FINAL

2016 AGRICULTURAL WATER MANAGEMENT PLAN

MARCH 2016

Prepared for:

Carpinteria Valley Water District
Carpinteria, CA 93014

Prepared by:

Milner-Villa Consulting
805-551-3294
www.milnervilla.com

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CARPINTERIA VALLEY WATER DISTRICT

MARCH 2016

Carpinteria Valley Water District

Charles Hamilton, General Manager
Bob McDonald, District Engineer
Alex Keuper, Administrative Analyst
Rhonda Gutierrez, Engineering Technician/Water Conservation Specialist

Consultant

Brad Milner, President
Milner-Villa Consulting
1746 S. Victoria Ave. #F126, Ventura, CA, 93003
805-551-3294
www.milnervilla.com

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List of Abbreviations and Acronyms

AB	Assembly Bill
AF	acre-foot
AFY	acre-foot per year
AWWA	American Water Works Association
AWMP	Agricultural Water Management Plan
BMP	Best Management Practice
CADDW	California Division of Drinking Water
CADWR	State of California Department of Water Resources
CANRA	State of California Natural Resources Agency
CCR	Consumer Confidence Report
CCWA	Central Coast Water Authority
cfs	cubic feet per second
CII	Commercial, Industrial, Institutional (water use sectors)
CIMIS	California Irrigation Management Information System
COMB	Cachuma Operations and Maintenance Board
CVWD	Carpinteria Valley Water District (or District)
CWC	California Water Code
EWMP	Efficient Water Management Practices
GIS	Geographic Information System
gpcd	**g**allons per capita per day
gpm	**g**allons per minute
MGD	million gallons per day
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SDWA	Safe Drinking Water Act
SGMA	Sustainable Groundwater Management Act
SWP	State Water Project
SWRCB	State Water Resources Control Board
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
UWMP	Urban Water Management Plan
WWTP	wastewater treatment plant

Definitions for selected terminology are provided in **Appendix A**.

SECTION 1: INTRODUCTION

1.1 PURPOSE

The Carpinteria Valley Water District (District) is pleased to release this Agricultural Water Management Plan (AWMP). This AWMP was prepared by the District to ensure the appropriate level of reliability in water service sufficient to meet the needs of its various categories of customers during normal, dry, or multiple dry years. The California Agricultural Water Management Planning Act of 2009 (Act) requires agricultural water suppliers to develop and adopt an AWMP (California Water Code, Section 10800-10853). In addition, this AWMP must achieve the requirements of additional state regulations including but not limited to the following: California Water Code, Section 10608.48-10608.64; California Code of Regulations, Title 23, Section 597; and Executive Orders by the Governor of California. The AWMP must be updated every five years in the years ending in zero and five. As such, the AWMP is regarded as a guideline subject to revision, with each update incorporating new strategies and requirements in response to new legislation and other changing conditions. The AWMP will be submitted to the State of California Water Resources Control Board (SWRCB) for approval.

1.2 AUTHORIZATION

The District authorized Milner-Villa Consulting to provide consulting services related to preparation of this AWMP via Agreement dated November 6, 2015.

1.3 SCOPE OF DOCUMENT

This AWMP is divided into five primary sections. Section 2 describes the District's water service area. Section 3 defines the District's water demands. Section 4 defines the District's water supplies. Section 5 defines the water supply reliability. Section 6 describes water demand management (i.e., water conservation) activities. References are provided following Section 6. Definitions for abbreviations and acronyms are provided immediately following the Table of Contents, and definitions for selected terms are included in **Appendix A**. Copies of the DWR Worksheets No. 1-48 are provided in **Appendix C**.

1.4 COORDINATION ACTIVITIES

1.4.1 Notification of AWMP Preparation

"An agricultural water supplier required to prepare a plan pursuant to this part shall notify each city or county within which the supplier provides water supplies that the agricultural water supplier will be preparing the plan, or reviewing the plan, and considering amendments or changes to the plan. The agricultural water supplier may consult with, and obtain comments from, each city or county that receives notice pursuant to this subdivision." (Water Code, Section 10821(a)

To describe notification of AWMP preparation, the agricultural water supplier is encouraged to provide supporting documentation in the AWMP. This could include a list of contacted cities and counties, copies of the notice of preparation, and copies of any other records demonstrating compliance. If the agricultural water supplier chooses to also notify other agencies, a list of these agencies could be provided.

If the agricultural water supplier chooses to consult with and obtain comments from contacted city(s), county(s), or any other agencies, a list of each agency and organization contacted or involved in the preparation, discussion, or coordination of the AWMP can be provided. A description of the coordination process, outreach materials used, any substantial comments that affected development of the AWMP, and if the comments were incorporated in the AWMP could also be provided.

1.4.2 Public Participation

"Prior to adopting a plan, the agricultural water supplier shall make the proposed plan available for public inspection and shall hold a public hearing on the plan. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned agricultural water supplier pursuant to Section 6066 of the Government Code. A privately owned agricultural water supplier shall provide an equivalent notice within its service area and shall provide a reasonably equivalent opportunity that would otherwise be afforded through a public hearing process for interested parties to provide input on the plan" (Water Code, Section 10841).

California Government Code, Section 6066 states the following:

"Publication of notice pursuant to this section shall be once a week for two successive weeks. Two publications in a newspaper published once a week or oftener, with at least five days intervening between the respective publication dates not counting such publication dates, are sufficient. The period of notice commences upon the first day of publication and terminates at the end of the fourteenth day, including therein the first day."

Public Water Suppliers can report the above listed requirements by providing copies of the public notifications on hearing time and place, and copies of the notice of the availability of the AWMP (or amendment to the AWMP) for public review. A description of any substantial public comments may be included also.

1.4.3 District Compliance

In preparing this AWMP, the District has complied with the plan preparation requirements including the following:

- The District notified the following agencies: City of Carpinteria, which is the only municipality located within the District; County of Santa Barbara, Planning and Development Department; and County Water Agency. In addition to city and county agencies, the District values the input of social, cultural, and economic community

groups in the service area and encourages them to comment on this and any future AWMP.

- The District provided 14-day advanced notification (copy provided in **Appendix B**) regarding a public hearing for the AWMP to applicable local agencies and organizations summarized in **Appendix C, Worksheet 2**.
- Prior to the public hearing, the Public Review Final Draft AWMP Update was made available to the public and on the District's website (www.cvwd.net) for review and comment.
- The District anticipates conducting a public hearing for the AWMP on March 23, 2016, at District Board of Directors meeting, at the City of Carpinteria City Hall, 5775 Carpinteria Avenue, Carpinteria, California. The hearing will consist of a brief presentation on the Draft AWMP, and response to questions from the public and other agencies. Copies of the meeting notice and Board resolution adopting the AWMP will be provided in **Appendix B.**
- The District anticipates submitting the AWMP to CADWR on approximately April 1, 2016.
- The District's adopted AWMP will be posted on the District's website, www.cvwd.net, and available for public review at the District's Office, 1301 Santa Ynez Avenue, Carpinteria, California, during normal business hours, within 30 days of submitting the AWMP to SWRCB

SECTION 2: SERVICE AREA

2.1 AWMP REQUIREMENTS

Water Code §10826 (a) requires a description of the agricultural water supplier and the service area:

> "(a) Describe the agricultural water supplier and the service area, including all of the following:
>
> (1) Size of the service area.
> (2) Location of the service area and its water management facilities.
> (3) Terrain and soils.
> (4) Climate.
> (5) Operating rules and regulations.
> (6) Water delivery measurements or calculations.
> (7) Water rate schedules and billing.
> (8) Water shortage allocation policies." (Water Code §10826(a).

The Water Code requires a description of these elements in the AWMP, but details are not specified. In this section, this Guidebook suggests a reasonable level of detail to assist the agricultural water supplier in preparing an AWMP that can be used for water management planning and providing information to address Water Code §10826 (b) requirements for a description of the quantity and quality of water resources of the agricultural water supplier. This Guidebook organizational outline groups descriptions into Physical Characteristics – elements (a)(1) to (a)(4), and Operational Characteristics – elements (a)(5) to (a)(8). See Section II of the AWMP Template.

This section also provides a basis for evaluating structural or operational improvements as well as an area to provide the basic information about physical and operational aspects that may affect water management.

This section is also an opportunity to provide some background information, such as the agricultural water supplier date of formation, source(s) of water supply (such as Central Valley Project (CVP), State Water Project (SWP), local surface or groundwater), or any other pertinent information.

"Describe previous water management activities." (Water Code §10826(d).

The Water Code does not specify which management activities need to be included. Useful information would include previous water management plans and program(s) under which the previous plan was developed, adoption date by the water supplier, approval or acceptance date (by the AWMC or USBR, respectively), management agency and representative, and other pertinent information, including any amendments and/or revision dates.

2.2 OVERVIEW OF DISTRICT

2.2.1 Location

The District is located on the coast of California 80 miles north of Los Angeles and 12 miles southeast of Santa Barbara (see **Figure 2-1** for a vicinity map). The District's service area encompasses an area extending along the south coast of the County of Santa Barbara easterly from the Toro Canyon area to the Ventura County line. See **Figure 2-2** for a map of the District boundary. The Foothills of the Santa Ynez Mountains lay to the north and the ocean to the south of the valley. The District's service area contains approximately 11,098 acres (17.3 square miles).

2.2.2 History of District

The District was established in 1941. Over time, the District has acquired three different water companies, all within the boundaries of the District, in order to provide more reliable service to the customers of the District. The first water company to be acquired was the Shepard Mesa Mutual Water Company on February 8, 1955. Subsequently, Ocean Oaks Water Company was transferred to the District on July 6, 1957. The third and largest water company to be acquired was the Carpinteria Water Company which was first started in 1919 by Frank L. Stewart. In 1922, because of increased demand for additional service, Frank L. Stewart formed a partnership with E. Stanley Atkinson which was known as the Stewart-Atkinson Water Company of Carpinteria. After a public hearing was conducted, the State of California Public Utilities Commission approved on July 22, 1924 the incorporation of the Stewart-Atkinson Water Company. The company was named the "Carpinteria Water Company". A certificate of public convenience and necessity was granted by the State of California Public Utilities Commission on December 31, 1924, and authority to operate a public utility system was granted on March 5, 1925. The Carpinteria Water Company was serving approximately 165 customers at that time. By 1949, the Carpinteria Water Company was serving approximately 820 customers. At the time of purchase and transfer of the Carpinteria Water Company to the District on July 1, 1964, active service connections totaled approximately 1,600. (CCWA, 2011)

2.2.3 District Facilities

The District owns and operates five (5) municipal wells with a combined capacity to produce approximately 3.98 MGD. These wells are located central to the suburban section of Carpinteria. **Figure 2-3** displays the CVWD facilities including general locations of wells. The District constructed a new well, Headquarters Well, and a replacement well for El Carro in the last 10 years. Both of these wells have the capability to extract as well as inject water. These wells will help meet the peak demands and provide some redundancy in the groundwater supply reliability. Additional details regarding District groundwater extractions provided in Section 4.

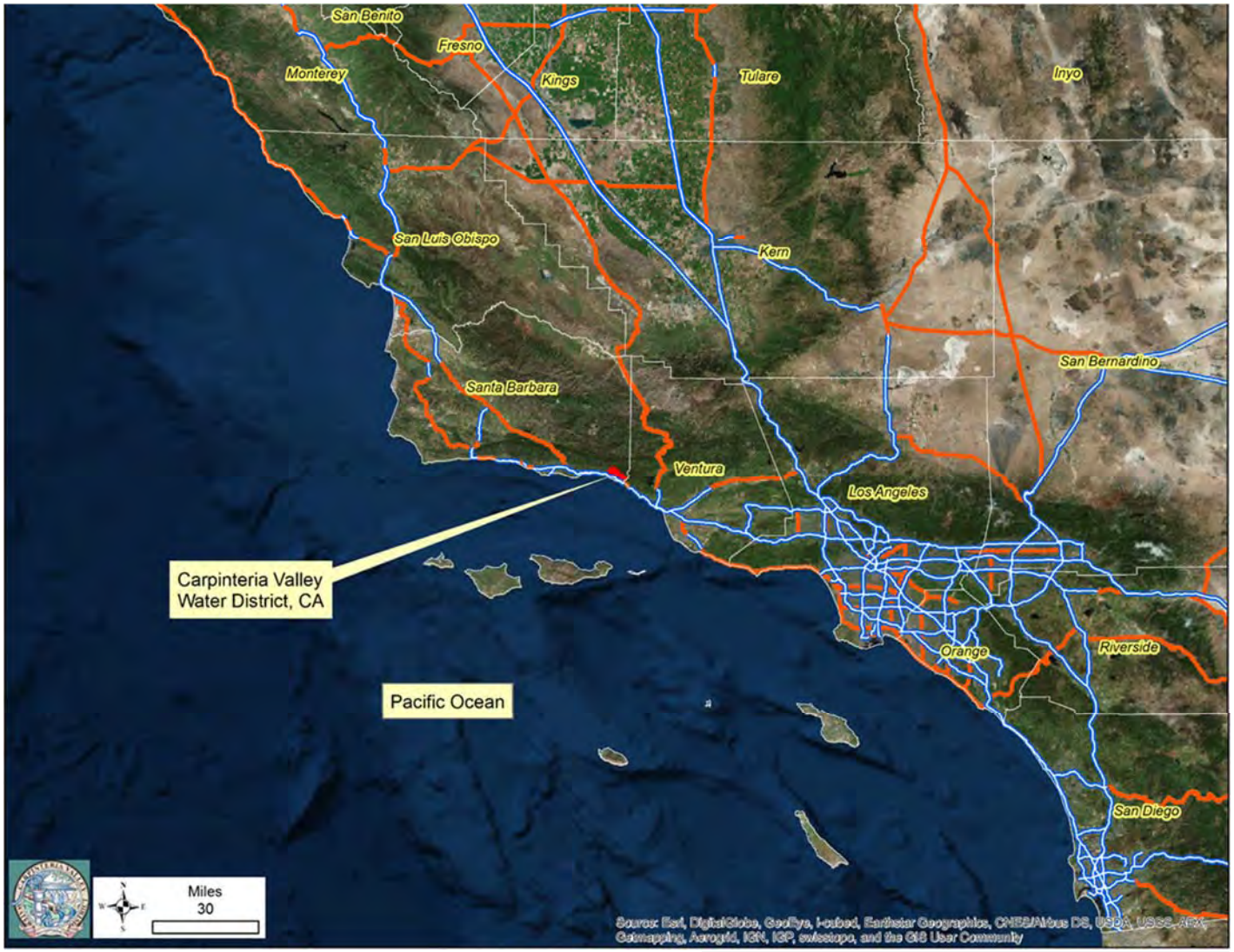


FIGURE 2-1
VICINITY MAP

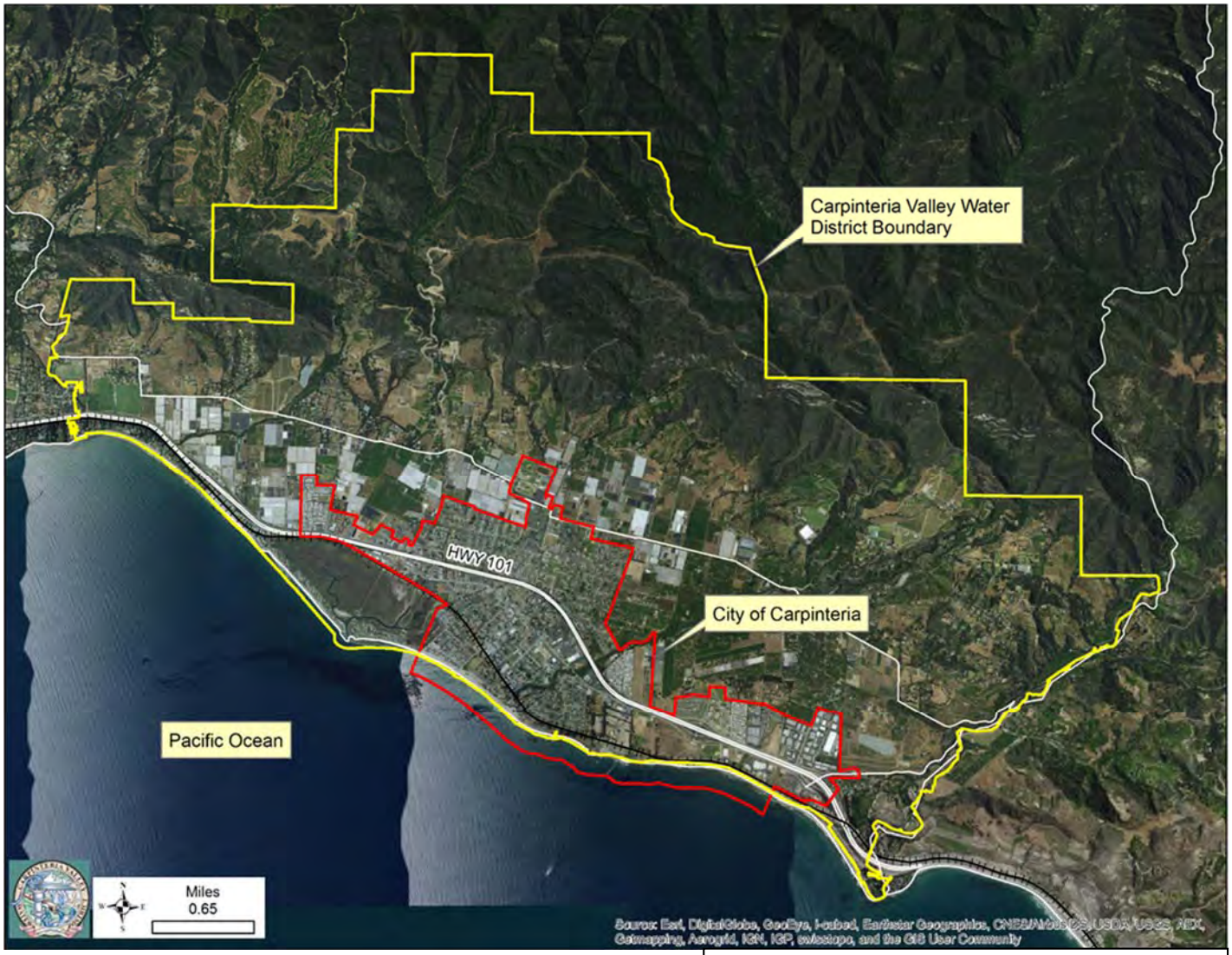


FIGURE 2-2
DISTRICT SERVICE AREA

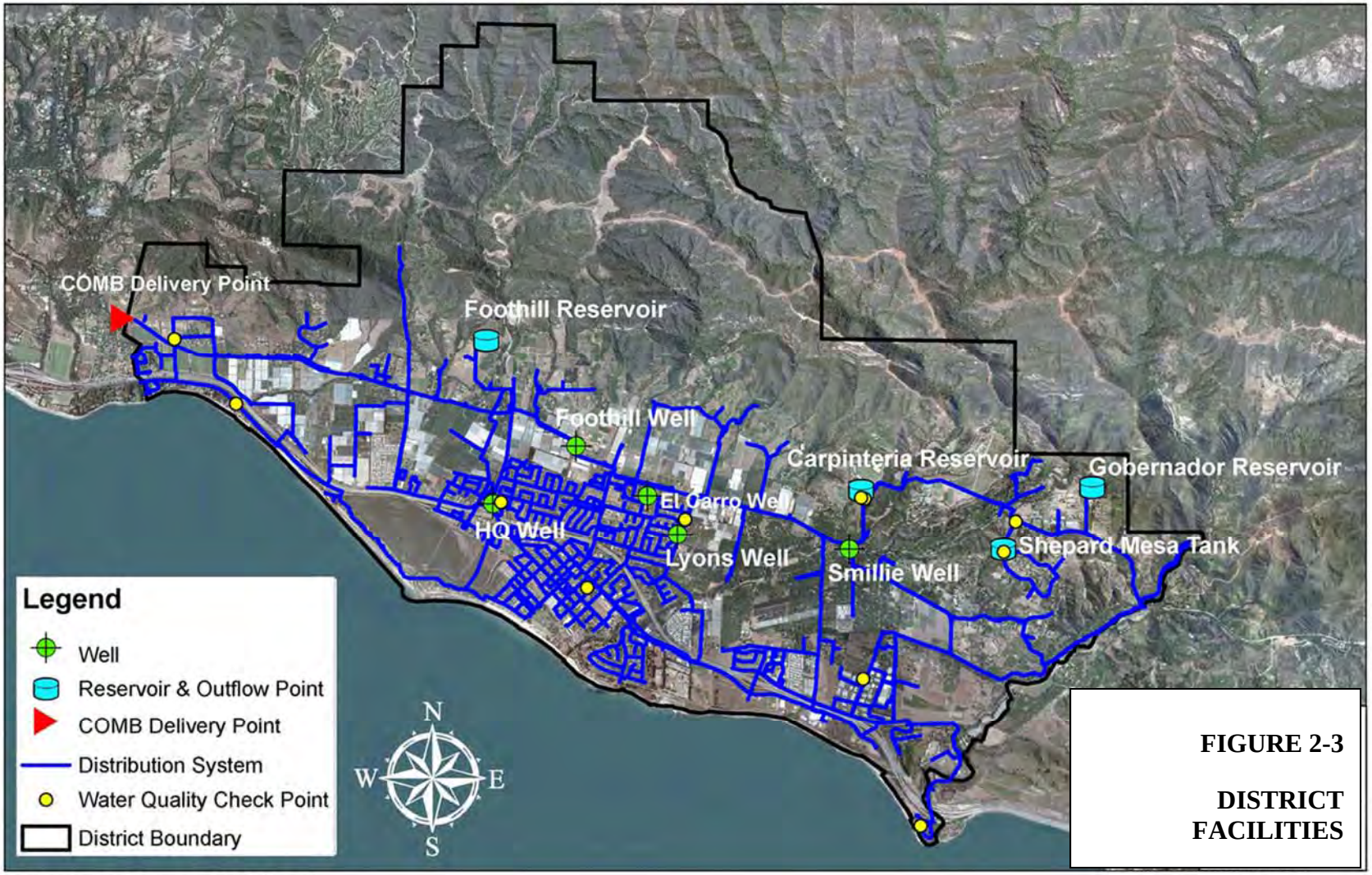


FIGURE 2-3

DISTRICT FACILITIES

The District owns and operates three (3) potable water reservoirs with a combined storage capacity of approximately 10.68 AF (see also **Appendix C Worksheet No. 5**). These reservoirs include Shepard Mesa (0.15 AF), Foothill (9 AF), and Gobernador (1.53 AF). **Figure 2-3** displays the CVWD facilities including general locations of the reservoirs. Cachuma Operations and Maintenance Board (COMB) owns and operates two additional reservoirs in the area including Ortega Reservoir (60 AF) and Carpinteria Reservoir (44 AF).

The District owns and operates a total of 78.14 miles of distribution pipelines (see also **Appendix C, Worksheet No. 4**). These pipelines include concrete (51%), steel (36%), and other materials (13%). **Figure 2-3** displays the general locations of the CVWD distribution facilities.

2.2.4 Terrain and Soils

The District service area is located on a narrow, moderately to gently-sloping alluvial plain which extends from the base of the Santa Ynez Mountains southward to the Pacific Ocean. Natural drainage of the plain is provided by Carpinteria Creek, Franklin Creek, Santa Monica Creek, Rincon Creek, and Toro Creek; with the headwaters of each creek located in the Santa Ynez Mountains.

The soils have been classified by the United States Soil Conservation Service and are a combination of associations 1, 2, 3, and 7 type soils. The District is not aware of soil-related conditions or problems which may impact agriculture. See **Appendix D** for a soils map. As noted on the soils map, the most common soil type within the District is fine sandy loam at 35.74 percent. Additional details are provided in **Appendix C, Worksheet No. 7.**

2.3 CLIMATE

2.3.1 General Climate Data

Climate within the District's service area is Mediterranean-like in character. Summers are usually dry with generally mild temperatures and the winters are cool and have light to moderate quantities of precipitation (predominantly in the form of rainfall) with cool temperatures. Annual variation in climate conditions is minimal within the District. However, unique topographic conditions in the Gobernador Canyon area of the District can lead to frost conditions for approximately 5 days per year.

The District service area is located on a narrow, moderately to gently sloping alluvial plain which extends from the base of the Santa Ynez Mountains southward to the Pacific Ocean. Natural drainage of the plain is provided by Carpinteria Creek, Franklin Creek, Santa Monica Creek, Rincon Creek, and Toro Creek. Headwaters of each of these creeks are located in the Santa Ynez Mountains.

Water from the Cachuma Project is collected from the Santa Ynez mountain watershed, which is subject to its own local climatic variations. Cachuma Project water, stored in Lake Cachuma, is a major source of surface water for the District (see Section 4 for details). Rainfall in the Santa

Ynez watershed is greater than that of local patterns due to the orographic affect created by the local mountains and the offshore winds.

Average daily maximum air temperature varies between 64.9 and 77.1 degrees Fahrenheit with an average of 70.8. (WRCC, 2015) Annual rainfall for the area is 18.83 inches. Annual average evapotranspiration (ETo) for the area is 43.7 inches. (CADWR, 2015) Additional temperature, precipitation, and evapotranspiration data is provided in **Table 2-1**. Additional details provided in **Appendix C, Worksheets No. 8-9**.

TABLE 2-1
LOCAL CLIMATE SUMMARY

Month	Average Maximum Temperature (F) (1)	Average Minimum Temperature (F) (1)	Average Total Precipitation (inches) (2)	Average Evapotranspiration (inches) (3)
January	64.9	43.0	4.11	1.79
February	65.6	44.6	4.05	2.32
March	66.8	46.2	3.27	3.57
April	69.0	48.6	1.29	4.63
May	69.9	51.3	0.41	5.10
June	72.4	54.3	0.09	4.83
July	75.9	57.3	0.02	5.38
August	77.1	57.9	0.06	5.21
September	76.7	56.4	0.29	4.03
October	74.4	52.5	0.70	3.16
November	70.9	46.9	1.61	2.04
December	66.4	43.4	2.94	1.65
Annual	**70.8**	**50.2**	**18.83**	**43.71**

Notes:
(1) Western Region Climate Center, Santa Barbara, Station No. 047902, 2015.
(2) Data combined from Western Region Climate Center, Santa Barbara data set (1894-1948), and County of Santa Barbara, Carpinteria Fire Station data set (1949-2015).
(3) CADWR, Santa Barbara CIMIS, Station No. 107, 2015.

2.3.2 Effective Precipitation

Effective precipitation is the amount of precipitation that is actually added and stored in the soil. There are numerous methods for calculating effective precipitation including empirical-based (direct measurement) and formula-based (indirect estimate). All estimates of the effectiveness of precipitation depend on several factors such as the amount and intensity of precipitation, character and water holding capacity of the soil, and plant characteristics. **Worksheet No. 42** (see **Appendix C**) summarizes the estimated effective precipitation based on a formula-based method by Gilbert G. Stamm, 1967, from the United States Bureau of Reclamation. The formula uses an effectiveness percentage as applied to increments of monthly precipitation. For example, for the first 1 inch of monthly precipitation, the effectiveness percentage is 90 to 100 percent. The effectiveness percentage decreases to 0 to 10 percent for monthly precipitation greater than 6

inches. Data in Worksheet No. 42 indicate the effective precipitation for the District service area for the years 2011 to 2015 ranges from 2,395 AF (2013) to 9,747 AF (2011).

2.4 DEMOGRAPHIC FACTORS

2.4.1 Land Use

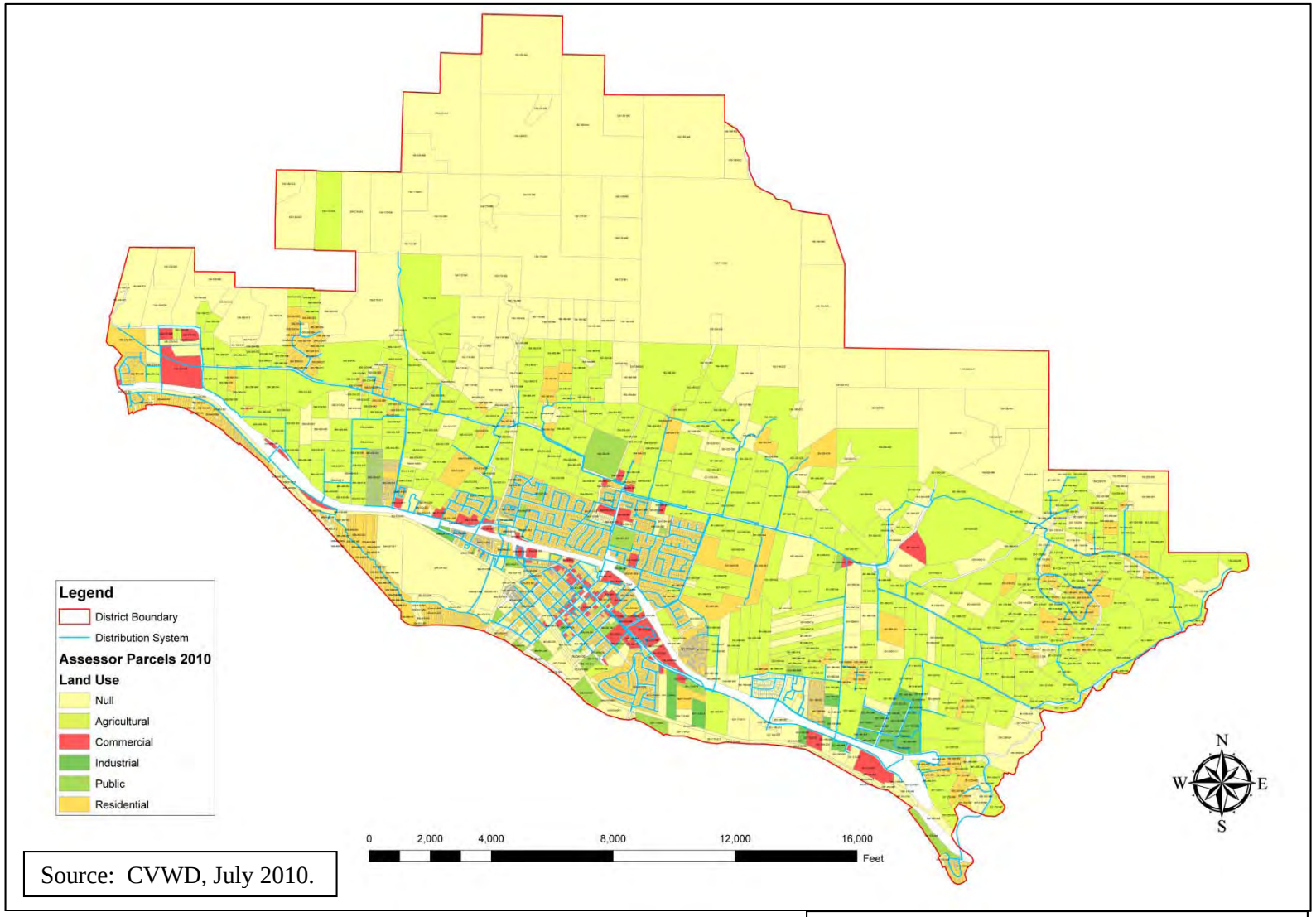
Land use within the District includes agriculture (3,167 acres), residential, and commercial properties (see **Figure 2-4** for details). Much of the land within the City limits is residential or commercial use with some industrial and manufacturing. Almost all the agricultural land lies outside the City limits. Land use within the District is regulated by the City of Carpinteria within its boundaries, and by the County of Santa Barbara for the unincorporated area of the District.

Agricultural customers include approximately 3,167 acres of irrigated crops including avocados, lemons, fruit trees, and nursery operations (see **Table 2-2** for details; also **Appendix C, Worksheets 21-23**). Sprinklers are the most common method of crop irrigation.

TABLE 2-2
ACRES OF AGRICULTURAL CROPS IN THE DISTRICT

Crop Type	Acres
Avocados	1,849
Lemons/mixed fruit and lemons	207
Cherimoya/other fruit	185
Nursery (open)	415
Nursery (covered)	370
Field	141
Total	**3,167**

Notes:
Source: CVWD, 2015.



Source: CVWD, July 2010.

FIGURE 2-4
DISTRICT LAND USE MAP

2.4.2 Population

The City has a water allocation program as required by the Local Coastal Plan. A water allocation is given to each new development to ensure that the available supply of water is not exceeded. The City has reached its General Plan build-out population but has the potential for approximately 250 more residential units. It is unknown at this time if the City will allow 250 more units to be developed in the future. Many of the undeveloped parcels outside the City limits are being developed as ranchettes or small farm operations. These lands will produce only a small increase in the number of housing units in the Valley.

Water service is provided to a current population within the District's service area of approximately 15,600 and a total of 4,160 service connections. Population estimates were generated from the present to 2040 and include areas outside of the City limits but within the District service area. The District estimated the population for the period 2015 to 2040 using the 2010 Census data, aerial photography, current meter connections, District surveys, and estimated growth rate of 0.2 percent. **Table 2-3** provides a summary of the historical population for the City of Carpinteria and projected population for the District for the period 2015 to 2040. Population growth within the District is anticipated to be 800 persons over the next 25 years (approximately 0.2 percent per year).

TABLE 2-3
HISTORICAL AND PROJECTED DISTRICT POPULATION

Year	Actual City Population (1)	Estimated City Population (2)	Estimated District Population (3)	Average Annual Growth Rate (%)
2000	14,194	-	-	0.3
2010 (4)	13,040	-	15,141	-0.8
2015	-	13,300	15,600	0.5
2020	-	13,425	15,760	0.2
2025	-	13,550	15,920	0.2
2030	-	13,675	16,080	0.2
2035	-	13,800	16,240	0.2
2040	-	13,900	16,400	0.2

Notes:
(1) Source: US Census (2010), includes only the City of Carpinteria.
(2) Source: Santa Barbara County Association of Governments (2015).
(3) Source: CVWD estimate based on US Census, aerial photography survey, current meter connections, District surveys, and estimated growth rate of 0.2 percent per year; includes City population and residents outside City limits but served by the District.
(4) US Census indicated a net population loss of approximately 1,154 City residents (2000 to 2010).

2.5 DISTRICT OPERATIONS

2.5.1 Operating Rules and Regulations

A copy of the District's Rules and Regulations Manual (2015-2016) is available on the District's website: http://www.cvwd.net/pdf/about/public_info/Rules_Regulations_09232015.pdf
Copies of the District's Rules and Regulations are also available upon request.

2.5.2 District Water Delivery Measurements

The District utilizes positive displacement meters with an accuracy of 98.5 percent to 101.5 percent. See **Appendix C, Worksheet 13** for details.

2.5.3 Water Rate Schedules and Billing

The District currently has inclining block water rates (also known as conservation rate), where the cost per unit of water increases with the quantity of water used for all accounts. Customers are billed monthly for 100 percent of the volume of water used. Meter fees (2015-2016, see copy in **Appendix E**) range from $37.88 per month (5/8-inch) to $1,262.50 (6-inch). The commodity rate for agricultural customers is $1.92 per 100 cubic feet (HCF) to $2.94 per HCF depending on usage and elevation of the property. The commodity rate for all residential, commercial, and industrial customers is $3.40 per HCF to $6.94 per HCF depending on usage and elevation of the property. In addition, the District has an additional fee for capital improvement program ($16.50 to $275 per month) and drought surcharge ($2.40 to $40.00 per month). The District has the legal authority to evaluate and set rates for its customers. See **Appendix C**, **Worksheet 15** for additional details.

2.6 WATER SHORTAGE ALLOCATION POLICIES

2.6.1 Water Shortage Contingency Planning

In 1997, in accordance with the requirements of Assembly Bill 11X, the District developed its Emergency Response Plan (ERP). A copy of this Plan is provided in **Appendix F**. The District's plan contains procedures for the distribution of potable water in a disaster. These procedures are consistent with guidelines prepared by the California State Office of Emergency Services. The District's ERP identifies various levels of natural and man-caused emergencies and provides examples of actions for a number of given emergencies, including earthquake and power failure.

The District owns and operates sufficient groundwater production capacity to meet demands during a water supply shortage. In addition, specific water-critical customers (such as hospitals, schools, and a few individual customers with medical conditions dependent on continuous water availability) have been identified. Emergency potable water distribution sites have been identified as City Hall, Carpinteria Middle School, Carpinteria Valley Water District offices, and Carpinteria High School. Standby procurement documents are being developed for emergency bulk purchase of bottled water. Standby arrangements with several local trucking firms to provide tankers to distribute potable water (certified by the California Division of Drinking

Water) for safe transportation of potable water are being developed. All existing water supply storage, treatment, and distribution, facilities are now inspected weekly.

In the event of a major earthquake the District's Emergency Response Plan (**Appendix F**) includes procedures for assessment of damage, public notification and procedures to determine appropriate actions to restore service as quickly as possible. It is likely in such an event that District customers will be required to ration water to some degree. The District would implement its Water Shortage Contingency Plan, defined below, if necessary.

In the event of a flood that knocks out transmission or distribution lines the District staff will assess the damage and re-valve to get water to where it is needed. This type of disaster will probably result in isolated damage that can be worked around until the damage can be repaired. The District distribution is looped and in most cases water could be rerouted to any area of the District.

In the event of a power outage, the District has generators with automatic transfer switches on all the major booster stations and a portable 300 kW generator to run the wells. Critical treatment equipment is all run from an uninterruptible power supply (UPS). All future treatment equipment will be equipped with an automatic transfer switch and emergency generator.

2.6.2 Supplemental Water Supplies

To offset future potential water shortages due to drought or disaster, the District is considering additional water supplies. These supplemental water supplies are summarized in **Section 4**.

2.6.3 Water Shortage Contingency Ordinance/Resolution

The District adopted Resolution No. 547 in 1990 to address water shortage emergency (copy provided in **Appendix G)**. The District adopted Ordinance No. 90-1 in 1990 to address drought regulations and water conservation standards (copy provided in **Appendix G**). Ordinance No. 90-2, also adopted in 1990, addresses restrictions on uses of water within the District (copy provided in **Appendix G**). Ordinance No. 90-3, adopted in 1990, addresses restriction upon the delivery of water within the District (copy provided in **Appendix G**).

On February 12, 2014, the District adopted Resolution 972, declaring a Stage One (1) Drought Emergency to address drought conditions and request a 20 percent voluntary reduction in consumption from District customers. Resolution 980 was adopted in August 2014, incorporating prohibited activities defined by the State Water Resources Control Board's (SWCRB) Drought Emergency Water Conservation Regulation, and financial penalties for infraction of those prohibited activities. Ordinance 14-1, consolidating Resolutions 972 and 980, adding new requirements, and establishing enforcement measures was adopted in October 2014 (copy provided in **Appendix G**). Ordinance 15-2 was adopted in May 2015 declaring a Stage Two (2) Drought Condition with mandatory water use restrictions to achieve an immediate system-wide reduction in water usage by 25 percent, and incorporating additional prohibited activities and watering restrictions (copy provided in **Appendix G**).

The District is well prepared to operate effectively in the face of a catastrophic water supply interruption using the Emergency Response Plan (**Appendix F**) and the District Ordinances (**Appendix G**) for guidance.

2.6.4 Stages of Action and Reduction Goals

The District will use a three-stage rationing plan to invoke during declared water shortages. The rationing plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of the water supply shortage. **Table 2-4** summarizes the District's water rationing stages and reduction goals which range from 15 percent to 50 percent.

TABLE 2-4
WATER RATIONING STAGES AND GOALS

Shortage Condition	Stage	Customer Reduction Goal	Type of Rationing Program
Up to 15 Percent	I	15%	Voluntary
15 to 30 Percent	II	25%	Voluntary
30 to 50 Percent	III	50%	Mandatory

Notes:
Source: CVWD.

The District may consider adding additional stages (i.e., up to total of 5 stages) during preparation of the 2015 UWMP Update.

2.6.5 Priority by Use

Water allotments are established for all customers on a percentage basis. All customers will be required to reduce use at the same percentage. First priority is given to health and safety in all cases. It is not believed that a stage III shortage will jeopardize the health or safety of any District customers. If a customer chooses to protest their allotment due to hardship a claim can be filed at the District for review by the manager and if appropriate by the Board of Directors. A decision to adjust an allotment will be based primarily on a health and safety basis.

2.6.6 Health and Safety Requirements

In Stage I and II shortages, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal. However, under Stage III mandatory rationing programs, the District established a health and safety allotment of 55 gallons/capita/day (gpcd) and as low as 43 gpcd for short term severe water shortages. This value equals 3,300 cubic feet per person per year for long term water shortages. Stage III mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, would

require that customers eliminate outdoor landscape watering and make changes in their interior water use habits (for instance, not flushing toilets unless "necessary" or taking less frequent showers).

2.6.7 Water Shortage Stages and Triggering Mechanisms

The water shortage response is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The rationing program triggering levels shown below were established to ensure that this goal is met.

Rationing stages may be triggered by a shortage in one water source or a combination of sources. Although an actual shortage may occur at any time during the year, the water supply will be assessed by the staff in September each year to determine if there will be a shortage.

The District's potable water sources are groundwater, surface water from Lake Cachuma, and imported State Water Project water. Rationing stages may be triggered by a supply shortage or by contamination in one source or a combination of sources. Shortages may overlap Stages, therefore triggers automatically implement the more restrictive Stage. Criteria for triggering the rationing stages are shown in **Table** 2-5 below.

A decision by the General Manager and ratification by the Board of Directors will be the mechanism by which the District will declare stage I, II or III rationing requirements.

TABLE 2-5
WATER SHORTAGE STAGES AND TRIGGERING MECHANISMS

Percent Reduction of Supply	**Stage I Up to 15%**	**Stage II 15 - 30%**	**Stage III 30-50%**
Water Supply Condition			
Supply Deficit	(1) Estimated demand is projected to exceed total supply by up to 15%. And (2) Below "normal" year is declared. Or	(1) Estimated demand is projected to exceed total supply by 15-30%. And (2) Below "normal" year is declared. Or	(1) Estimated demand is projected to exceed total supply by over 30%. And (2) Fourth consecutive below "normal" year is declared and carryover water is depleted. Or
Water Quality	(1) Contamination of up to 15% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of 15-30% of water supply (exceeds primary drinking water standards). Or	(1) Contamination of over 30% of water supply (exceeds primary drinking water standards). Or
Disaster Loss	As Necessary.	As Necessary.	As Necessary.

Notes:
Source: CVWD.

2.7 PROHIBITIONS, CONSUMPTION REDUCTION METHODS, AND PENALTIES

2.7.1 Mandatory Prohibitions on Water Wasting

Prohibition on waste of water usage was originally enacted in Ordinance No. 90-1 (copy provided in **Appendix G**) and has been restated in Ordinance No. 15-2 (copy provided in **Appendix G**).

Examples of specific restrictions and prohibited wasteful practices include, but not limited to, the following: no use of running water for hosing or washing down driveways, walkways, and buildings; restaurants were to refrain from serving water unless requested by customers; no outside watering between 10:00 a.m. and 4:00 p.m. by hand or moveable landscape irrigation system; no outside watering between 8:00 a.m. and 6:00 p.m. by a fixed landscape irrigation system; no watering after measurable rainfall events; controls on boat and vehicle washing; no use of water which results in runoff beyond the immediate area of use; and leaks must be repaired within seventy-two (72) hours of discovery or notification by the District.

2.7.2 Consumption Reduction Methods

Under normal water supply conditions, potable water production and deliveries figures are recorded monthly. Total deliveries are compared monthly with available supplies. A water supply report is generated for the Manager showing how the supply compares to the estimated demand for the year. This report is then presented to the Board its regular meeting each month.

During a Stage I or Stage II water shortage, weekly production will be collected and reported to the District Engineer. The Engineer compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Manager. Monthly reports are presented to the Board of Directors at their regular meetings. If reduction goals are not met, the Engineer will determine where allotments are being exceeded and contact that customer directly in an effort to correct the problem. During a Stage III water shortage, the procedure listed above will be followed, with the addition of a daily production report to the Manager.

2.7.3 Water Allotment Methods

The District has established the allotment methods for each customer type as noted in **Table 2-6** below.

TABLE 2-6
WATER ALLOCATION METHOD BY CUSTOMER TYPE

Customer Type	Allocation Method
Agricultural	Percentage Reduction - vary by efficiency
Residential	Percentage Reduction – can vary by occupants per household
Commercial	Percentage Reduction
Industrial	Percentage Reduction
Public Authority	Percentage Reduction
New Customers	Estimate of similar uses apply
New Developments	No new services for new development during a declared water shortage of Stage III

Notes:
Source: CVWD.

Table 2-7 below indicates the proposed water allocated to each customer type by rationing stage during a declared water shortage. Individual customer allotments are based on a 5-year period. This gives the District a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year base period.

The District General Manager shall calculate each customer's allotment according to the established rationing allotment method. The allotment shall reflect seasonal patterns. Each customer shall be notified of his or her classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. Any customer may appeal the assigned water allotment on the basis of incorrect calculation or health and safety.

TABLE 2-7
WATER USE RESTRICTION (ALLOTMENTS)

User Type	Allotments		
	Stage I	Stage II	Stage III
Agriculture	85%	70%	50%
Residential (1)	85%	70%	50%
Commercial	85%	70%	50%
Industrial	85%	70%	50%
Public Authority	85%	70%	50%

Notes:
(1) Exceptions may be made on a case by case basis for high occupancy dwellings. (CVWD)

2.7.4 Excessive Use Penalties

Excessive use penalties are not included in the current District policies and regulations. However, the District may impose excessive use penalties if additional conservation measures are deemed necessary.

2.8 PREVIOUS WATER MANAGEMENT ACTIVITIES

The District prepared a Water Management Plan with an agricultural focus in 2011 for the United States Bureau of Reclamation (prepared by Milner-Villa Consulting). This Water Management Plan, included similar elements to the AWMP such as a description of the service area and land use, inventory of water resources, summary of water demands, and description of best agricultural and urban management practices (conservation measures, or efficient water management practices).

In addition, the District adopted the most recent Urban Water Management Plan in 2011 (prepared by Milner-Villa Consulting). The UWMP includes similar elements as the AWMP including descriptions of the service area, water demands, water resources, water resources reliability, and demand management measures (conservation measures, or efficient water management practices). The District's 2011 UWMP was an update of prior UWMP adopted in 1985 (original), 1988, 1992, 1997, 2001, and 2007.

Other significant District documents related to water management include but not limited to the following:

AB3030 Annual Report. 2015 and annual updates. Prepared by Fugro Consultants Inc.

Carpinteria Groundwater Basin Hydrogeologic Update and Groundwater Model Project. 2012. Prepared by Pueblo Water Resources.

Groundwater Management Plan. 1996. Prepared by the District.

Water Reliability Strategies for 2030. 2006 and 2009 Addendum. Prepared by Kennedy/Jenks Consultants.

Carpinteria Groundwater Basin - Final Hydrogeologic Update. 1986. Prepared by Geotechnical Consultants, Inc.

SECTION 3: QUANTITY OF WATER USES

3.1 AWMP REQUIREMENTS

This section describes the water uses for agricultural, environmental, recreational, municipal and industrial, groundwater recharge, transfers and exchanges, and other water uses within the agricultural water supplier's service area.

Water Code §10826 (b) requires a description of the quantity of all underlying items, including the water uses identified under §10826 (b)(5). Section 10826 (b)(5) requires that the AWMP include a description of the following:

> "Water uses within the agricultural water supplier's service area, including all of the following:
>
> (A) Agricultural.
> (B) Environmental.
> (C) Recreational.
> (D) Municipal and industrial.
> (E) Groundwater recharge.
> (F) Transfers and exchanges.
> (G) Other water uses."

The legislation also does not require a specific method, timescale, or other parameters for quantifying water uses under this element in this section. Additionally, Executive Order B-29-15 directs that AWMP include quantification of water supplies and demands for 2013, 2014, and 2015 to the extent data are available.

If available, it is suggested (but not required) that quantities of water used from each water source within the service area, for each water use type, be reported along with additional information that can be used in determining the overall water budget. This would allow for greater flexibility in water management planning.

In order to provide a meaningful and consistent basis for water accounting in accordance with Water Code §10826 (b)(7), it is suggested that:

- Information be reported using the same year(s) and timeframe for all water use types as listed under Water Code §10826 (b)(5).
- Monthly or bi-monthly water usage data is provided for each water use type.
- Data for each water use type can be presented in a similar format as shown in the Worksheets 20 through 29. Depending upon the number of locations or complexity regarding each type of water use in the service area, this table can be expanded or summarized as necessary. For instance, for a particular water use type, if the same

amount of water is required each year and/or each month, it would not provide more information to report monthly use for the past five years; reporting the consistent demand quantity and a notation to that effect would be essentially the same.

If special management or usage areas have been identified in Section II of the AWMP, it would further assist in water management planning to provide a table of water use estimates, delineating the water use in each applicable area for each water use type (e.g., agriculture, environmental, and others).

It is suggested that the AWMP also include a detailed description of their basis for reporting water quantities:

1. What year(s) are used to describe the water quantities, and if there were any special conditions relevant to the determination of quantities (e.g., excessively wet year, water measurement system only partially implemented, couldn't measure a particular source or use, or others).

2. A Representative Year and/or the Plan Cycle year can be used as a basis for determining water quantities.

CADWR encourages water supplier to use the same basis (year(s)) and timeframe (e.g., Water Year months, calendar year, or other) to report water quantities in all tables/descriptions in Sections III through IV of the AWMP (detailed in Sections 3.3 through 3.5 of this Guidebook). For example, the agricultural water supplier could use the first Plan Cycle year 1 (2012/2013) data and identify that data is based on the Water Year from October 2012 to September 2013.

CADWR encourages agricultural water suppliers to report water quantities based on a Plan Cycle yearly-basis and include information for the past five years. In accordance with Executive Order B-29-15, quantification of water demands is to be reported for 2013, 2014, and 2015 to the extent data is available.

If a Representative Year is used to describe and tabulate water uses and supplies, it should be defined and the year(s) it is based on identified. The Representative Year can be an average or a range of hydrological variation: Drought, normal, and wet years. The rationale/description of what constitutes a Representative Year(s) should be included in this section, if applicable (refer to Worksheet 19).

If water uses are estimated instead of measured, CADWR encourages the agricultural water supplier to provide justification and documentation of calculations and data used for the estimation. This information can be summarized in the discussion pertaining to quantification of the specific supplies and/or uses with details included as an attachment in Section VIII. This information can also provide the basis for the Aggregated Farm Gate Delivery Report.

For water management planning, it is often advantageous to estimate future water use demands. While not required, the agricultural water supplier can also include a description of any anticipated changes or trends in water demand within their service area in order to facilitate the

AWMP's use as a planning document. This could include changes in water use related to the following:

- Changes in crop types resulting in different crop water use requirements than current conditions.
- Expected market fluctuations that would affect the type and amount of crops grown.
- Increased water use efficiency that would reduce water uses through reduced non-recoverable water.
- Increased energy costs that would potentially reduce the amount of water used from higher energy sources (e.g., pumped groundwater); and/or,
- Anticipated changes in land use (e.g., conversion of agricultural land to developed land).

3.2 CURRENT WATER USES

Water demand (use) is a function of several factors. Geographic location, topography, land use, demography, and water system characteristics (i.e., system pressures, water quality and metering of connections) all influence water usage. Water demand characteristics within the District will therefore differ from water demands of other areas in California according to these factors of influence.

Reasons for differences in water demand between local communities can be numerous and complex. Many factors may influence water demands including, but are not limited to, the following: parcel size, crop type, soil type, slope, irrigation type, housing density, house age, condition of plumbing, use of water efficiency management practices, climate, water rates, local ordinances, record keeping, statistical anomalies, etc.

Total water use includes the total amount of water delivered by the District including water losses. According to the District, total water use in 2015 was 4,137 acre-feet (AF). For additional details see **Table 3-1** below. For the year 2010, the District sold 3,718 acre-feet (AF), while water sold in 2005 was 3,962 AF. Thus, the 2015 demands were 419 AF (11 percent) more than the 2010 demands and 175 AF (4 percent) more than the 2005 demands.

TABLE 3-1
2015 DISTRICT WATER USES

Water Use Sector	Total Volume (AFY) (1,2)	Percent of Total Water Uses
Single-Family Residential	740	18
Multiple-Family Residential	413	10
Commercial	237	6
Institutional	113	3
Landscape	50	1
Industrial	66	2
Agricultural	2,105	51
Water Losses	413	10
Total	**4,137**	**100**

Notes:
Source: CVWD.
(1) All values rounded.
(2) Total does not include system water losses.

3.2.1 Municipal and Commercial Demands

In 2015, single-family and multiple-family residential customers used 1,153 AF (28 percent) of the total water uses. Commercial customers accounted for 237 AF (6 percent) of the total 2015 water uses. Municipal and commercial customers (including residential, commercial, institutional, and landscape uses) accounted for nearly 1,553 AF (38 percent) of the total District water demand. For additional details see **Table 3-1**; and see **Appendix C**, **Worksheet 26**.

3.2.2 Industrial Demands

Industrial customers accounted for 66 AF (2 percent) of the total water demands in 2015. For additional details see **Table 3-1**; and see **Appendix C, Worksheet 26**.

3.2.3 Agricultural Demands

Agricultural customers accounted for 2,105 AF (51 percent) of total water demands in 2015. For additional details see **Table 3-1**; and see **Appendix C, Worksheet 20**. See **Table 3-2** for additional details. In 2010, agriculture accounted for approximately 1,582 AF (43 percent) of total water uses.

3.2.4 Water Losses

In addition to the traditional demand sources, another component that significantly impacts the District's water resources is water system losses (also known as "unaccounted-for water"). This component is typically defined as the difference between water production and water sales. These water losses can be due to authorized activities such as fire fighting and main flushing. In addition, water losses may be due to unauthorized sources such as leakage, illegal connections, theft, and inaccurate flow meters. Estimated water loss within the District was approximately 413 AF (10 percent) of the total water demand during 2015. For additional details see **Appendix C, Worksheet 46**.

The District's estimated unaccounted-for water was slightly higher than estimates from USEPA Region 9 which indicate an average of 6.4 percent for total water loss. California Department of Water Resources, Office of Water Conservation uses approximately 9.5 percent for long-range planning of municipal water production. The District may consider additional measures to reduce water loss within the distribution system. These measures may include additional water main replacement, meter replacement, and meter exchange.

3.3 FUTURE WATER USES

Projected water use estimates are based on the small increases to the District's customer base. Section 2.4.2 summarized anticipated population growth within the District. Population growth within the District is anticipated to be 800 persons over the next 25 years (approximately 0.2 percent per year). For the period 2015 to 2040, the District anticipates a slight increase in total water demand to approximately 4,200 AF, an increase of nearly 50 AF over the 2015 total water demand. References to total water uses include the total amount of water delivered by the District. Future total water uses for 2040 are not anticipated to increase significantly compared to 2015 water uses due to District implementation of extensive water conservation programs.

3.3.1 Municipal and Commercial Demands

Future municipal and commercial demands will account for approximately 2,180 AF (52 percent) of the total District water demand in 2040. Estimated future municipal and commercial total water demand will increase by approximately 10 percent compared to 2015 demands. Future single-family and multiple-family residential demands will account for approximately 31 percent of the urban water demand (slight increase compared to 2015). Future residential demands are not anticipated to increase significantly, despite the addition of approximately 800 persons, due to District implementation of extensive water conservation programs.

3.3.2 Industrial Demands

Future industrial water demands will account for approximately 80 AF (2 percent) of the District total water demand in 2040, which is nearly equal to the current industrial water demand.

3.3.3 Agricultural Demands

Future agricultural demands will account for approximately 1,930 AF (46 percent) of the District total water demand in 2040, which is slightly less than the current demand.

3.3.4 Water Losses

District water system losses will account for approximately 300 AFY (7 percent) of the total water demand in 2040. Water loss in 2040 is anticipated to be less than water loss in 2015 due to improvements in District metering and District distribution pipeline replacements.

SECTION 4: QUANTITY AND QUALITY OF WATER RESOURCES

4.1 AWMP REQUIREMENTS

Water Code §10826 requires that the AWMP:

> "(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
>
> (1) Surface water supply.
> (2) Groundwater supply.
> (3) Other water supplies.
> (4) Source water quality monitoring practices.
> (5) Drainage from the water supplier's service area."

The legislation does not specify the mechanisms or level of detail that would satisfy requirements for describing the quantity of water supplies. Additionally, in accordance with Executive Order B-29-15, quantification of water demands is to be reported for 2013, 2014, and 2015 to the extent data is available.

For each water source type, CADWR encourages agricultural water suppliers to include discussions on origin (there may be multiple origins for a particular water source—for example, groundwater supplies can be obtained from different groundwater basins), customers, and use limitations of each water supply source in either the AWMP Template or the Worksheets provided.

If wholesale water supplies are received from another supplier or you provide water to another water user, the AWMP should make note of this. For water obtained from wholesale sources, the agricultural water supplier can include a reference to the wholesalers UWMP/AWMP and a brief summary of the water supply's origin.

The Water Code requires a description of the estimated or calculated quantities of water supplies for each of the three major categories of water supply sources used within the service area (surface water, groundwater, and 'other' water), as well as a description of the estimated or calculated quantities of drainage water leaving the service area. In order to provide a meaningful and consistent basis for water accounting, in accordance with Water Code §10826 (b)(7), it is suggested that:

1. Information is reported using the same year(s) for all descriptions of water resources and uses, including: quantity and quality of water supplies from sources listed under Water Code§10826 (b); quantity and quality of the service area drainage; and, amounts of water used from each source.

2. Provide monthly or bi-monthly water usage data for each water supply source and for the service area drainage.

3. Data for each water supply source and the service area drainage be presented as shown in the Worksheets 20 through 29 or similar format(s). Depending upon the number of locations or complexity of each water supply source or service area drainage outlets, these tables can be expanded or summarized as necessary. For instance, for a particular water supply source, if the same amount of water is available each year and/or each month, it is not necessary to report monthly water supplies for the past five years; although a notation to that effect would be helpful. Conversely, if supplies are more complex (e.g., the service area drainage discharges to two different watersheds), multiple tables are advised.

4. The average year water supply quantities and projects to increase water supplies are described for each water supply.

5. The descriptions note any restrictions or operational constraints associated with the supplier's water supplies, if applicable, for each water supply type.

6. Information on water transfers and exchanges, both short- and long- term agreements and opportunities is provided.

If quantities are estimated, the agricultural water supplier is encouraged to provide justification and documentation of calculations and data used for the estimation(s) in the AWMP.

If special management or usage areas have been identified in Section II of the AWMP, a table or tables with water supply estimates for each water supply source available to each applicable area would further assist in water management planning.

The Water Code requires that the AWMP: *"Include an analysis, based upon available information, of the effect of climate change on future water supplies"* [Water Code §10826 (c)]

4.2 QUANTITY OF CURRENT WATER RESOURCES

CVWD has a balanced water supply portfolio with surface water supplies from the Cachuma Project, surface water from the State Water Project, and groundwater from the Carpinteria Groundwater Basin. Potential maximum extraction of groundwater by the District is 3,500 AFY, while the long-term average will be approximately 1,700 AFY. The District's maximum local surface water allocation from the Cachuma Project is currently 2,813 AFY, while the long-term average will be approximately 1,970 AFY. Maximum allocation from the SWP is 2,200 AFY (including 200 AF of drought buffer), while the long-term average will be approximately 1,250 AFY. Each of these water supplies is described in detail in subsequent sections.

Table 4-1 summarizes the current and total available water resources to meet demands within the CVWD service area. Actual total District deliveries in 2015 were 3,646 AF, which included 2,943 AF (71 percent) from District wells, 468 AF (11 percent) from the Cachuma project, and 476 AF (12 percent) from SWP water. For the period 2011-2015, local groundwater provided

approximately 33 percent of the average annual water supply, while the Cachuma Project provided approximately 52 percent and SWP water provided approximately 15 percent over the same period.

In addition to these primary resources, the CVWD will periodically purchase water from or exchange water with neighboring water purveyors, such as the Santa Ynez River Water Conservation District, Santa Ynez Improvement District No. 1 (ID No. 1). The District received 246 AF (6 percent) in 2015 in an exchange agreement with ID No. 1.

Table 4-1 summarizes the total available water resources for the period 2020-2040. Projected total available water resources for the period 2020-2040 will be approximately 6,713 AFY. As noted in **Section 3**, the 2040 estimated water demands will be 4,200 AFY. Therefore, total available water resources are anticipated to be sufficient to reliably meet future water demands.

TABLE 4-1
CURRENT AND TOTAL AVAILABLE WATER RESOURCES (AFY)

Water Resources	Actual 2015	Projected 2020	Projected 2025	Projected 2030	Projected 2035	Projected 2040
Groundwater (1)	2,943	1,700	1,700	1,700	1,700	1,700
USBR – Cachuma (2)	468	2,813	2,813	2,813	2,813	2,813
Department of Water Resources – SWP (3)	476	1,800	1,800	1,800	1,800	1,800
Recycled Water (4)	0	0	0	0	0	0
Desalination	0	0	0	0	0	0
Transfers or Exchanges In/Out	246	400	400	400	400	400
Other (5)	0	0	0	0	0	0
Total	**4,133**	**6,713**	**6,713**	**6,713**	**6,713**	**6,713**

Notes:
Source: CVWD.
(1) Current annual average CVWD groundwater pumping is approximately 1,500 AFY (1984-2015); CVWD anticipates that pumping would be increased up to the operational yield to offset demands; conservative estimate of long term average for CVWD pumping is approximately 1,700 AFY which is consistent with the basin safe yield (McDonald, 2016).
(2) Based on current maximum allocation of 2,813 AFY. However, the District understands that future deliveries will be less than the maximum allocation (McDonald, 2016).
(3) Based on current maximum allocation of 2,200 AFY (includes 200 AFY drought buffer program). However, the District understands that future deliveries will be less than the maximum allocation. The projected value of 1,800 AF reflects the total allocation minus the ID#1 exchange volume of 400 AF. (McDonald, 2016)
(4) CVWD is currently evaluating potential long-term use of recycled water (CVWD, 2015). However, conservative estimate assumes no recycled water available for direct or indirect reuse.
(5) CVWD has banked and utilized 1,000 AFY of State Water Project water. CVWD anticipates utilizing banking programs again between 2015 and 2040. (McDonald, 2016)

Table 4-2 summarizes the long-term planning estimated water resources for the period 2020-2040. Estimated water resources for the period 2020-2040 will be approximately 4,924 AFY. As noted in **Section 3**, the 2040 estimated water demands will be 4,200 AFY. Therefore, long-term planning estimated water resources are anticipated to be sufficient to reliably meet future water demands.

TABLE 4-2
LONG-TERM PLANNING ESTIMATED WATER RESOURCES (AFY)

Water Resources	Projected 2020	Projected 2025	Projected 2030	Projected 2035	Projected 2040
Groundwater (1)	1,700	1,700	1,700	1,700	1,700
USBR – Cachuma (2)	1,970	1,970	1,970	1,970	1,970
Department of Water Resources – SWP (3)	854	854	854	854	854
Recycled Water (4)	0	0	0	0	0
Desalination	0	0	0	0	0
Transfers or Exchanges In/Out	400	400	400	400	400
Other (5)	0	0	0	0	0
Total	**4,924**	**4,924**	**4,924**	**4,924**	**4,924**

Notes:
Source: CVWD.
(1) Current annual average CVWD groundwater pumping is approximately 1,500 AFY (1984-2015); CVWD anticipates that pumping would be increased up to the operational yield to offset demands; conservative estimate of long term average for CVWD pumping is approximately 1,700 AFY which is consistent with the basin safe yield (McDonald, 2016).
(2) Based on maximum allocation of 2,813 AFY. However, conservative planning estimate assumes a 70 percent delivery of maximum allocation (McDonald, 2016).
(3) Based on maximum allocation of 2,200 AFY (includes 200 AFY drought buffer program). However, conservative estimate assumes long-term planning average of 57 percent delivery. The projected value of 854 AFY reflects the expected available SWP Table A deliveries (1,254 AFY) minus the ID 1 exchanges of 400 AFY. (McDonald, 2016; CADWR, 2014))
(4) CVWD is currently evaluating potential long-term use of recycled water (CVWD, 2015). Conservative estimate assumes no recycled water available for direct or indirect reuse.
(5) CVWD has banked and utilized 1,000 AFY of State Water Project water. CVWD anticipates utilizing banking programs again between 2015 and 2040. (McDonald, 2016)

A variety of future water sources and/or management actions using existing supplies (including increased groundwater production, participation in banking projects, use of recycled water, and participation in SWP allocation transfers) could be strategically implemented to efficiently and effectively achieve future water demands within the CVWD service area through 2040. Future water supply alternatives are discussed in **Section 4.4**.

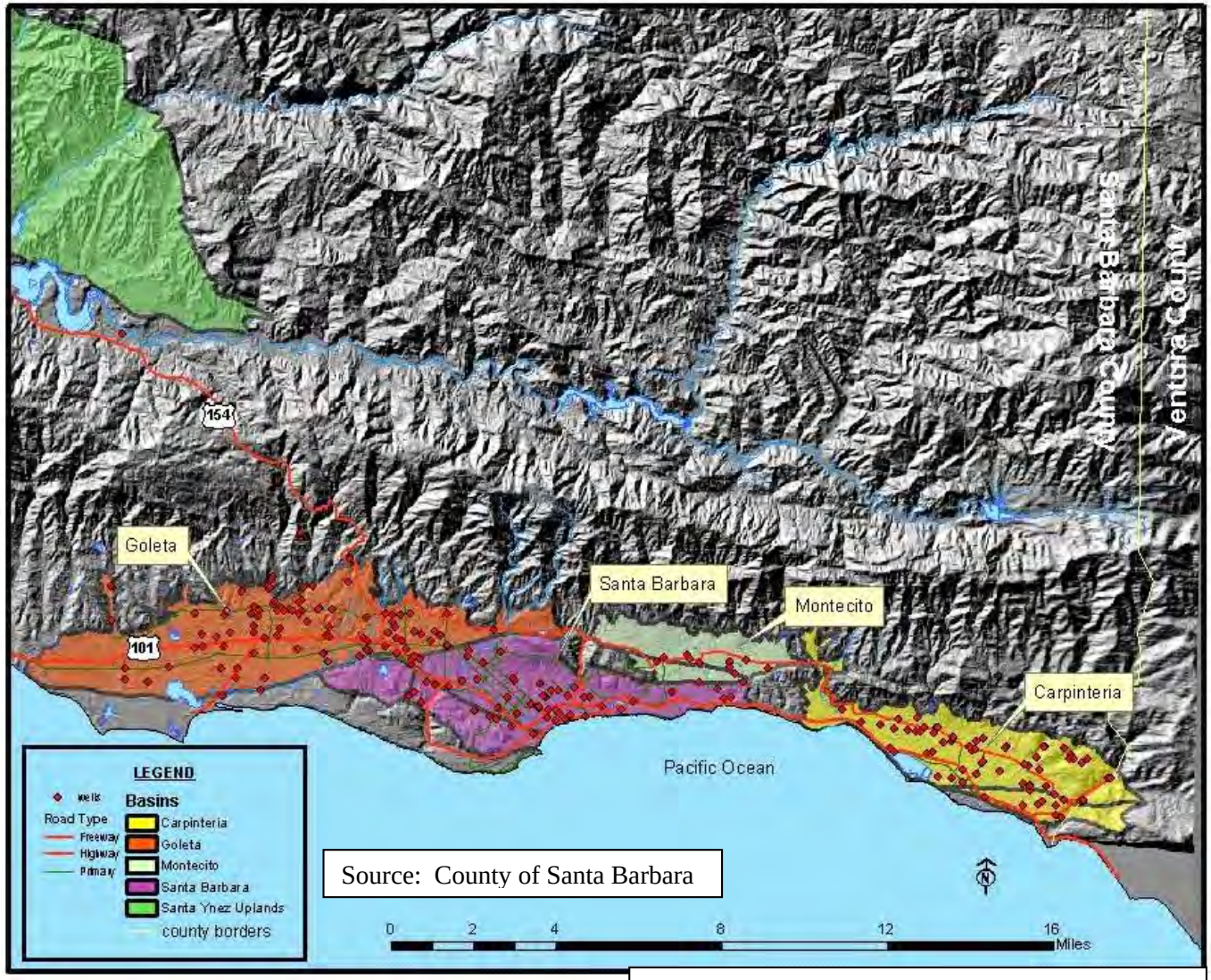
4.2.1 Groundwater Resources

The CVWD extracts water from the Carpinteria Groundwater Basin. The District overlays the Carpinteria Groundwater Basin (CADWR Basin No. 3-18), a relatively large groundwater aquifer, that extends from beyond the Ventura County line on the east, to Toro Canyon on the west, from the foothills of Santa Ynez Mountains to the north, and extending offshore to the south for over a mile. **Figure 4-1** displays the regional groundwater basins (Carpinteria Basin is located in the lower right). **Figure 4-2** displays the Carpinteria Groundwater Basin including areas of Storage Unit No. 1 and Storage Unit No. 2. **Figure 4-3** recharge area and confined area of the Carpinteria Basin. **Figure 4-4** provides a cross section of the Carpinteria Groundwater Basin from ocean (left) to mountains (right), and note the multiple water bearing zones. The Basin includes approximately 16.6 square miles of surface area.

The Basin is divided by the Rincon Creek fault into two storage units; storage Unit No. 1 is the superior unit in both storage quality and storage capacity. Total storage in the aquifer is estimated to be approximately 700,000 AF (CVWD, 1986). Usable groundwater storage capacity is important because it determines how much groundwater can be stored during wet periods for use during droughts. In a coastal basin, conceptually it is the volume of water stored in a basin between the maximum water-level surface and the lowest water-level surface that could be reached without initiating seawater instruction. Minimum desirable water levels are difficult to define, because water levels near the coast need to remain consistently above sea level to prevent seawater intrusion, whereas inland water levels can safely be drawn down below sea level on a transient basis. Nonetheless, it is common practice to use as a first-approximation estimate the difference between the maximum historical water-level surface and a uniform plane at sea level to define usable groundwater storage capacity.

For the Carpinteria Groundwater Basin, usable groundwater storage capacity was estimated by calculating the volume of water stored above sea level based on Spring 1998 water-level contours (the historical basin high) for Storage Unit 1. Usable storage for the Basin recharge area was estimated at 38,926 AF, while the usable storage in the confined area was estimated at 29 AF. Thus, total usable area was estimated to be nearly 39,000 AF. (Marks, 2015) For details see **Appendix C, Worksheet No. 32**.

Safe yield is defined as the amount of groundwater that can be continuously withdrawn from a basin without adverse impact. (CADWR, 2003) Estimated safe yield of Unit No. 1 is approximately 4,000 AFY (CVWD, 2012). It is not anticipated that CVWD and the private well owners would operate above the safe-yield on a long-term basis without implementing efforts to replenish the basin.



Source: County of Santa Barbara

FIGURE 4-1
REGIONAL GROUNDWATER BASINS

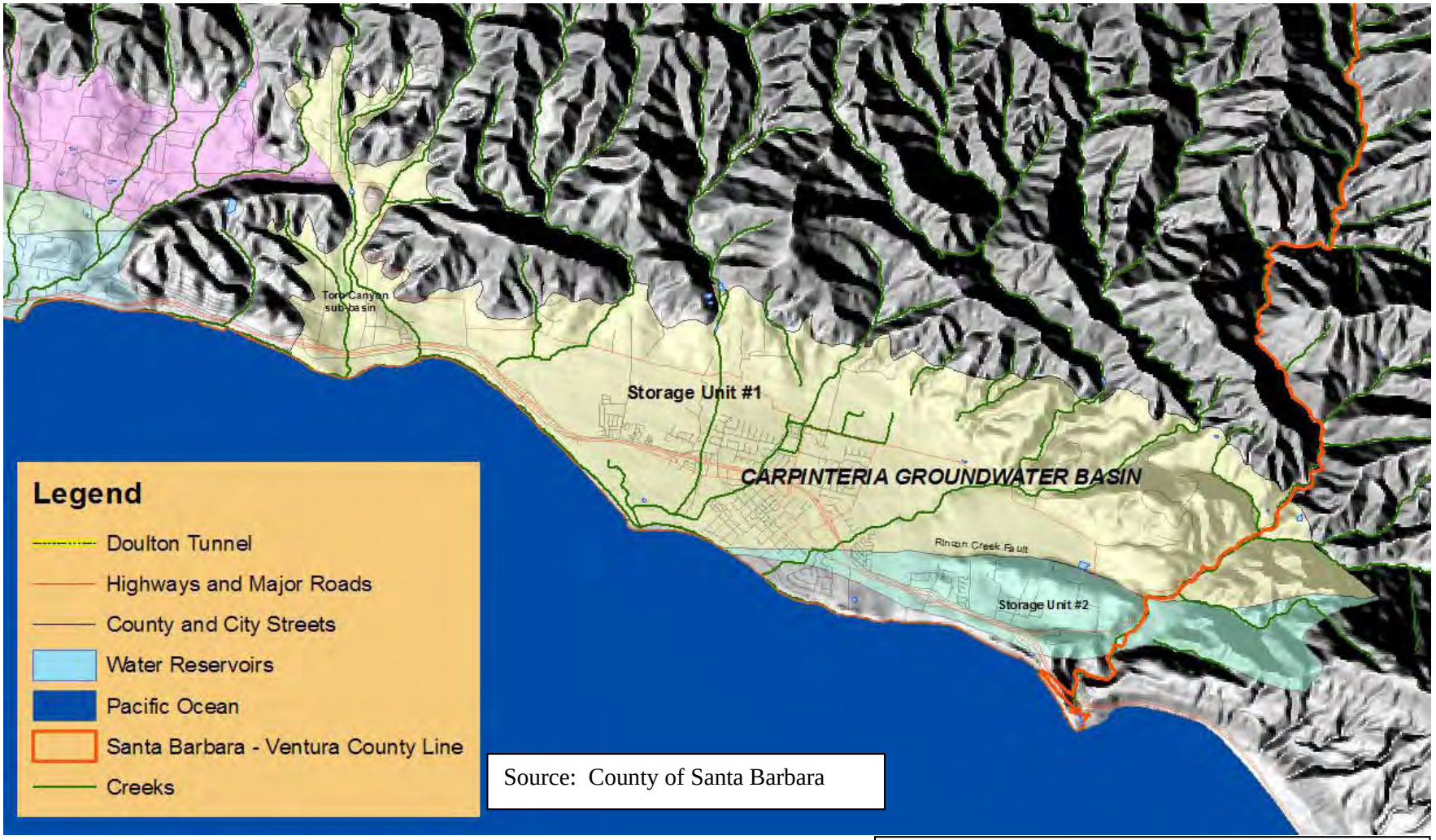


FIGURE 4-2
CARPINTERIA GROUNDWATER BASIN

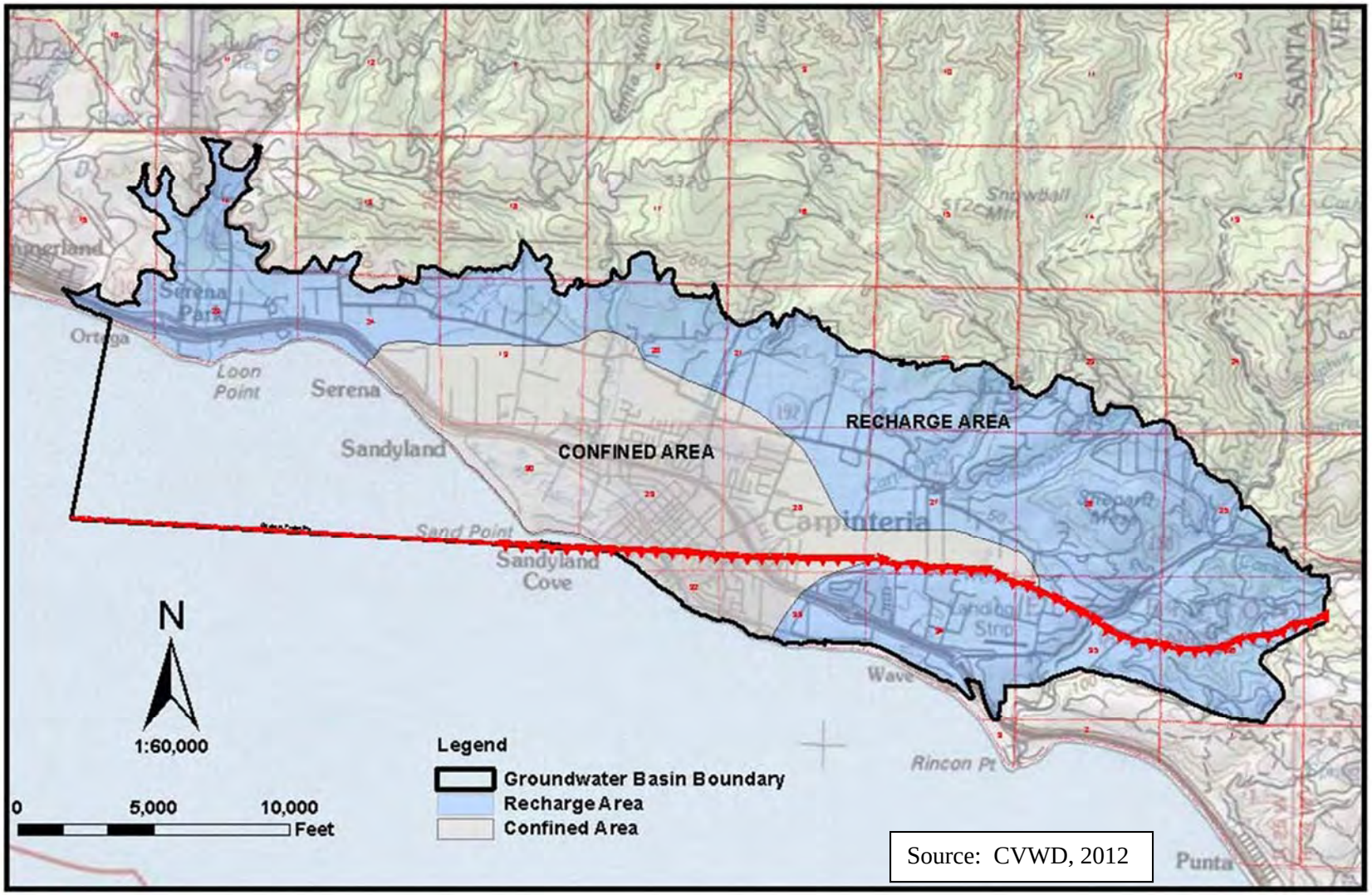


FIGURE 4-3
CONFINED AND RECHARGE AREAS

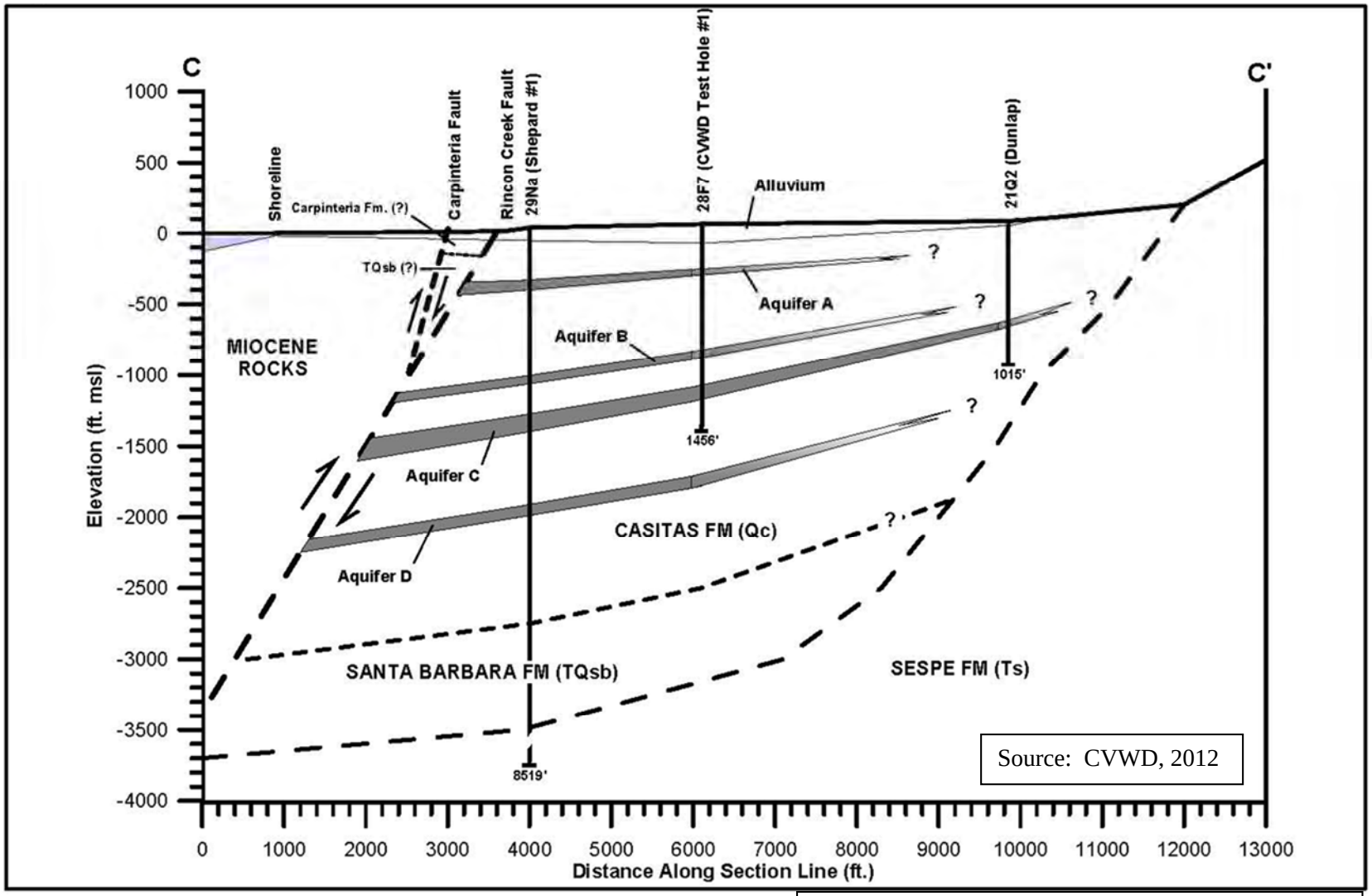


FIGURE 4-4
CROSS SECTION OF CARPINTERIA GROUNDWATER BASIN

Groundwater rights in the Basin have not been adjudicated. The District under the authority of State Assembly Bill 3030 adopted a Groundwater Management Plan in order to establish its role as groundwater manager for the Carpinteria Groundwater Basin. This Plan was adopted on August 14, 1996 by the District's Board of Directors (CVWD, 1996) and provides direction for the District as the managing entity for the Carpinteria Groundwater Basin. Elements of the Plan include; water level & quality monitoring, sanitary seal retrofit program, abandoned well destruction program, educational goals, and a well inventory database. A copy of this Plan is provided in **Appendix H**.

California Department of Water Resources (CADWR) in Bulletin 118 (CADWR, 2003) stated that the Carpinteria Groundwater Basin, Basin Number 3-18, was nearly at the high levels seen in 1979 in which artesian conditions existed at many wells. No projections were made by CADWR on the future storage of the Carpinteria basin; however, basin pumping has not approached the estimated safe yield since 1990. It is not anticipated that the District will operate on a long-term basis above the safe yield without implementing a means to replenish the basin.

As previously noted, the District operates 5 municipal wells (see **Section 2**). The District owns and operates five (5) municipal wells with a combined capacity to produce approximately 3.98 MGD. **Table 4-3** provides a summary of the District's wells. These wells are located central to the suburban section of Carpinteria. **Figure 2-1** displays the CVWD facilities including general locations of wells. The District recently constructed a new well, Headquarters Well, which has the capability to extract as well as inject groundwater. The Headquarters Well will help meet the peak demands and provide some redundancy in the groundwater supply reliability.

Total pumping within the Carpinteria Basin by CVWD and private owners has averaged nearly 4,209 AFY from 2011-2015 (see **Table 4-4** for details; also see **Appendix** C**, Worksheets 30 and 34**). District-only pumping averaged approximately 1,446 AFY (34 percent of total pumping) from 2011-2015, while private pumping averaged 2,764 AFY (66 percent of total pumping) over the same period. Maximum recorded total pumping within the District during the period 1984 to 2015 occurred in 2015 and resulted in 5,541 AF of total District and private extractions. This record pumping was likely due to a combination of statewide drought, reduced surface water deliveries, and reduced local precipitation.

Table 4-4 also indicates that District pumping ranged from 6 percent to 71 percent of total District water supplies for the period 2011-2015. In **Table 4-4**, the percent of annual water supply refers to the percent of groundwater pumped compared to the total amount of District water supplies including surface water and groundwater sources.

TABLE 4-3
DISTRICT GROUNDWATER FACILITIES

Well Name	Status	Typical Capacity (gallons/min.)	Typical Production (MG/day)
El Carro Well	Active	1,200	1.10
High School Well	Inactive	300	0.00
Headquarters Well	Active	1,400	2.80
Lyon Well	Standby	600	0.00
Smillie Well	Active	400	0.44
TOTALS		**3,900**	**4.34**

Notes:
Source: CVWD.
All values rounded.

TABLE 4-4
CARPINTERIA GROUNDWATER BASIN TOTAL PUMPING 2011-2015

Year	District Pumping (AFY)	Percentage of Total Pumping	Percentage of Annual Water Deliveries	Private Pumping (AFY)	Percentage of Total Pumping	Total Basin Pumping (AFY)
2011	1,365	36	34	2,428	64	3,793
2012	1,174	31	26	2,564	69	3,738
2013	312	9	6	3,060	91	3,372
2014	1,434	31	33	3,168	69	4,602
2015 (1)	2,943	53	71	2,598	47	5,541
Annual Average	**1,446**	**34**	**33**	**2,764**	**66**	**4,209**

Notes:
Source: CVWD.
(1) Private pumping for 2015 was not available at the present time. Estimated value based on most recent 10-year average (2005-2014).

Pumping via private wells occurs throughout the basin with a high concentration of large users north of Foothill Road for primarily agricultural uses. Estimates for private groundwater extraction are derived from land use analyses by CVWD since there was little measured water use data (CVWD, 2005). In order to manage this component of local groundwater use an estimate using crop types and water demand factors is done each year to estimate the private pumping in the basin. Additionally, levels are monitored every 2 months over the entire basin to ensure that no localized overdrafting occurs in part of the basin. No significant localized depressions in water level have been noted to date. However, it is likely that groundwater pumping will slightly increase in the future due to the reliance by CVWD on groundwater needed to blend (with treated surface water and or groundwater) to meet water quality standards and the estimated increase in groundwater being extracted by private well owners.

4.2.2 Surface Water Resources

The District receives surface water supplies from the Cachuma Project and State Water Project (SWP). Each of these water supply sources is summarized below. **Table 4-5** summarizes the surface water supplies received by the District for the period 2011 to 2015. Over the last five years, the District has received an annual average of 2,968 AF from these sources.

TABLE 4-4
DISTRICT SURFACE WATER DELIVERIES 2011-2015

Year	USBR Cachuma Project (AFY)	Percentage of District Supply	CADWR State Water Project (AFY) (1)	Percentage of District Supply	Total Surface Water Deliveries (AFY)
2011	2,172	66	501	0	2,673
2012	2,923	74	433	0	3,356
2013	3,697	84	836	10	4,533
2014	2,198	50	891	17	3,089
2015	468	10	722	14	1,190
Annual Average	**2,292**	**53**	**677**	**16**	**2,968**

Notes:
Source: CVWD.
All values rounded.
(1) Includes water exchanged with ID#1.

4.2.2.1 Cachuma Project

Principal features of the Cachuma Project are Lake Cachuma (see **Figure 4-5**), Bradbury Dam (see **Figure 4-6**), Tecolote Tunnel, and South Coast Conduit (SCC) and related distribution systems. Water diverted from Lake Cachuma passes through the Tecolote Tunnel, which brings water through the Santa Ynez Mountains to the SCC. The SCC facilities include a steel distribution pipeline that has lateral pipelines bringing water to four regulating reservoirs; Glen Anne Dam and Reservoir, Lauro Dam and Reservoir, Ortega Dam and Reservoir, and Carpinteria Reservoir. Tecolote Tunnel, SCC, and the regulating reservoir facilities are operated by the Cachuma Operation and Maintenance Board (COMB). The COMB Board consists of five Member Units, of which CVWD is one. CVWD has a contractual agreement with COMB for delivery of its Cachuma Project water. Surface water stored in Lake Cachuma is treated at the Cater Water Treatment Plant (WTP), before being conveyed to CVWD. The Cater WTP is owned and operated by the City of Santa Barbara and has a capacity to treat 37 MGD.

Annual average flow of the Santa Ynez River is 66,000 acre-feet. The river basin and the South Coast area are characterized by a short rainy season in the winter and a long dry season in the summer. The region is from time to time subject to strong storms off the Pacific, consequently, rainfall can vary widely. Lake Cachuma and Bradbury Dam were constructed by the U.S. Bureau of Reclamation (Bureau) as part of the Cachuma Project in the early 1950s. The lake includes a surface area of approximately 3,200-acres, 42 miles of coastline, and 195,600 acre feet of storage.

The District receives water from the Cachuma Project (local surface water) which stores water in Lake Cachuma within the Santa Ynez River watershed in Santa Barbara County. The District purchased an annual average of 2,292 AF from the Cachuma Project over the period 2011 to 2015. This amount represents 53 percent of the District's total water supplies. **Table 4-4** summarizes the Cachuma Project supplies received by the District for the period 2011 to 2015. For additional details, see **Appendix C, Worksheet No. 30**.

FIGURE 4-5
PHOTO - LAKE CACHUMA,
SANTA BARBARA COUNTY

When finished, the Bradbury Dam was a zoned earthfill structure that rose 206 feet above the stream bed with a crest length of 2,975 feet (see **Figure 4-6**). Approximately 6,700,000 cubic yards of earthfill were used in its construction. The spillway section is concrete-lined, with four 50 foot by 30 foot radial gates, and has a capacity of 161,000 cubic feet per second (cf/s). Beneath the dam is a 7-foot horseshoe tunnel containing the controlled outlet works, which consist of the concrete-lined tunnel through which two 30-inch, hollow-jet valves and one 10-inch butterfly valve pass non-flood flows of the Santa Ynez River to users downstream of the dam.

The Lake's storage capacity is approximately 195,600 acre feet. The total annual allocation for all member agencies is 25,814 acre feet, set collectively by the Cachuma member agency managers. This number is based on the present understanding of the lake volume, fish and downstream water rights releases, and drought planning. The storage capacity within Lake Cachuma will likely decrease slightly over time due to silt loading. Additionally, releases for fish, environment, and drought planning may change over time which may significantly affect total allotments for Cachuma member agencies.

FIGURE 4-6
PHOTO - BRADBURY DAM, LAKE CACHUMA, SANTA BARBARA COUNTY

The allotments between the Cachuma member agencies were decided by the member agencies to be a certain percentage of the annual allotment. These percentage values were written into the original Cachuma Contract. Each agency has a contractual right to their percentage of the annual allotment. The current annual yield, 25,814 AFY, was determined prior to the last USBR contract renewal in 1995 and written into the Cachuma Contract. This means, from a contract standpoint, that each member has entitlement to a fixed amount of water. Currently, the District's allocation is 2,813 AFY (see **Table 4-1** on p.38).

However, it is likely that the member units will have to adjust the annual water withdrawals between now and the next contract renewal in 2020. Decision making about these changes is not done by the project owner, USBR, but is generally done at the member agency level and then reported to COMB as an operational change. COMB implements the changes as directed by the member units. In the event that one of the member units does not concur with the other members regarding water supply operational changes, that agency has autonomy to continue to operate the way it has been as long as they do not exceed their allotment as specified in the USBR contract. Lake supply planning occurs at an operational level and relies on the member agencies voluntary cooperation. CVWD's planning principles and water supply goals are representative of the other member agencies planning principles and goals. That principle being that CVWD uses the resource responsibly with the goal to sustain it for indefinite future beneficial use for all of the member units.

Water stored in Lake Cachuma is also used to maintain and improve stream conditions in the Santa Ynez River downstream of the Bradbury Dam, in addition to providing water to member units. Water releases for fish from Bradbury Dam have occurred since 1993, with additional water releases from Lake Cachuma used to fulfill groundwater rights agreements held by the Bureau. Effects of future water rights decisions on Cachuma yield have not been estimated by the Bureau or any other agency in Santa Barbara County (CVWD, 2005). Lake Cachuma occasionally spills at Bradbury Dam, on average about every three years. Spill water goes toward the ocean, and is used for river recharge, habitat and sediment management, and historically has not been available to the Cachuma Member Units, except for Santa Ynez ID No. 1.

When full Lake Cachuma provides the member units with 5 to 6 years of water supply conditions at an annual consumption of approximately 27,000 AF in dry conditions. Other competing interests for water stored in Lake Cachuma include fish habitat and downstream water rights. In the event that lake levels are drawn down to less than 100,000 AF, the member units begin cutting back allocations by 20 percent each year in an effort to preserve the water supply. In normal years, more than half of CVWD's water supply comes from the Cachuma Project. The District's current maximum annual allocation for water from the Cachuma Project is 2,813 AFY.

However, the District's Cachuma Project annual allocation could decrease in the future due to a number of factors including but not limited to the following: sedimentation which reduces reservoir storage capacity, water rights, fish flow releases, and hydrologic conditions. Sedimentation rates in Lake Cachuma are estimated to average 410 AFY; a rate that is expected to increase by 170 AFY (total of 580 AFY) by 2021 (CVWD, 2005; personal communication, Jim Stubchaer, June 2005). The Cachuma dry year supply can be as low as 55 percent. For planning purposes, CVWD assumes an overall 30 percent reduction in Cachuma supplies from 2015 to 2040, reducing the CVWD allocation to approximately 1,970 AFY. (McDonald, 2015)

The District purchased an annual average of 2,292 AF from the Cachuma Project over the period 2011 to 2015. This amount represents 53 percent of the District's total water supplies. **Table 4-4** summarizes the Cachuma Project supplies received by the District for the period 2011 to 2015. For additional details, see **Appendix C, Worksheet No. 30**.

4.2.2.2 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. The SWP is owned by the State of California and operated by the CADWR. The primary purpose of the SWP is to deliver water to 29 urban and agricultural water suppliers in Northern California, San Francisco Bay Area, San Joaquin Valley, Central Coast, and Southern California, including 20 million urban users and 750,000 acres of farmland. Of the contracted water supply, approximately 70 percent goes to urban users and 30 percent goes to agricultural users.

SWP facilities originate in northern California at Lake Oroville on the Feather River. **Figure 4-7** illustrates the location of major SWP facilities. Storage released from Lake Oroville flows into the Feather River, goes downstream to its confluence with the Sacramento River, and then

travels into the Sacramento-San Joaquin River Delta (Delta). Water is pumped from the Delta region to contractors in areas north and south of the San Francisco Bay and south of the Delta. SWP deliveries consist solely of untreated water. The SWP system currently consists of 700 miles of canals and pipelines, 33 storage facilities, 21 reservoirs and lakes, 5 hydro-electric power plants, 4 pumping-generating plants, and 20 pumping plants. (CADWR, 2013b)

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 and the aqueduct then divides into the East and West Branches. In addition to delivering water to its contractors, the SWP is operated to improve water quality in the Bay-Delta region, control flood waters, provide recreation, power generation, and environmental enhancement.

The SWP's Coastal Branch serves the San Luis Obispo and Santa Barbara counties. The Central Coast Water Authority (CCWA) was formed to finance, construct, manage, and operate the 42-mile extension of the SWP pipeline from Vandenberg to Lake Cachuma (see **Figure 4-8**). CCWA contracts with the Santa Barbara County Flood Control and Water Conservation District (SBCFC and WCD) for SWP water. The SBCFC and WCD is a SWP Contractor, and has a SWP allocation of 45,486 AFY divided to 14 Allocation Holders. CVWD contracts directly with CCWA for its SWP allocation. Initially, the District sought an allocation of 2,700 AFY that was later scaled back to 2,000 AFY.

The District's allocation of 2,000 AFY was determined in 1991 when citizens within CVWD, along with the other Central Coast water agencies, voted to participate in the SWP. A drought buffer of 200 AFY was added later for a total SWP allocation of 2,200 AFY. Estimates to support that level of allocation were based on the 1987 through 1991 drought conditions, and the rate of growth in the region at the time.

The CADWR "State Water Project Delivery Reliability Report" provides SWP contractors an assessment of the reliability of the SWP component of their overall supplies. "Water delivery reliability" is defined as the annual amount of water that can be expected to be delivered with a certain frequency. Water delivery reliability depends on three general factors: the availability of water, the ability to convey water to the desired point of delivery, and the magnitude of demand for the water. SWP delivery reliability is calculated using computer simulations based on 82 years of historical data. The CADWR Report (CADWR, 2013a) includes "Table A" which provides a projection of potential deliveries of imported surface water for the SWP contractors for the average water year scenario, single dry-year scenario, and multiple dry-year scenario. Table A contract amounts do not reflect actual deliveries a contractor should expect to receive.

The CADWR Report (CADWR, 2013a) also discusses factors having the potential to affect SWP water delivery reliability including the following:

- Restrictions on SWP and Central Valley Project (CVP) operations due to new regulations and legal findings to protect endangered species;

- Climate change and sea level rise, which is altering the hydrologic conditions in the State;
- Vulnerability of Delta levees to failure due to floods and earthquakes;
- Annual snowpack;
- Reservoir capacity.

Contractors' requests for SWP water deliveries cannot always be met. In some years there are water shortages and water surpluses in other years. It was thought at the time that the SWP was constructed that the system could deliver about 50 percent of the allocations in a very dry year. Deliveries for the 2003-2012 period averaged 2,226,000 AF (53 percent) for Table A allocations. (CADWR, 2013a) The 2013 Reliability Report provided a projection of CADWR's water delivery reliability of the SWP for the current scenario (year 2013) and future scenario (year 2033). In 2015, SWP contractors received 20 percent of their SWP allocations. (CADWR, 2016) For the period 2006-2015, SWP contractors received an average of 49 percent of their SWP allocations. The last 100 percent allocation, difficult to achieve even in wet years due to pumping restrictions to protect threatened and endangered fish, was in 2006.

The 2013 Reliability Report (CADWR, 2013a) indicated that the SWP, using existing facilities operated under current regulatory and operational constraints and future anticipated conditions, and with all contractors requesting delivery of their full Table A allocations in most years, could deliver 58 percent of Table A allocations on a long-term average basis. However, in a single dry-year (worst case scenario) CADWR estimated delivery of an average of only 11 percent of Table A allocations. In a four- year drought scenario, the CADWR estimated delivery of an average of 31 percent of Table A allocations.

The 2013 Reliability Report (CADWR, 2013a) recognized continuing challenges to the ability of the SWP to deliver full contractual allocations of SWP water. Factors that affect the ability to estimate existing and future SWP water delivery reliability include the following:

- water availability at the source;
- water rights with priority over the SWP;
- climate change;
- regulatory restrictions on SWP exports;
- ongoing environmental and policy planning efforts;
- San Joaquin River/Sacramento River Delta levee failure.

While increased uses for the SWP pipeline capacity are being found for wheeling water, the SWP allocation may not always provide sufficient drought protection. The CVWD often elects to not receive SWP water in normal, wet, and dry years by not using its full SWP allocation.

Source: CA DWR.

FIGURE 4-7
STATE WATER PROJECT FACILITIES

Source: CCWA.

FIGURE 4-8
CCWA FACILITIES

Water from the SWP has been available to CVWD since 1995. Actual SWP water deliveries to the District in 2015 were 722 AF which included 246 AF in an exchange with ID#1. For the period 2011-2015, SWP water provided approximately 16 percent of the District's water resources.

4.2.3 Additional Water Supply Projects

Currently the District relies on three sources of supply to meet water demand in its service area. These include: local groundwater, Cachuma Project, and State Water Project. Additionally, CVWD from time to time will purchase or exchange water from neighboring water purveyors. The District anticipates sufficient supply to meet demand for the next 25 years under normal water supply and water demand conditions. Current District Capital Improvement Projects relate to reliability and water quality issues rather than supply.

The District currently participates in two "out of District storage programs". The first program includes a cooperative arrangement for groundwater banking called "Short-Term Water Storage Partnership" (Rosedale-Rio Bravo Water Storage District and Irvine Ranch Water District), which the District has participated in since 2008. This program involves storage of SWP water in the groundwater basins managed by the Rosedale-Rio Bravo Water Storage District. The second program involves the District temporarily storing SWP carryover water in San Luis Reservoir. The groundwater banking program and the availability of storage in San Luis Reservoir are two programs made available to increase overall SWP supply reliability. Currently, the District has approximately 800 AF of deliverable water stored in these two out of District storage programs. Implementation of a portion of these arrangements, or any future potential water storage or banking arrangements, can reasonably be expected to provide up to 1,000 AF of supply in future years, and CVWD anticipates increasing this out of District storage amount between 2010 and 2035.

The District has explored opportunities to sell a portion of its State Water Project (SWP) entitlement. The District entered into an Option Agreement in 2006 with Plains Exploration Production (PXP) to sell up to 400 AFY of the District's SWP entitlement portion. During the Option period, PXP paid the District approximately $950,000 in slightly more than three years. Unfortunately, PXP chose to terminate the Option Agreement in 2009.

As the District moves forward with the planning of its capital improvements, the focus has been on creating a flexible, reliable, and robust water system including water supply reliability and water quality. Among the improvements, the District is currently exploring the feasibility of an aquifer storage and retrieval (ASR) program. In addition, it also recently completed a new production/injection well, installed covers on surface reservoirs to protect water quality, and, completed a new 3 million gallon storage tank to provide additional finished water storage. While these projects will not directly increase the quantity of supply they will provide a means to better utilize the available water supply and improve water quality.

Conjunctive use of the Carpinteria Groundwater Basin would potentially allow local storage of excess water such as spill water from Lake Cachuma that would normally be lost. Additionally,

use of the groundwater in excess of the annual basin yield during dry periods is being considered to extend the surface water supply through drought periods.

In 2004, COMB completed an improvement to Lake Cachuma spillway to increase storage by approximately 9,300 acre feet by extending the flash boards 3 feet to bring the maximum lake elevation from 750 feet above sea level to 753 feet above sea level. Objective of this project was to provide additional storage for downstream releases related to fish habitat and water rights. This additional storage capacity was put to use in the winter of 2004-2005 in which Lake Cachuma filled during a single extreme winter storm.

4.2.4 Sales, Transfers, and Exchanges

The District is not a wholesaler and in general does not sell water to other agencies. The District does not have long-term plans or contracts to sell, transfer, or exchange water with other agencies through 2040. However, the CVWD infrequently sells, transfers, and or exchanges water with other agencies. For example, the CVWD sold 250 AF in 2004 to Montecito Water District as a one-year contract. This water was sold to Montecito prior to entering the District's distribution system.

CVWD also participates regularly in a SWP exchange program with Santa Ynez ID No. 1, located downstream of Lake Cachuma. Under the exchange program, CVWD typically purchases approximately 412 AF of SWP and supplies it to ID No. 1 for its use. In exchange, Santa Ynez ID No. 1 supplies an equal amount of Lake Cachuma water for CVWD’s use. This exchange eliminates the need to pump SWP water into Lake Cachuma and the retreatment of this water prior to use, thereby lowering the overall cost to both parties. CVWD saves approximately $110/AF in pumping charges by exchanging up to 412 AFY of SWP supply with ID No. 1.

In addition, the CVWD can receive water from the Casitas Municipal Water District (CMWD) The CMWD can provide surface water from Lake Casitas. An 8 inch piped connection exists between CMWD and CVWD systems. If more flow is required than the capacity of the existing 8 inch pipeline can deliver, as was the case in 1987 to 1991 drought, then an overland pipe could be installed to convey the additional flow. An emergency water exchange agreement remains in place. For this reason the CVWD has considered this a limited potential water supply. The CVWD also receives CMWD water for sale to CMWD customers adjacent to the CVWD service area.

The District continues to explore opportunities to sell a portion of its State Water Project (SWP) entitlement. The District is considering selling up to 1,000 AF of SWP entitlement. Additional details were provided in Section 4.2.2.

4.3 WATER QUALITY OF EXISTING WATER RESOURCES

4.3.1 Water Quality Concerns

The District has both surface water and groundwater sources which present very different water quality issues. Surface water comes from State Water Project (Sacramento Delta) and Lake Cachuma (from the Santa Ynez River watershed) and the groundwater is locally produced via

District wells. The District meets all water quality requirements of the California Division of Drinking Water (CADDW, formerly Department of Public Health). A copy of a recent Consumer Confidence Report (CCR) is provided in **Appendix I**. **Appendix C Worksheet 36** provides details related to surface water quality (**Worksheet 36a**) and groundwater quality (**Worksheet 36b**). Details of the District's water quality monitoring program are provided in **Appendix C Worksheet 38** and **Appendix K**.

4.3.1.1 Groundwater

The District extracts local groundwater from the Carpinteria Groundwater Basin. No known contamination issues exist with respect to the groundwater supply. Manganese arises as a secondary water quality concern for groundwater, and this is controlled via a treatment system. Groundwater is also used to blend with the imported supplies to reduce disinfection by-products. The District has no known water quality violations with respect to groundwater extractions. A copy of the current Consumer Confidence Report is provided in **Appendix I**.

4.3.1.2 Surface Water (Cachuma and SWP Supplies)

The source of SWP water is rain and snow from the Sierra Nevada, Cascade, and Coastal mountain ranges. SWP water is delivered to Lake Cachuma where is it stored when purchased by CVWD, where it then travels to CVWD via the SCC. There are two water treatment plants (WTPs) along the SCC; Corona Del Mar, and Cater. The Cater WTP treats all Cachuma water delivered to the CVWD. Water treated at this plant can be drawn directly from the SCC or from Lauro Reservoir. Water in the SCC comes directly from Lake Cachuma via the Tecolote Tunnel. Normal operation for the Cater WTP is to draw water from the Lauro Reservoir.

Water quality issues of concern that affect SWP water held in surface reservoirs and in Lake Cachuma include: total organic carbon, taste and odor, color, bacteriological, and disinfection byproducts. These issues are typical of surface waters in California, and are resolved via treatment modifications. The District has no known water quality violations with respect to surface water sources. A copy of the current Consumer Confidence Report is provided in **Appendix I**.

4.4 FUTURE WATER RESOURCES

Table 4-1 summarizes the current and projected water resources from existing water sources that are available to meet demands within the CVWD service area. Potential maximum extraction of groundwater by the District is 3,500 AFY, while the long-term average will be approximately 1,700 AFY. The District's maximum local surface water allocation from the Cachuma Project is currently 2,813 AFY, while the long-term average will likely be approximately 1,970 AFY. Maximum allocation from the SWP is 2,200 AFY (including 200 AF of drought buffer), while the long-term average will likely be approximately 1,250 AFY. As summarized in Section 3.4, District total water demands are anticipated to increase to approximately 4,200 AFY by 2040. (McDonald, 2015) Therefore, existing water resources are anticipated to be sufficient to reliably meet future water demands under normal conditions.

There are several alternatives that the District may consider for increasing future water resources including: add groundwater resources, groundwater banking, maximize use of surface water rights, transfer or exchange of water rights, use of recycled water, and additional support for efficient water management programs (see Section 6). The following sections summarize future water supply programs that could be used to increase the quantity and reliability of the District's water supplies.

4.4.1 Groundwater Resources

Based on projected demands groundwater extractions will average approximately 1,800 AFY in 2015 to 2040 (see **Table 4-1** for details). It is anticipated that groundwater extractions will be approximately 37 percent of the District's total water resources from 2015 to 2040.

4.4.2 Carpinteria Groundwater Bank

Since CVWD is reliant on groundwater, any discussion of water reliability strategies should include discussion of greater use of groundwater storage and conjunctive use management of the Carpinteria Basin. Direct recharge, in-lieu recharge, and ASR can be used in the deposit or "put" side of a water bank operation, and existing and new wells can be used for the withdrawal or "take" operations. Increased recharge of local creeks or recycled water could enhance the amount of water that can later be extracted.

For initial estimates of storage quantities for a groundwater bank, CVWD could consider obtaining 6,300 AF of storage, based on 5 percent storage losses over five years, and a storage account to accommodate six drought years. A water bank of this size would accommodate a similar period as the CADWR defined six-year drought of 1987 to 1992 (CADWR, 2000). An additional storage buffer could be added for a typical water bank mechanism for reducing rapid changes in the storage account's groundwater levels that limit withdrawals to one-third the storage account.

A water-banking program would need evaluation of the Basin response if it is stressed to a greater degree than has occurred historically. Groundwater modeling and well pumping tests would be needed to test for subsidence, seawater intrusion, or other potential effects of increasing use of the Carpinteria Basin.

4.4.3 Extraction Options

A local water bank could be used by CVWD, but would need cooperation by users of private wells in the Basin. During many years, well owners would receive the benefit of higher groundwater levels and reduced pumping costs. In the drought years, the groundwater levels would be drawn down, and water levels could drop to historic lows. Extraction limits would need to be determined to avoid negative effects of subsidence, having water levels below well pump intakes, or sea water intrusion. Further modeling and aquifer testing would be needed to determine how water levels would respond over a series of years. The bank would have the potential to be expanded to allow for use by other nearby entities during a drought if this option makes sense to the Basin users.

4.4.4 Recharge Options

Groundwater storage and banking projects generally have rules of operation, whereby an agency can "rent" storage space in a groundwater basin. In-lieu recharge, in conjunction with Lake Cachuma and SWP deliveries, presents an opportunity for groundwater banking. When surplus water is available from the SWP or Lake Cachuma (due to spill events or high carryovers), the CVWD could reduce its well production and use the surplus surface water to meet demands. In this manner, low cost surplus surface water is used 'in-lieu' of using the groundwater, causing a net recharge of the groundwater. Withholding use of the groundwater resource prolongs the availability of the basin yield, and may allow CVWD to increase its extractions of water from the basin to enhance dry year reliability during drought conditions.

Other direct recharge methods are also available including recharge along the creek beds, and ASR. ASR is the practice of injecting water in a well during times when water is available, and recovery of the water from the same well during times when it is needed. ASR, as a water supply management option, allows for storing water during times of flood, surplus, or when water quality is good, and recovering it later during emergencies or times of water shortage, or when water quality from the source would otherwise be poor. Large water volumes are stored deep underground, reducing or eliminating the need to construct large and expensive surface reservoirs. ASR has the additional advantage of being easily measurable. CVWD (2005) has identified an increasing interest in ASR to enhance groundwater recharge and if needed, protect the aquifer from seawater intrusion. The District has analyzed ASR in several previous investigations.

Increased use of the Carpinteria Basin would involve agriculture/growers and other possible stakeholders. Grant money from the State (ie, AB3030 funding) could be available for more detailed groundwater modeling. Such modeling would serve to better quantify how much the Carpinteria Basin could be used for all the stakeholders, and, to test various groundwater management plans. The District plans to formally evaluate groundwater banking in the Carpinteria Basin.

4.4.5 Carpinteria Basin Deep Aquifer Water

CVWD currently does not pump groundwater from the deeper aquifer in the Carpinteria Basin. Groundwater at these depths is typically of lesser quality than the shallower groundwater. Groundwater modeling and monitoring studies would be performed on the underlying aquifer to determine the storage amount within these deeper layers, should this option be considered in more detail. Costs for this water would likely be greater than the costs assumed for current groundwater production, because of the increased pumping lifts to bring the water from the deeper layers to the surface and to treat the water adequately. These costs are likely less than desalination, but would need more detailed studies prior to extraction. The District plans to formally evaluate extracting Carpinteria Basin deep aquifer water.

4.4.6 Surface Water Rights

As described in **Section 4.2**, the District currently owns a maximum allocation of approximately 2,813 AFY of Lake Cachuma surface water rights (see **Table 4-1** for details). However, this allocation will likely be reduced to a maximum of 1,970 AFY from 2015 to 2040. (McDonald, 2015) In addition, the District has an allocation of 2,200 AF of SWP water, however the estimated long-term average delivery is only 1,100 AF. As previously noted, the District may sell a portion of the SWP allocation, however nothing has been finalized at this point. Availability of surface water, particularly during summer months and periods of prolonged drought, and water quality considerations may restrict the surface water options.

As previously noted, the District currently participates in two "out of District" storage programs including storing SWP water in Rosedale-Rio Bravo Water Storage District groundwater basins and storing SWP water in San Luis Reservoir. Currently, the District has approximately 1,000 AF of deliverable water stored in these two out of District storage programs. Implementation of a portion of these arrangements, or any future potential water storage or banking arrangements, can reasonably be expected to provide up to 1,000 AF of supply in future years, and CVWD anticipates increasing this out of District storage amount between 2010 and 2040.

For the purposes of this AWMP, the District does not anticipate pursuing additional surface water rights to supplement future water resources. However, this does not restrict the District's future efforts to pursue additional surface water resources to supplement existing groundwater production.

4.4.7 Desalinated Water

With population growth and the recent prolonged drought contributing to an increase in Californians' concerns about water scarcity, several communities and industries in California are looking towards desalination plants to convert saline water (e.g., seawater, brackish water or treated wastewater) into fresh water. By 2030, the number of operational plants is expected to increase to 33 plants, for a total desalination capacity for the state close to 300,000 AFY (CADWR, 2005a). Use of desalinated water could aid in offsetting CVWD's reliance on their other available water supplies during drought periods, and allow for their more efficient management. Additionally, use of desalinated water could be used to improve water quality of new and existing potable water supplies.

Seawater desalination options potentially available to CVWD include:

- Construct a new seawater desalination facility within or adjacent to the District's service area
- Participate in the City of Santa Barbara's desalination project
- Participate in a desalination facility outside of Santa Barbara County and receive water by exchange.

At the present time, the District does not have plans to construct a desalination treatment plan nor purchase desalinated water from any agency.

4.4.8 Sales, Transfers, and Exchange Opportunities

4.4.8.1 Water Transfers

The District has considered the idea of banking water or exchanging water with other purveyors, but, to date, such measures have not been planned. The District annually looks at its customer base demand, District population growth, and economic changes to determine if additional water resources need to be acquired. The District is currently exploring options for the use of a groundwater bank located outside of the County. However, an agreement is not in place at this time.

Opportunities exist with Casitas Municipal Water District to the south and a State Water Project connection to the north (CCWA Extension). The District will continue to assess its future supply needs and if necessary will explore water banking and/or exchange possibilities.

4.4.8.2 Water Exchanges

As described in **Section 4.2**, CVWD also participates regularly in a SWP exchange program with Santa Ynez ID No. 1, located downstream of Lake Cachuma. Under the exchange program, CVWD typically purchases 300 AF of SWP and supplies it to Santa Ynez ID No. 1 for its use. In exchange, Santa Ynez ID No. 1 supplies an equal amount of Lake Cachuma water for CVWD's use. The District anticipates continuing this program through 2040.

4.4.8.3 Casitas Municipal Water District

During the 1987 to 1991 drought the District and other Cachuma project members made use of another source of water from Ventura County. This source was Casitas Lake managed by Casitas Municipal Water District (CMWD). Although the drought affected CMWD supply, they still had excess water to sell to water purveyors in Santa Barbara County. An 8-inch pipeline exists between the CMWD and CVWD systems. If more flow is required than the capacity of the existing 8-inch pipeline can deliver, as was the case in 1987 to 1991 drought, then an overland pipe would be installed to convey the additional flow. An emergency water exchange agreement remains in place. For this reason, the District has considered this a limited potential water supply.

4.4.9 Recycled Water

The District has considered recycled water to meet future water demands. Acceptable uses of recycled water include irrigating crops, parks, and golf courses, as well as water needed for groundwater recharge, industrial processes, power plants, fire fighting, and other similar uses. Increased use of recycled water for non-potable uses could reduce the District's reliance on SWP and Lake Cachuma resources and reduce use of local groundwater supplies.

Issues associated with the use of recycled water include:

- Water quality as it relates to the end use; is recycled water suitable for irrigation of agricultural or public park lands, groundwater recharge, or other reuse
- Regulatory requirements associated with the end use and the public's contact with the recycled water

- Cost for additional treatment beyond what the wastewater treatment plant already required to provide.

4.4.9.1 Wastewater Treatment

Carpinteria Valley Water District does not collect or treat wastewater. Wastewater within CVWD's service area is collected and treated by Carpinteria Sanitary District (CSD). The collection system covers most of the City of Carpinteria and some outlying areas of unincorporated County of Santa Barbara.

The collection system consists of approximately 40 miles of piping and serves 3,820 residential, 35 mixed commercial/residential, and 251 non-residential parcels within the CSD service area. Estimated maximum peak flow of the collection system is 6.5 MGD, peaking for a period of 20 minutes. Peak flows occurring during heavy rainfall are likely attributable to infiltration and intrusion flows.

The CSD treatment plant is located on a low lying section of an alluvial deposit adjacent to Carpinteria Creek. Plant Capacity is 2.5 MGD with treatment meeting secondary standards. Treated water is disposed via an ocean outfall located 1,000 feet out from the treatment plant. Average inflow to the plant is approximately 1.4 MGD.

However, this treatment plant is capable of meeting secondary standards only. In order to adequately treat the wastewater, the plant would need to be outfitted with tertiary treatment capabilities. According to CVWD (2005), the CSD currently has enough acreage at the Carpinteria treatment facilities to implement a tertiary system that would produce between 200 and 400 AFY of recycled water. The CSD does not have any current plans to upgrade treatment facilities to meet tertiary standards.

4.4.9.2 Existing Recycled Water Supplies and Demands

Water recycling, also known as water reclamation, involves water that, as a result of treatment of wastewater, is suitable for direct beneficial use. Currently only localized recycled water systems exist. Those are located in privately owned agricultural greenhouse operations and at the Carpinteria Sanitary District grounds. It is unknown to what degree greenhouse operators are using recycled water but it does appear that recycled systems are common within that industry. Carpinteria Sanitary District uses recycled water on the treatment plant premises for treatment processes and some landscape irrigation.

4.4.9.3 Future Recycled Water Supplies and Demands

The District has partnered with the Carpinteria Sanitary District (CSD) and the City of Carpinteria to develop a Recycled Water Facilities Plan (Plan) for the District's service area. (CVWD, 2015) The Draft Plan includes a market assessment of potential recycled water customers. In addition, the Draft Plan includes development of various recycled water use alternatives to serve municipal, agricultural, and groundwater recharge uses. The Draft Plan includes 10 alternative scenarios including municipal landscape only, agriculture only, groundwater recharge only, combination of agriculture and municipal, combination of

agriculture and groundwater charge, and a no-project alternative. Estimated recycled water yield of the alternatives range from 10 AFY (alternative 1A) to 1,200 AFY (alternatives 4A and 4B). Estimated capital costs for the alternatives range from $1,000,000 (alternative 1A) to $24,200,000 (alternative 4A). Estimated unit cost (cost per AF) range from $1,340 per AF (alternative 4B) to $7,400 per AF (alternative 1A). The District anticipates completion of the Plan in 2016.

4.5 CLIMATE CHANGE

4.5.1 Introduction

Current climate change projections suggest that California will continue to enjoy a Mediterranean climate with the typical seasonal pattern of relatively cool and wet winters and hot, dry summers. However, climate patterns are different now and may continue to change at an accelerated pace. Increases in global emissions of greenhouse gases are leading to serious consequences for California including, but not limited to, the following: higher air and water temperatures, rising sea levels, increased droughts and floods, decreased amount and duration of snow pack, and extreme variability in weather patterns. (CADWR, 2013b; CANRA, 2009) These changes are anticipated to intensify over the 20-year planning horizon of this Assessment. Even if all emissions of greenhouse gases ceased today, some of these developments would be unavoidable because of the increase in greenhouse gases recorded over the last 100 years and the fact that the climate system changes slowly. (PPIC, 2011) Many of these climate changes would affect the availability, volume, and quality of California water resources.

4.5.2 Potential Impacts of Climate Change

State and local water resources and water demands may be impacted by climate change via one or more processes including precipitation, air temperature, runoff, sea level change, and flooding. Rainfall variability is expected to increase, leading to more frequent droughts and floods. Runoff from snowpack may be earlier and less predictable, and precipitation may fall as more rain and less snow. Air temperatures in California are anticipated to increase by 2 to 9 degrees Fahrenheit by the year 2100. (CANRA, 2009) Higher air temperatures may result in more rain and less snow, diminishing the reserves of water held in the Sierra Nevada snowpack. (CANRA, 2009) Spring runoff from snowpack is occurring earlier now than it did in the first part of the 20th century. This change in runoff could affect availability of spring and summer snowmelt from mountain areas, including State Water Project water from the Sacramento Delta and local rivers and streams. Total annual exports from the Delta for State and Federal contractors may also decrease by 20 to 25 percent by the year 2100. (CCCC, 2009)

Sea levels have risen by as much as 7 inches along the California coast over the last century. (CANRA, 2009) According to some estimates, sea level is projected to rise an additional 2 to 5 feet by 2100. (PPIC, 2011; Pacific Institute, 2009; CA RNA, 2009; CAT, 2008) These sea level increases could significantly impact infrastructure within coastal areas and affect quantity and timing of State Water Project water exports from the Sacramento Delta. Effects of sea level rise in the Delta would be two-fold: (1) problems with weak levees protecting the low-lying land, many already below sea level; and (2) increased salinity intrusion from the ocean which could

degrade fresh water transfer supplies pumped at the southern edge of the Delta or require more fresh water releases to repel ocean salinity.

In the CADWR Water Plan (CADWR, 2013b), an assessment of the impacts of global climate change on the State's water supply was conducted using a series of computer models based on decades of scientific research. Model results for California indicate a significant likelihood of increased temperature, reduction in Sierra snow depth, early snow melt, and a rise in sea level. These changing hydrological conditions could affect future planning efforts which are typically based on historic conditions. Difficulties in water resources planning that may arise include, but are not limited to, the following:

- hydrological conditions, variability, and extremes that are different than what current water systems were designed to manage.
- changes occurring too rapidly to allow sufficient time and information to permit managers to respond appropriately.
- special efforts or plans to protect against surprises and uncertainties.

As such, CADWR will continue to provide updated results from these models as further research is conducted and information becomes available.

4.5.3 Effects of Climate Change on Agriculture's Water Demand

Climate change may increase daytime and nighttime temperatures and seasonal temperatures. This change may impact the length of the growing season. This general increase in temperatures coupled with greater variability and unpredictability in precipitation is expected to lead to increases in evapotranspiration resulting from warmer seasons; thereby creating an increase in demand for irrigation water and an increase in the year-to-year variability of demand.

Temperate fruit and nut trees such as almonds, pistachios, and apples require adequate winter chill to produce economically viable yields. Increased temperatures daytime, nighttime, and season temperatures may reduce winter chill hours thereby causing adverse effects on the yield of some crops. Some farmers are beginning to overcome this change by planting trees closer together and using new varieties.

Studies are now underway to prepare farmers for the likely impacts of climate change. Such efforts include breeding varieties of fruit trees which can withstand the decreased water chill hours, developing tools to aid the crops in coping with insufficient chill, and researching the temperature responses of particular orchard crops to better understand potential long-term effects. However, some solutions such as replanting orchards with altered crop varieties or the installation of aiding tools may not be feasible for many irrigators.

4.5.4 Mitigation and Adaptation

Responding to climate change generally takes two forms: mitigation and adaptation. Mitigation is taking steps to reduce human contribution to the causes of climate change by reducing greenhouse gas (GHG) emissions. Adaptation is the process of responding to the effects of climate change by modifying our systems and behaviors to function in a warmer climate. (CADWR, 2013b)

In the water sector, climate change mitigation is generally achieved by reducing energy use, becoming more efficient with energy use, and/or substituting renewable energy sources in place of fossil fuel based energy sources. Because water requires energy to move, treat, use, heat, and discharge, water conservation is also energy conservation. As each water supplier implements water conservation measures and determines its water conservation targets, it can also calculate conserved energy and GHGs not-emitted as a side benefit. Once a water supplier has calculated the water conserved by a BMP, it is straightforward to convert that volume to conserved energy, and GHGs not-emitted. Additionally, water suppliers may want to focus on implementing water conservation measures that conserve water but do so at a significant decrease in GHG emissions as compared with other measures. (CADWR, 2013b)

Climate change means more than hotter days. Continued warming of the climate system has considerable impact on the operation of most water districts. Snow in the Sierra Nevada provides 65 percent of California's water supply. Predictions indicate that by 2050 the Sierra snowpack will be significantly reduced. Much of the lost snow will fall as rain, which flows quickly down the mountains during winter and cannot be stored in our current water system for use during California's hot, dry summers. The climate is also expected to become more variable, bringing more droughts and floods. Water districts will have to adapt to new, more variable conditions. (CADWR, 2013b)

Principles of climate change adaptation include the following:

- As more mitigation is completed now, the less adaptation we may have to do in the future, because climate impacts could be less severe.
- Mitigation is much less expensive than adaptation.
- Mitigation should happen globally.
- Adaptation must happen locally.
- Adaptation strategies should be implemented according to future conditions, regular assessment and recalibration.
- Some adaptation strategies have benefits that can be realized today.

4.5.5 Local Strategies

As climate change continues to unfold in the coming decades, water agencies, may need to mitigate and adapt to new strategies, which may require reevaluating existing agency missions, policies, regulations, facilities, funding priorities, and other responsibilities. Examples of mitigation and adaptation strategies include, but not limited to, the following:

- Prepare long-term facility and sustainability master plans including specific elements for climate change adaptation.
- Increase ground water recharge using additional surface water and recycled water.
- Increase recycled water demands.

- Promote additional water use efficiency for urban, commercial, and industrial best management practices.
- Increase investments in infrastructure that promotes adaptation strategies (such as ground water recharge, and recycled water) and existing principal facilities susceptible to impacts of climate change.

Notwithstanding the above strategies for dealing with climate change, the reality is that current environmental regulations place a very high priority on releasing additional water for endangered species (i.e., Sacramento Delta and Santa Ynez River) and the environment. There will be more competition for scarce water supplies between people and the environment. Resolving this conflict will be one of the biggest challenges confronting water agencies.

The goal of the District is to utilize the available surface water and groundwater resources as effectively as possible in meeting the requirements of the District's water users. It is worth noting, however, that the District's control over water supplies is limited; thus management practice changes will need to be adaptive in nature.

SECTION 5: WATER ACCOUNTING AND WATER SUPPLY RELIABILITY

5.1 AWMP REQUIREMENTS

The purpose of this section is to bring together water use and supply for an overall picture of agricultural water used and the ability of water supplies to meet water demands within the supplier's service area. The Water Code requires that water accounting of water supplies, water uses, and the overall water budget, along with a description of water supply reliability, be presented in the AWMP. See Section V of the AWMP Template (**Appendix** A1).

The Water Code §10826 require that the AWMP:

> "(b) Describe the quantity and quality of water resources of the agricultural water supplier, including all of the following:
>
> (7) Water accounting, including all of the following:
>
> (A) Quantifying the water supplier's water supplies.
> (B) Tabulating water uses.
> (C) Overall water budget."

The Water Code does not specify the mechanisms or level of detail that would satisfy requirements for water accounting. Additionally, in accordance with Executive Order B-29-15, quantification of water supplies and demands are to be reported for 2013, 2014, and 2015, to the extent data is available.

As an overview of water supply use within the service area, annual amounts are appropriate; however, to provide more meaningful information to calculate the water budget annual amounts, additional water supply and use information (e.g., monthly/seasonal values, effective precipitation amounts, water losses, and others) can be included in this section. The additional information would also provide the agricultural water supplier with some data useful for estimating water use efficiency, if desired.

5.2 QUANTITY OF WATER RESOURCES

Table 5-1 (also see **Appendix C, Worksheet 47**) summarizes the quantity of water supplies available to the District. This table includes surface water, ground water, annual effective precipitation, and other purchases. Total water supplies for 2011 to 2015 ranged from 9,665 acre-feet (2015) to 16,328 acre-feet (2012), while the total water supplies for the representative year of 2009 was 16,681 acre-feet. This data further indicates that the years 2013, 2014, and 2015 were below normal years for overall water supplies within the District.

TABLE 5-1
QUANTITY OF DISTRICT WATER RESOURCES (AFY)

Water Resources (1)	**Representative Year 2009**	**2011**	**2012**	**2013**	**2014**	**2015**
Surface Water	2,836	2,673	3,356	4,533	3,089	1,190
Ground water (2)	4,062	3,793	3,738	3,372	4,602	5,541
Effective Precipitation (3)	9,783	9,747	9,234	2,395	7,012	2,934
Purchases	0	0	0	0	0	0
Total	**16,681**	**16,213**	**16,328**	**10,300**	**14,703**	**9,665**

Notes:
(1) All values in acre-feet and rounded to nearest AF.
(2) Total for District and private pumping. Data for 2015 private pumping estimated based on most recent 10-year average (2005-2014).
(3) Estimated. See **Section 2.3.2** for details.

5.3 QUANTITY OF WATER USES

Table 5-2 (also see **Appendix C, Worksheet 44**) summarizes the quantity of water uses within the District. This table includes crop water uses, conveyance and storage system (and losses), environmental uses (consumptive), municipal and industrial uses, uses outside the District, conjunctive uses, and other uses. Total water uses for 2011 to 2015 ranged from 6,724 AF (2015) to 7,821 AF (2013), while water uses for the representative year of 2009 was 7,157 AF. It is important to note that municipal and industrial water use within the District for the year 2015 was 665 acre-feet less than the year 2013. This observation is likely due to the extensive water efficient water management practices implement by the District over the last two years.

TABLE 5-2
QUANTITY OF DISTRICT WATER USES (AFY)

Water Uses (1)	**Representative Year 2009**	**2011**	**2012**	**2013**	**2014**	**2015**
Crop Water Use (2)	4,767	4,470	4,820	5,268	5,199	4,692
Conveyance and Storage System (3)	259	358	350	390	436	413
Environmental Use	0	0	0	0	0	0
Municipal and Industrial (4)	2,131	1,996	2,284	2,163	1,730	1,619
Outside the District (5)	0	0	0	0	0	0
Conjunctive Use	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total	**7,157**	**6,824**	**7,454**	**7,821**	**7,365**	**6,724**

Notes:
(1) All values in acre-feet and rounded to nearest AF.
(2) Combined District supplied water and private pumping. Data for 2015 private pumping estimated based on most recent 10-year average (2005-2014).
(3) Includes water losses.
(4) Includes residential, commercial, industrial, institutional, and landscape water uses.
(5) District experiences no net loss of water via exchanges.

5.4 WATER BUDGET SUMMARY

Table 5-3 (also see **Appendix C, Worksheet 48**) summarizes the quantity of water supplies minus the quantity of water uses within the District. The product of this analysis is the estimated amount of water available for deep percolation to the Carpinteria Groundwater Basin. Total water uses for 2011 to 2015 ranged from 6,724 AF (2015) to 7,821 AF (2013). Total water supplies for 2011 to 2015 ranged from 9,178 AF (2015) to 16,328 AF (2012). For the purposes of this report, the amount of drain water leaving the service area was estimated to be 0 acre-feet per year. Therefore, the amount of water potentially available for deep percolation to the Carpinteria Groundwater Basin ranged from 2,479 acre-feet (2013) to 9,389 acre-feet (2011).

TABLE 5-3
DISTRICT WATER BUDGET SUMMARY (AFY)

Water Budget (1)	**Representative Year 2009**	**2011**	**2012**	**2013**	**2014**	**2015**
Subtotal of Water Resources (2)	16,681	16,213	16,328	10,300	14,703	9,665
Subtotal of Water Uses	7,157	6,824	7,454	7,821	7,365	6,724
Drain Water Leaving Service Area	0	0	0	0	0	0
Estimated Water to Deep Percolation (3)	**9,524**	**9,389**	**8,874**	**2,479**	**7,338**	**2,941**

Notes:
(1) All values in acre-feet and rounded to nearest AF.
(2) Data for 2015 private pumping estimated based on most recent 10-year average (2005-2014).
(3) District estimates that long-term average percolation to the Carpinteria Groundwater Basin is 4,000 AFY (CVWD, 2012).

5.5 RELIABILITY ASSESSMENT

The District developed an assessment of the future water supply reliability. This assessment includes a comparison of the total projected water demand with the water supplies available for the normal/average water year. The District understands there are additional scenarios to calculate reliability including, but not limited to, single dry water-year, multiple consecutive dry water-years, three-year peak demand, etc. The District selected the normal/average water-year scenario for assessment in this report. Results for this assessment are described below.

Table 5-4 summarizes CVWD's normal (average) water year supply and demand estimates. Table 5-4 indicates that local groundwater, Cachuma surface water, and SWP surface water are anticipated to be the primary water resources through 2040. Table 5-4 indicates that CVWD will utilize an average of approximately 1,700 AFY of local groundwater to meet demands. This value is consistent with the current understanding of the Carpinteria Basin safe-yield. The District will utilize an average of approximately 1,970 AFY of local surface water from the Cachuma Project. This value represents the most current understanding of the normal year yield from the Cachuma Project (including a reduction of 30 percent).

Table 5-4 indicates the District will utilize approximately 1,250 AFY of imported surface water from the SWP. This value represents the most current understanding of the normal year yield from the SWP (including a reduction of 43 percent). The District anticipates delivery of an average of 850 AFY from the Central Coast Water Authority and 400 AFY via an exchange agreement with ID#1.

Projected total water supply available during an average water-year will be approximately 4,920 AFY. Projected District normal year water demand for 2040 will be approximately 4,200 AFY. This assessment indicates the District will have an estimated net positive supply or contingency of approximately 720 AFY from 2020 to 2040. Thus, no deficit was observed during the assessment of normal water-year supplies and demands. CVWD anticipates that groundwater pumping would be increased up to the Basin safe-yield to offset demands. In addition, the CVWD could implement additional programs to increase supplies and/or water conservation/demand management measures to reduce demands.

TABLE 5-4
PROJECTED NORMAL WATER YEAR SUPPLY AND DEMAND (AFY) 2020-2040

	2020	2025	2030	2035	2040
Supplies					
Groundwater (1)	1,700	1,700	1,700	1,700	1,700
Cachuma (2)	1,970	1,970	1,970	1,970	1,970
SWP (3)	850	850	850	850	850
Transfers/Exchanges (3)	400	400	400	400	400
Other (4,5)	0	0	0	0	0
Supply Total	**4,920**	**4,920**	**4,920**	**4,920**	**4,920**
Demand Total (6)	**4,200**	**4,200**	**4,200**	**4,200**	**4,200**
Difference (7)	**720**	**720**	**720**	**720**	**720**

Notes:
Source: CVWD.
(1) Current annual average CVWD groundwater pumping is approximately 1,500 AFY (1984-2015); CVWD anticipates that pumping would be increased up to the operational yield to offset demands; conservative estimate of long term average for CVWD pumping is approximately 1,700 AFY which is consistent with the basin safe yield. (McDonald, 2016)
(2) Based on current maximum Cachuma allocation of 2,813 AFY. However, the District understands that future deliveries will be less than the maximum allocation. Cachuma supply at 1,970 AFY represents the most current understanding of the normal year yield from the Project (30% reduction of 2,813 AFY). (McDonald, 2016)
(3) Based on current maximum SWP allocation of 2,200 AFY (includes 200 AFY drought buffer program). However, the District understands that future deliveries will be less than the maximum allocation. The projected total average SWP delivery may be 1,250 AFY which represents the most current understanding of the normal year yield from the SWP (43% reduction of max allocation at 2,200 AFY). The projected SWP value of 850 AFY reflects the average delivery (1,250 AFY) minus the ID#1 exchange volume of 400 AF. (McDonald, 2016)
(4) CVWD is currently evaluating potential long-term use of recycled water (CVWD, 2015). However, conservative estimate assumes no recycled water available for direct or indirect reuse.
(5) CVWD has banked and utilized 1,000 AFY of State Water Project water. CVWD anticipates utilizing banking programs again between 2015 and 2040. (McDonald, 2016)
(6) Does not include potential additional reduction of demand of 10 percent for period 2020-2040 utilizing water conservation Demand Management Measures for urban and agricultural customers.
(7) The difference or contingency represents the sum of supplies minus demands. The CVWD desires to indicate a positive supply or contingency of a minimum of 200 AFY in order to account for unforeseen changes in supplies or demands.

SECTION 6: EFFICIENT WATER MANAGEMENT PRACTICES

6.1 AWMP REQUIREMENTS

Water Code §10826 (e) requires that certain water use efficiency information be included in the AWMP per §10608.48. Sections 10608.48 (a) through 10608.48(f) are related to the EWMPs of the AWMP. Sections 10608.48 (a) to 10608.48 (c) require implementation of EWMPs. Section 10608.48 (d) requires a report of which EWMPs have been implemented, an estimate of efficiency improvements, and documentation that non-implemented EWMPs were either not locally cost-effective or technically feasible. Section 10608.48 (e) specifies how to report the information.

Implementation of critical EWMPs (Water Code §10608.48 (b)) are required of all agricultural water suppliers. Other EWMPs (Conditional), listed in Water Code §10608.48 (c), are required only if they are locally cost-effective and technically feasible. CADWR also encourages the agricultural water supplier to report on how implementation of EWMPs may have affected or is anticipated to affect operations.

This section summarizes the EWMPs implemented by the District. It is understood that the District is not required to implement the critical EWMPs since the District service area includes less than 10,000 acres of agriculture.

6.2 INTRODUCTION

"Water management practices," as applied to water conservation, refers to the use of measures, practices, or incentives implemented by water utilities to permanently reduce the level or change the pattern of demand for a utility service.

6.3 EFFICIENT WATER MANAGEMENT PRACTICES

Critical activities and conditional activities are the two general classes of EWMPs defined in SB X7-7. Critical activities must be implemented by agricultural water suppliers and include requirements for accurate measurement of water deliveries to individual farming operations and for adopting a pricing structure for agricultural water customers based at least in part on quantity of water delivered. Conditional activities are those that must be implemented by agricultural water suppliers if they are locally cost-effective and technically feasible. Table 6-1 lists EWMPs as required by the Act.

TABLE 6-1
LIST OF EFFICIENT WATER MANAGEMENT PRACTICES

Critical	
1	Measure the volume of water delivered to customers with sufficient accuracy
2	Adopt a pricing structure for water customers based on at least in part on quantity delivered
Conditional	
1	Facilitate alternate land use for lands with exceptionally high water duties or whose irrigation contributes to significant problems, including drainage
2	Facilitate use of available recycled water that otherwise would not be used beneficially, meets all health and safety criteria, and does not harm crops or soil
3	Facilitate the financing of capital improvements for on-farm irrigation systems
4	Implement an incentive pricing structure
5	Expand line or pipe distribution systems, and construct regulatory reservoirs to increase distribution system flexibility and capacity, decrease maintenance, and reduce seepage
6	Increase flexibility in water ordering by, and delivery to, water customers within operational limits
7	Construct and operate supplier spill and tailwater recovery systems
8	Increase planned conjunctive use of surface water and groundwater within the supplier service area
9	Automate canal control structures
10	Facilitate or promote customer pump testing and evaluation
11	Designate a water conservation coordinator
12	Provide for the availability of water management services to water users
13	Evaluate the policies of agencies that provide the supplier with water to identify the potential for institutional changes to allow for more flexible water deliveries and storage.
14	Evaluate and improve the efficiencies of the supplier's pumps

6.4 STATUS OF EFFICIENT WATER MANAGEMENT PRACTICES

Table 6-2 provides a summary of the implementation status of each of the EWMPs. The table is followed by a narrative providing details of the District's efforts related to the implementation of each of the EWMPs.

TABLE 6-2
STATUS OF EFFICIENT WATER MANAGEMENT PRACTICES

Critical	
1 – Water Measurement	Being Implemented
2 – Volume-based pricing	Being Implemented
Conditional	
1 – Alternate Land Use	Being Evaluated by District
2 – Recycled Water Use	Being Evaluated by District
3 – On-Farm Irrigation Capital Improvements	Being Evaluated by District
4 – Incentive Pricing Structure	Being Implemented
5 – Infrastructure Improvements	Being Implemented
6 – Order/Delivery Flexibility	Not Applicable- This is an on demand system
7 – Supplier Spill and Tailwater Systems	Not Applicable
8 – Conjunctive Use	Being implemented
9 – Automated Canal Controls	Not Applicable
10 – Customer Pump Test/Evaluation	Being Implemented
11 – Water Conservation Coordinator	Being Implemented
12 – Water Management Services	Being Implemented
13 – Identify Institutional Changes	Being Implemented
14 – Supplier Pump Improved Efficiency	Being Implemented

6.4.1 Water Measurement

All of the District's meters for surface water supplies and ground water supplies are metered. Accuracy of the District's meters is generally 98.5 percent to 101.5 percent. All of the District's customers are metered.

6.4.2 Volume-Based Pricing

The District currently has inclining block water rates (also known as conservation rate), where the cost per unit of water increases with the quantity of water used for all accounts. Currently, customers are charged a monthly meter fee and a volumetric rate for actual water used. Meter fees (2015-2016, see copy in **Appendix E**) range from $37.88 per month (5/8-inch) to $1,262.50 (6-inch). The commodity rate for agricultural customers is $1.92 per 100 cubic feet (HCF) to $2.94 per HCF depending on usage and elevation of the property. The commodity rate for all residential, commercial, and industrial customers is $3.40 per HCF to $6.94 per HCF depending on usage and elevation of the property. The District has the legal authority to evaluate and set rates for its customers. See **Appendix E** for a copy of current water fees and charges. The District is currently reviewing the water rates with completion due approximately February 2016.

6.4.3 Alternative Land Use

The District could encourage alternative land use by agricultural customers within the District. Alternative land uses could include alternative crop types and or fallowing of land. However, there are limited known properties with exceptionally high water duties or whose irrigation contributes to significant problems located within the District boundaries.

6.4.4 Recycled Water

Currently, recycled water is not available within the District. However, the District, Carpinteria Sanitary District, and the City of Carpinteria are preparing a comprehensive evaluation of the potential options to produce highly treated recycled water and distribute the recycled water to customers within the District service area. (CVWD, 2015)

6.4.5 On-Farm Irrigation Capital Improvements

The District is evaluating an agricultural irrigation efficiency program which offers financial incentives to local farmers for improving the efficiency of on-farm irrigation systems. The program could assist farmers by providing them with technical assistance and reimbursing them for a percentage of the cost of equipment required for irrigation system retrofits that improve irrigation efficiency. Examples of new equipment include, but not limited to, the following: drip/micro irrigation, soil moisture sensors, tensiometers, etc.

6.4.6 Incentive-Pricing Structure

The District currently has inclining block water rates (also known as conservation rate), where the cost per unit of water increases with the quantity of water used for all accounts. Currently, customers are charged a monthly meter fee and a volumetric rate for actual water used. Meter fees (2015-2016, see copy in **Appendix E**) range from $37.88 per month (5/8-inch) to $1,262.50 (6-inch). The commodity rate for agricultural customers is $1.92 per 100 cubic feet (HCF) to $2.94 per HCF depending on usage and elevation of the property. The commodity rate for all residential, commercial, and industrial customers is $3.40 per HCF to $6.94 per HCF depending on usage and elevation of the property. In addition, the District has an additional fee for capital improvement program ($16.50 to $275 per month) and drought surcharge ($2.40 to $40.00 per month). The District has the legal authority to evaluate and set rates for its customers. See **Appendix E** for a copy of current water fees and charges. The District is currently reviewing the water rates with completion due approximately February 2016.

Conservation rate structure for water service is similar to utility rate structures in place for electricity and natural gas. In a conservation block rate structure, the unit price increases with each successive block, resulting in an increase in the incremental and the average cost of water with increased customer usage or conservation block rate structures, the block (quantity) shift points are generally based upon the unique demand characteristics of each user class and are focused on user demand points to enhance water usage awareness. Conservation block rate tends to decrease water usage, (i.e., promote water conservation), due to the economic disincentive to waste water. Conservation pricing may also include seasonal rates and/or excess-use surcharges to reduce peak demands during summer periods.
Water savings due to conservation pricing would be difficult to estimate. Water savings can be more easily estimated from specific demand management measures for example residential retrofit, high-efficiency washing machines, ultra-low flow toilets, and irrigation system retrofits. For the purposes of this report water savings due to rate programs are not quantified (CUWCC, 2005).

6.4.7 Infrastructure Improvements

The District completed a Strategic Capital Facilities Plan in 1999. This document described the status of the District's primary facilities, identified issues facing the District, and formulated the District's options for addressing these issues. The District continues to add facilities for replacement into its capital replacement program. Approximately $10,000,000dollars of replacement projects have been identified. It is expected to take up to 20 years to complete the current list of projects.

6.4.8 Order/Delivery Flexibility

The District operates the entire distribution system, including agricultural and urban customer demands, based on instantaneous water demands. The District does not currently require customers to place orders for delivery of water. The District does not currently require lead times for delivery of water. The District currently does not have customer allocations in place. Therefore, the District currently provides flexibility for meeting all customer water demands.

6.4.9 Supplier Spill and Tailwater Systems

The District delivers water to all of its customers through a distribution pipeline system that is not prone to the operational spills common to the canal delivery systems that serve many of the State's agricultural water users. Agriculture customers within the District generally produce minimal spill water and tailwater as the result of efficient irrigation practices. The District does not have any spill water or tailwater systems. Agricultural customers may implement spill water and tailwater capture practices on their private property. Therefore, this EWMP is not applicable.

6.4.10 Conjunctive Use

Conjunctive use of groundwater and surface water is the planned balanced use of both types of water, so that the supplies and use of both these types of water can be maximized. During wet years, conjunctive use implies that the plentiful surface water supply is used to its maximum, while groundwater use is minimized. This allows for groundwater supplies to be saved and recharged. During dry years, this plentiful groundwater supply can then be used to help ensure that important surface water supplies are not depleted rapidly. Conjunctive use also encompasses the use of surface waters to artificially recharge the groundwater basin during wet years.
The District currently practices conjunctive use of its groundwater and surface water. During recent wet water years, the District maximized its use of plentiful surface water, while groundwater use by the District was reduced. Conjunctive use allows for the creation of a recharged groundwater basin, which can be used as insurance against potential drought or other impacts on the District's water supply.
The District plans to continue to evaluate the feasibility of artificial recharge of the groundwater basin including recharging with Cachuma water and or recycled water.

6.4.11 Automated Canal Controls

The District does not own nor manage any canals. Therefore, this EWMP is not applicable.

6.4.12 Customer Pump Test/Evaluation

The District encourages customers with irrigation pumps to contact Southern California Edison which offers free hydraulic pump tests. For information on pumps and SCE's Pump Test Program, contact SCE, 800-336-2822, or visit the following website on.sce.com/pumptest.

6.4.13 Water Conservation Coordinator

A Water Conservation Coordinator may provide the following: review and analyze water use on a District-wide basis; prepare and disseminate public information materials; provide follow-up and response to inquiries or complaints; coordinate water conservation programs; compile and verify data; coordinate requests for speakers on water topics; and participate in local, regional, and state organizations that promote water conservation. These activities result in high consumer awareness of water use practices. Currently, the District Engineer manages the conservation

programs within the District. In addition, the District has one staff person (approximately 25 percent of full-time) that implements the District's conservation programs.
Water savings due to a water conservation coordinator would be difficult to estimate. For the purposes of this report water savings due a water conservation coordinator are not quantified (CUWCC, 2005). The District will maintain a part-time water conservation coordinator for the foreseeable future. The District will provide the water conservation coordinator with the necessary resources to implement cost-effective EWMPs.

6.4.14 Water Management Services to Customers

6.4.14.1 Wholesale Agency Assistance Programs

Although the District is not a wholesaler, it does participate in regional programs. The District has participated in planning and programs concerning water demand management issues and urban water management in Santa Barbara County and the State of California. Additional benefits of participation include enhanced water resource flexibility in the event of operational disruption, extended drought, or other emergency. Selected examples of regional participation include the following organizations:

- Santa Barbara County Water Agency
- Central Coast Water Authority
- Cachuma Operation and Maintenance Board.

It is recommended that the District continue to participate in these organizations to reinforce relationships with other member agencies to enhance water resource flexibility and proper response to operational disruption, extended drought, or other emergency. No additional water savings or methods to measure savings are anticipated since the District is not a wholesaler.

6.4.14.2 Public Information Programs

The District recognizes the continued need for a public information program to maintain and increase the public's awareness of water and the need to use it wisely. Public information is used to promote the water conservation ethic and inform the public of the benefits derived from conserving a valuable resource. Providing current water conservation information is a key part of the District's program activities. The on-going programs have proven successful and are well received by customers. Continued educational programs are especially important during non-drought periods. It is recommended that the District continue to support these public information programs including various special events, sponsor activities, and prepare materials that promote awareness of demand management and water conservation issues. Several of these events, activities, and materials are described below.

The District prepares an annual Consumer Confidence Report (CCR) that is designed to inform customers about the quality of water and services provided. The District's CCR also includes water conservation elements. A copy of the current CCR is provided in **Appendix I**. In addition,

the City has prepared news releases, water bill inserts, announcements, and brochures to convey a water conservation message. Materials should be available in English and Spanish also. Examples of public information are provided in **Appendix** J. The District could enhance the existing website (www.cvwd.net) to include additional conservation related information. May is "Water Awareness Month." In addition, the USEPA declared August "Water Efficiency Month." These events are an excellent opportunity to communicate with customers the importance of water conservation. The District could distribute preprinted materials available for free or purchase from sources such as American Water Works Association, USEPA, or other water agencies. Materials should be available in English and Spanish also. Examples of public information are provided in **Appendix J.**

District staff are available to make presentations to community groups such as schools, farm associations, public service clubs, and Chambers of Commerce. Staff are available to discuss the impact of short-term and long-term water supply issues. Bilingual speakers could be available for English and Spanish audiences also. It is recommended that the District continue to support these public information programs.

6.4.14.3 Real-Time Crop Irrigation Information

The District added link from the CADWR CIMIS website to the District's web links page, and notified customers of new web link. District sends information to agriculture customers via direct mail regarding CIMIS data and benefits of ETo based irrigation. Additional irrigation information is made available to farmers upon request.

6.4.14.4 Provide Water Delivery Information to the Water Users

The District provides water usage reports to water users upon request and are encouraged to request data as needed.

6.4.14.5 On-Farm Evaluations

The District supports the availability of on-farm irrigation and drainage system evaluations. The District will consider the potential to contract with the Ventura County and Santa Barbara County Resource Conservation District's mobile laboratory for irrigation evaluation. As part of program participation, farmers are provided with free irrigation system audits/evaluations, which include recommendations for implementation of applicable best management practices and water use efficiency improvements. A potential future element of this program could provide financial incentives to farmers who choose to implement the recommendations made as part of the irrigation system audits/evaluation process.

6.4.15 Identify Institutional Changes

The distribution systems of the agencies that directly supply the District with imported surface water and local surface water are capable of delivering water to the District's system on an on-

demand basis. Therefore, the District has not had to contend with issues pertaining to water delivery and storage flexibility.
The District actively attempts to identify programs that allow for voluntary transfers of water within and outside of its sphere of influence that facilitate greater water supply flexibility and storage. This includes evaluation and implementation of programs involving imported surface water and local surface water.

The District is engaged in a wide range of activities to ensure that the region continues to have a reliable supply of water in future years. Integrated Resources Planning, Integrated Regional Water Management Planning, Urban Water Management Planning, Water Shortage Contingency Planning, and Demand Management Measures are all strategies employed by the District for sustaining adequate water supplies and managing local water demands.

6.4.16 Supplier Pump Improved Efficiency

The District's water loss control program includes main replacement, system water audits, system leak detection and repair, meter testing and replacement, valve exercising, and main flushing.

The District's efforts include the following actions:

- The District continues to meet current standards for apparent losses of below 10 percent, however using an in house method for calculating the losses.
- Economic values of water loss will be generated using recent expense data and an avoided cost model.
- Prepare a component analysis on the water system to identify the various components of real losses.
- Identified real losses will be analyzed and a determination will be made as to the cost effectiveness of potential water loss reduction actions. If any individual or group of actions are determined to be cost effective, the District will begin a program to implement such actions.
- All reported leaks, including the District's side or customer's side, are currently addressed immediately. If a customer's use increases by 50 percent, after reading the meter, then the District flags the account and the customer is contacted to let them know they may have leak.

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APPENDICES

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Appendix A

Definitions of Selected Terminology

APPENDIX A

DEFINITIONS FOR SELECTED TERMINOLOGY

Provided below are definitions of selected acronyms and terms used throughout this document.

acre-foot. The amount of water needed to cover an acre one-foot deep (approximately 325,900 gallons). An acre-foot can support the annual indoor and outdoor needs of between one and two households per year, and, on average, 3 acre-feet are needed to irrigate 1 acre of farmland; enough to cover a football field 1 foot deep.

appropriation. The right to withdraw water from its source.

aquifer. A geologic formation of sand, rock and gravel through which water can pass and which can store, transmit and yield significant quantities of water to wells and springs.

audit (end-use). A systematic accounting of water uses by end users (residential, commercial, industrial, or agricultural), often used to identify potential areas for water reduction, conservation, or efficiency improvement.

audit (system). A systematic accounting of water throughout the production, transmission, and distribution facilities of the system.

available supply. The maximum amount of reliable water supply, including surface water, groundwater, and purchases under secure contracts.

average-day demand. A water system's average daily use based on total annual water production (total annual gallons or cubic feet divided by 365); multiple years can be used to account for yearly variations.

avoided cost. The savings associated with undertaking a given activity (such as demand management) instead of an alternative means of achieving the same results (such as adding supply); can be used to establish the least-cost means of achieving a specified goal. Can be measured in terms of incremental cost.

baseline. An established value or trend used for comparison when conditions are altered, as in the introduction of water conservation measures.

beneficial use. A use of water resources that benefits people or nature. State law may define beneficial use.

benefit-cost analysis. A comparison of total benefits to total costs, usually expressed in monetary terms, used to measure efficiency and evaluate alternatives. See also cost-effectiveness and avoided-cost.

best management practice. A measure or activity that is beneficial, empirically proven, cost-effective, and widely accepted in the professional community.

block. A quantity of water for which a price per unit of water (or billing rate) is established.

budget (water-use). An accounting of total water use or projected water use for a given location or activity.

capital facilities. Physical facilities used in the production, transmission, and distribution of water.

commodity charge. See variable charge.

conservation (water). Any beneficial reduction in water losses, waste, or use.

conservation pricing. Water rate structures that help achieve beneficial reductions in water usage. See nonpromotional rates.

consumptive use. Use that permanently withdraws water from its source.

cost-effectiveness. A comparison of costs required for achieving the same benefit by different means. Costs are usually expressed in dollars, but benefits can be expressed in another unit (such as a quantity of water). See net benefits.

customer class. A group of customers (residential, commercial, industrial, wholesale, agricultural, and so on) defined by similar costs of service or patterns of water usage.

decreasing-block (or declining-block) rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) decreases with the amount water usage.

demand forecast. A projection of future demand that can be made on a systemwide or customer-class basis.

demand management. Measures, practices, or incentives deployed by water utilities to permanently reduce the level or change the pattern of demand for a utility service.

demographic. Having to do with population or socioeconomic conditions.

discount rate. A percentage that is used to adjust a forecast of expenditures to account for the time value of money or opportunity costs; it can be based on the utility's cost of capital.

distribution facilities. Pipes, treatment, storage and other facilities used to distribute drinking water to end-users.

drought. A sustained period of inadequate or subnormal precipitation that can lead to water supply shortages, as well as increased water usage.

Efficient Water Management Practices. Demand management measure for AWMP.

end use. Fixtures, appliances, and activities that use water.

end user. Residential, commercial, industrial, governmental, or institutional water consumer.

escalation rate. A percentage that is used to adjust a forecast of expenditures to account for the increasing value of a good or service over time (apart from the discount rate and inflationary effects).

evapotranspiration. Water losses from the surface of soils and plants.

fixed charge. The portion of a water bill that does not vary with water usage.

fixed costs. Costs associated with water services that do not vary with the amount of water produced or sold.

graywater. Reuse, generally without treatment, of domestic type wastewater for toilet flushing, garden irrigation and other nonpotable uses. Excludes water from toilets, kitchen sinks, dishwashers, or water used for washing diapers.

groundwater. Water that occurs beneath the land surface and fills partially or wholly pore spaces of the alluvium, soil or rock formation in which it is situated. Does not include water produced with oil in the production of oil and gas or in a bona fide mining operation.

groundwater basin. A groundwater reservoir defined by all the overlying land surface and the underlying aquifers that contain water stored in the reservoir. Boundaries of successively deeper aquifers may differ and make it difficult to define the limits of the basin.

groundwater overdraft. The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average.

groundwater recharge. The action of increasing groundwater storage by natural conditions or by human activity.

groundwater table. The upper surface of the zone of saturation (all pores of subsoil filled with water), except where the surface if formed by an impermeable body.

imported water. Water that has originated from one hydrologic region and is transferred to another hydrologic region.

increasing-block (or inclining-block) rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) increases with the amount water usage.

incremental cost. The additional cost associated with adding an increment of capacity.

instream flow. River and stream waters that maintain stream quality, aquatic life, and recreational opportunities.

integrated resource planning. An open and participatory planning process emphasizing least-cost principles and a balanced consideration of supply and demand management options for meeting water needs.

irrigation scheduling. An automated method for optimizing outdoor water use by matching the watering schedule to plant needs.

large-volume user. A water customer, usually industrial or wholesale, whose usage is substantial relative to other users; large-volume users may present unique peaking or other demand characteristics.

leak detection. Methods for identifying water leakage in pipes and fittings.

life span. The expected useful life of a supply-side or demand-side project, measure, or practice. (The life span may not be identical to useful life for tax purposes.)

load management. Methods for managing levels and patterns of usage in order to optimize system resources and facilities.

losses (water). Metered source water less revenue-producing water and authorized unmetered water uses.

low water-use landscaping. Use of plant materials that are appropriate to an area's climate and growing conditions (usually native and adaptive plants). See also xeriscape.

market penetration. The extent to which an activity or measure is actually implemented compared to all potential uses or markets.

marginal-cost pricing. A method of rate design where prices reflect the costs associated with producing the next increment of supply.

master metering. A large meter at a point of distribution to multiple uses or users that could be further submetered. Includes metered wholesale sales.

maximum-day demand. Total production for the water system on its highest day of production during a year.

meter. An instrument for measuring and recording water volume.

mixed-use meter. A meter measuring water use for more than one type of end use (such as indoor and outdoor use).

net benefits. The numerical difference between total benefits and total costs, both of which must be expressed in the same unit (usually dollars). See cost-effectiveness.

net present value. The present value of benefits less the present value of costs.

nominal dollars. Forecast dollars that are not adjusted for inflation.

nonaccount water. Metered source water less metered water sales.

nonconsumptive use. Water withdrawn and returned to the source.

nonpromotional rates. Rates that do not encourage additional consumption by water users.

nonresidential customer. A commercial, industrial, or agricultural utility customer.

normalization. Adjustment of a variable to a "normal" level based on averaging over an accepted period of time; used in forecasting.

opportunity cost. The value of a foregone opportunity that cannot be pursued because resources are taken up by a chosen activity.

peak demand. The highest point of total water usage experienced by a system, measured on an hourly and on a daily basis.

per-capita use. Total use divided by the total population served.

per-capita residential use. Residential use divided by the total population served.

precipitation rate (sprinkling). The surface application rate for landscape watering, usually expressed in inches per hour.

present value. Future expenditures expressed in current dollars by adjusting for a discount rate that accounts for financing costs.

pressure regulator. A post-meter device used to limit water pressure.

price elasticity of demand. A measure of the responsiveness of water usage to changes in price; measured by the percentage change in usage divided by the percentage change in price.

primary treatment. Removing solids and floating matter from wastewater using screening, skimming and sedimentation (settling by gravity).

rationing. Mandatory water-use restrictions sometimes used under drought or other emergency conditions.

raw water. Untreated water.

real dollars. Forecast dollars that are adjusted for inflation.

recycled water. Wastewater that becomes suitable for a specific beneficial use as a result of treatment. Legislation in 1991 legally equates the term recycled water to reclaimed water.

retrofit. Replacement of parts in an existing plumbing fixture or water-using appliance in order to improve its operational efficiency.

revenue-producing water. Water metered and sold.

reuse (water). Beneficial use of treated wastewater.

Safe Drinking Water Act. Federal drinking water quality legislation administered by the USEPA through state primacy agencies.

safe yield. The maximum reliable amount that can be withdrawn from a source without compromising quality or quantity, as defined by hydrological studies; can be based on acceptable withdrawals during a critical supply period or drought with a specific probability of occurrence.

seasonal rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) varies by season of use; higher rates usually are charged in the season of peak demand.

secondary treatment. The biological portion of wastewater treatment which uses the activated sludge process to further clean wastewater after primary treatment. Generally, a level of treatment that produces 85 percent removal efficiencies for biological oxygen demand and suspended solids. Usually carried out through the use of trickling filters or by the activated sludge process.

sensitivity analysis. An analysis of alternative results based on variations in assumptions; a "what if" analysis.

service territory. The geographic area served by a water utility.

source-of-supply. Facilities used to extract and/or store raw water prior to transmission and distribution.

source meter. A meter used to record water withdrawn from a surface water or groundwater source, or purchased from a wholesale supplier.

supply management. Measures deployed by the utility that improve the efficiency of production, transmission, and distribution facilities.

submetering. Metering for units comprising a larger service connection, such as apartments in a multifamily building.

surcharge. A special charge on a water bill used to send customers a specific pricing signal and recover costs associated with a particular activity.

system (water). A series of interconnected conveyance facilities owned and operated by a drinking water supplier; some utilities operate multiple water systems.

take-or-pay. A contract provision obligating a purchaser to pay for a commodity whether or not delivery is taken.

tariff. The schedule of a utility's rates and charges.

tertiary treatment. The treatment of waste water beyond the secondary or biological stage. Normally implies the removal of nutrients, such as phosphorous and nitrogen, and a high percentage of suspended solids.

transfers (water). Exchange of water among willing buyers and sellers.

transmission facilities. Pipes used to transport raw or treated water to distribution facilities.

treated water. Water treated to meet drinking water standards.

unaccounted-for water. The amount of nonaccount water less known or estimated losses and leaks.

uniform rate. A pricing structure for which the dollar amount charged per unit of water (such as dollars per gallon) does not vary with the amount of water usage.

universal metering. Metering of all water-service connections.

unmetered water. Water delivered but not measured for accounting and billing purposes.

user class. See customer class.

variable charge. The portion of a water bill that varies with water usage; also known as a commodity charge.

variable cost. Costs associated with water service that vary with the amount of water produced or sold.

water right. A property right or legal claim to withdraw/divert a specified amount of water in a specified time frame for a beneficial use.

wastewater. Water that has been previously used by a municipality, industry, or agriculture and has suffered a loss of quality as a result.

wastewater treatment plant. A municipal or public service district which provides treatment of collected wastewater.

watershed. A regional land area, defined by topography, soil, and drainage characteristics, within which raw waters collect and replenish supplies.

weather-adjusted. Water demand, revenues, or other variables adjusted to a "normal" weather year; also known as weather normalization.

wholesale water. Water purchased or sold for resale purposes.

Xeriscape. Landscaping that involves seven principles: proper planning and design; soil analysis and improvement; practical turf areas; appropriate plant selection; efficient irrigation; mulching; and appropriate maintenance.

Appendix B

District Notifications and Resolutions for AWMP

RESOLUTION NUMBER 1000

RESOLUTION OF THE BOARD OF DIRECTORS OF CARPINTERIA VALLEY WATER DISTRICT ADOPTING AND IMPLEMENTING THE AGRICULTURAL WATER MANAGEMENT PLAN 2016

WHEREAS the California Agricultural Water Management Planning Act of 2009 (Act) requires agricultural water suppliers to develop and adopt an Agricultural Water Management Plan (AWMP) (California Water Code, Section 10800-10853); and

WHEREAS this AWMP must achieve the requirements of additional state regulations including but not limited to the following: California Water Code, Section 10608.48-10608.64; California Code of Regulations, Title 23, Section 597; and Executive Orders by the Governor of California; and

WHEREAS the Carpinteria Valley Water District is both an agricultural and urban supplier of water providing water to a population of about 16,000 people; and

WHEREAS the AWMP must be updated every five years in the years ending in zero and five. As such, the AWMP is regarded as a guideline subject to revision, with each update incorporating new strategies and requirements in response to new legislation and other changing conditions; and

WHEREAS the AWMP must be adopted, after public review and hearing, and filed with the State of California Water Resources Control Board on approximately February 11, 2016; and

WHEREAS the District has therefore prepared and circulated for public review a draft Agricultural Water Management Plan 2016, and a properly noticed public hearing regarding said AWMP was held by the District Board of Directors on its February 10, 2016 meeting, and

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the Carpinteria Valley Water District as follows:

1. The Agricultural Water Management Plan 2016 is hereby adopted and to be on file at the District;

2. The District General Manager is hereby authorized and directed to file the Agricultural Water Management Plan 2016 with the State of California Water Resources Control Board on approximately February 11, 2016;

3. The District General Manager is hereby authorized and directed to implement the Water Conservation Programs as set forth in the Agricultural Water Management Plan 2016, which includes water shortage contingency analysis and recommendations to the Board regarding necessary procedures, rules, and regulations to carry out effective and equitable water conservation and water recycling programs;

4. In a water shortage, the District General Manager is hereby authorized to bring to the Board for its approval an appropriate declaration of a Water Shortage Emergency according to the Water Shortage Stages and Triggers indicated in the Plan, and implement necessary elements of the Plan;

5. The District General Manager shall recommend to the Board of Directors additional regulations to carry out effective and equitable allocation of water resources during water shortages.

Passed AND Adopted by Carpinteria Valley Water District Board of Directors, State of California, the 23rd day of March 2016 by the following vote:

AYES: Roberts, Van Wingerden and Holcombe
NAYES: None
ABSENT: Orozco and Forde
ABSTAIN: None

APPROVED:

Alonzo E. Orozco

Alonzo Orozco, President

ATTEST:

Charles B. Hamilton

Charles B. Hamilton, Secretary

Notice to Inform you of a Public Hearing about Carpinteria Valley Water District's Agricultural Water Management Plan

Notice is hereby given that a public hearing about the District's Agricultural Water Management Plan (AWMP) will be held by the Board of Directors of the Carpinteria Valley Water District at their regular Board meeting on

March 23, 2016 at 5:30 p.m.
Carpinteria City Hall
5775 Carpinteria Ave., Carpinteria, CA 93013

This Board meeting will include, but not be limited to, discussion on the matter of the District's Agricultural Water Management Plan as per California Water Code Section 10800-10853 and additional state regulations as per California Water Code Section 10608.48 - 10608.64; California Code of Regulations, Title 23, Section 597; and Executive Orders by the Governor of California. All interested persons are invited to attend, participate, and be heard.

The Draft AWMP will be available at the District and on its website, www.CVWD.net. For additional information, please contact District Engineer, Robert McDonald at (805) 684-2816 or Bob@cvwd.net.

Carpinteria Valley Water District

1301 Santa Ynez Avenue • Carpinteria, CA 93013
Phone (805) 684-2816

February 19, 2016

Dear Agricultural Customer,

This letter is to notify you that the District, in compliance with the State Emergency Conservation Regulations is in the midst of preparing its Agricultural Water Management Plan (AWMP). You are being contacted because you are listed as the contact for an agricultural water service account in the District.

A public hearing regarding the Draft AWMP will be held at the regular board meeting on

March 23, 2016 at 5:30 p.m.
Carpinteria City Hall
5775 Carpinteria Ave, Carpinteria, CA. 93013

Agricultural customers are encouraged to review the Draft Plan and attend the public hearing. If you would like to provide comments and input about the Draft AWMP please submit them in writing to the District prior to the close of business on March 23rd 2016. The Draft AWMP is available for viewing at the District office as well as on the District website, www.cvwd.net. For additional information, please feel free to contact me at (805)684-2816 extension 107or Bob@cvwd.net. Thank you for your attention on this matter.

Sincerely,

Robert T. McDonald
Acting General Manager

RTM/rg

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25 MON

noon-2 p.m., **Free One-on-one Computer Coaching**, Carpinteria Library, 5141 Carpinteria Ave., reserve time at 684-4314

1 p.m., **Mah Jongg,** Sandpiper Mobile Village clubhouse, 3950 Via Real, 729-1310

1 p.m., **Bingo**, Veterans Building, 941 Walnut Ave.

6 p.m., **Celebrate Recovery (Hurts, Hangups, Addictions)**, First Baptist Church, 5026 Foothill Rd., 684-3353

26 TUES

10 a.m., **Carpinteria Writers' Group**, Carpinteria Library, 5141 Carpinteria Ave., 684-0369

10 a.m.-noon, **Habitat Restoration of Tar Pits Park,** meet near railroad underpass, 684-2525

1 p.m., **Sandpiper Duplicate Bridge,** monthly games, call for find, 684-0629

7-8 p.m., **Al-Anon Meeting,** Faith Lutheran Church, 1335 Vallecito Place, 331-4817

7 p.m., **Carpinteria Boy Scout Troop 50 meeting,** Scout house behind Carpinteria Community Church, 1111 Vallecito Place

27 WED

7-8 a.m., **Morning Rotary meeting,** Woman's Club, 1059 Vallecito Rd.

10:30 a.m.-12:30 p.m., **Meditation in the Shambhala tradition**, Carpinteria Woman's Club, 1059 Vallecito Road, 861-3666, men and women welcome

1-4 p.m., **Knitting Group,** Veterans Memorial Hall, 941 Walnut Ave., free, 684-8077

1-4 p.m., **Scrabble**, Vista de Santa Barbara Clubhouse, 3100 Via Real, free

3:30-5 p.m., **Veterans stress relief acupuncture**, Hima Healing Center, 4690 Carpinteria Ave., Suite A, free, 684-3912

5:30-7 p.m., **Fighting Back Parent Program**, Canalino School, 1480 Carpinteria Ave., 963-1433 x125 or x132

6 p.m., **Kiwanis Club Meeting**, Veterans Memorial Hall, 941 Walnut Ave., 368-5644

6 p.m., **Sprechen Sie Deutsch? Gathering of German speakers**, Island Brewing Company, 5049 6th Street, tagolfwold@gmail.com

7:30 p.m., **8 Ball Tournament,** Carpinteria & Linden Pub, 4954 Carpinteria Ave.

7:30 p.m., **Vallecito Chapter, Order of the Eastern Star #185 meeting**, Carpinteria Masonic Center, 5427 Carpinteria Ave., 389-3330

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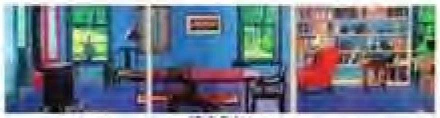
The Draft AWMP will be available at the District and on its website, www.CVWD.net. For additional information, please contact Acting General Manager, Robert McDonald at (805) 684-2816 or Bob@cvwd.net.

Email your event listings to news@coastalview.com

artcetera

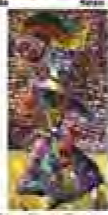

Chris Baker


Arturo Tello


Sean Anderson


Pamela Hill Brelsford


Patricia Houghton Clarke


Stuart Carey


Garrett Speirs


Julie B. Montgomery

Local artists featured at South County Sampler

Arts Fund Santa Barbara has gathered eight Carpinteria artists in its latest exhibition, South County Sampler. The works of artists Sean Anderson, Chris Baker, Stuart Carey, Patricia Houghton Clark, Pamela Brelsford, Julie B. Montgomery, Garrett Speirs and Arturo Tello have been gathered for the show premiering with a public reception on Friday, Feb. 5, from 5 to 8 p.m. at 205-C Santa Barbara Street during the Funk Zone Art Walk. [illegible] The purpose of this [illegible] stated the Arts Fund in a press release. The variety of talented artists provides something for all tastes and is designed to draw [illegible]. For more information about the show, visit artsfundsb.org. The gallery is open Wednesday through Sunday from noon to 5 p.m.

[illegible]

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The Draft AWMP will be available at the District and on its website, www.CVWD.net. For additional information, please contact Acting General Manager, Robert McDonald at (805) 684-2816 or Bob@cvwd.net.

Appendix C

AWMP Worksheets

Worksheet 1. Summary of Coordination, Adoption, and Submittal Activities

Potential Interested Parties	Notified of AWMP Preparation	Requested Copy of Draft	Commented on Draft/Action Taken by Supplier	Notified of Public Meetings	Attended Public Meetings	Copy of Adopted AWMP/ Amendment Sent
Agricultural Customers within Service Area	**2/19/2016**		**X**	**2/19/2016**	**X**	
City of Carpinteria	**2/5/2016**			**X**		**4/22/2016**
City Library						**4/22/2016**
County of Santa Barbara Water Agency	**2/5/2016**			**X**		**4/22/2016**
County of Santa Barbara Agriculture Commissioner	**2/5/2016**			**X**		**4/22/2016**
County of Santa Barbara Planning Department	**2/5/2016**			**X**		
Groundwater Management Entity (CVWD)	**2/5/2016**			**X**	**X**	**4/22/2016**
Santa Barbara County Local Agency Formation						**4/22/2016**
Department of Water Resources						**4/22/2016**
CA State Library						**4/22/2016**
Local Newspaper-Coastal View News	**1/21/2016**			**3/10/2016**		
CVWD Website	**CVWD**			**CVWD**		**CVWD**

Note: Additional rows/columns can be added as applicable.

Worksheet 2. Water Supplier History and Size

Date of Formation	**1941**

Source of Water

Local Surface Water	**x**		
Local Groundwater	**x**		
Wholesaler	**no**		
USBR	**no**		
SWP	**x**		
Service Area Gross Acreage		11,098	
Service Area Irrigated Acreage			3213

Note: Additional rows/columns can be added as applicable.

Worksheet 3. Expected Changes to Service Area

Change to Service Area [Delete non-applicable row(s)]	Estimate of Magnitude	Effect on the Water Supplier
Reduced Service Area Size	**none**	**NA**
Increased Service Area Size	**none**	**NA**
New Governmental Entity	**none**	**NA**
Other [Define/Identify]	**none**	**NA**

Note: Additional rows/columns can be added as applicable.

Worksheet 4. Water Conveyance and Delivery System

System Used	Number of Miles
Unlined Canal	**0**
Lined Canal	**0**
Pipelines	**78.14**
Drains	**0**

Note: Additional rows/columns can be added as applicable.

Worksheet 5. Water Supplier Reservoirs

Number	**3**
Total Capacity (AF)	**46.34**

Worksheet 6. Tailwater/Spill Recovery System

System	Yes/No
District Operated Tailwater/Spill Recovery	**none**
Grower Operated Tailwater/Spill Recovery	**none**

Worksheet 7. Landscape Characteristics

Topography Characteristic	% of the District	Effect on Water Operations and Drainage
[Text]	**[Percent]**	**[Text]**
[Text]	**[Percent]**	**[Text]**

Soil Characteristic/ Classification	% of the District	Effect on Water Operations and Drainage	Percolation Rate (inches/hour)
[Text]	**[Percent]**	**[Text]**	**[Fraction]**
Fine sandy loam	35.74		
Rock outcrop complex	18.42		
Lodo-Sespe complex	14.7		
Sandy loam	6.32		
Todos-Lobo complex	4.04		
Loam	3.75		
Orthents	3.77		
Elder-Soboda complex	2.75		
Loamy sand	2.61		
Xerortherents, cut and fill	2.49		
Clay loam	2.18		
Stony fine sandy loam	1.09		
Aquents, fill areas	0.8		
Sand	0.66		
Riverwash	0.51		
Clay	0.15		
Water	0.03		

Worksheet 8. Summary Climate Characteristics

Climate Characteristic	Value (1)
Average Annual Precipitation (inches) (1)	**18.83**
Annual Minimum Precipitation (inches) (1)	**3.86**
Annual Maximum Precipitation (inches) (1)	**45.2**
Average Annual Minimum Temperature (^{o}F) (2)	**50.2**
Average Annual Maximum Temperature (^{o}F) (2)	**70.8**

Note: Additional rows/columns can be added as applicable.

Notes:

(1) Data combined from Western Region Climate Center, Santa Barbara data set (1894-1948), and County of Santa Barbara, Carpinteria Fire Station data set (1948-2015).

(2) Station data obtained from Western Region Climate Center, Santa Barbara Station (047902), 2015.

Worksheet 9. Detailed Climate Characteristics*

Month/Time	Average Precipitation, Inches (1)	Average Reference Evapotranspiration (Eto), Inches (2)	Average Minimum Temperature, °F (3)	Average Maximum Temperature, °F (3)
January	4.11	1.79	43	64.9
February	4.05	2.32	44.6	65.6
March	3.27	3.57	46.2	66.8
April	1.29	4.63	48.6	69
May	0.41	5.1	51.3	69.9
June	0.09	4.83	54.3	72.4
July	0.02	5.38	57.3	75.9
August	0.06	5.21	57.9	77.1
September	0.29	4.03	56.4	76.7
October	0.7	3.16	52.5	74.4
November	1.61	2.04	46.9	70.9
December	2.94	1.65	43.4	66.4
Average	18.83	43.71	50.2	70.8
Wet Season (4)	17.97	19.16	46.5	68.3
Dry Season (5)	0.87	24.01	55.4	74.3
Extreme Conditions (if applicable) (6)	45.2	NA	20	115
Other [Identify]	NA	NA	NA	NA

Notes:

(1) Data combined from Western Region Climate Center, Santa Barbara data set (1894-1948), and County of Santa Barbara, Carpinteria Fire Station data set (1948-2015).
(2) Data obtained from California Department of Water Resources, CIMIS, Santa Barbara Station (107), 2015.
(3) Data obtained from Western Region Climate Center, Santa Barbara Station (047902), 2015.
(4) October to April
(5) May to September
(6) 1983

Worksheet 10. Supplier Delivery System

Type	Check if Used	Percent of System Supplied
On Demand	X	100
Modified Demand		0
Rotation		0
Other		

Note: Additional rows/columns can be added as applicable.

Worksheet 11. Water Allocation Policy

	(Check if applicable)			Allocation	
Basis of Water Allocation	Flow	Volume	Seasonal Allocations	Normal Year	Percent of Water Deliveries (%)
Area within the service area	NA	NA	NA	0	0
Amount of land owned	NA	NA	NA	0	0
Riparian rights	NA	NA	NA	0	0
Other	NA	NA	NA	0	0

Note: Additional rows/columns can be added as applicable.

Worksheet 12. Actual Lead Times

Operations	Hours/Days
Water orders	**0**
Water shut-off	**0**

Note: Additional rows/columns can be added as applicable.

Worksheet 13. Water Delivery Measurements

Measurement Device	Frequency of Calibration (Months)	Frequency of Maintenance (Months)	Estimated Level of Accuracy (%)
Orifices (meter gates)			
Propeller Meters			
Weirs			
Flumes			
Verturi Meters			
Pump, Run Time			
Pump, KWH			
Positive Displacement (ag.)			**98.5-101.5**

Worksheet 14. Water Rate Basis

Water Charge Basis	Check if Used	Percent of Water Deliveries (%)	Description
Volume of Water Delivered	X	100	
Rate and Duration of Water Delivered			
Acre			
Crop			
Land Assessment			
Other			

Worksheet 15. Rate Structure

Type of Billing	Check if Used	Description
Declining		
Uniform	X	**Agricultural customers; $1.70/HCF**
Increasing Block Rate	X	**Urban Customers; $3.00/HCF; $3.85/HCF/; 4.85/HCF**
Other		

Worksheet 16. Frequency of Billing

Frequency	Check if Used
Weekly	
Biweekly	
Monthly	X
Bimonthly	
Semiannually	
Annually	

Worksheet 17. Decreased Water Supplies Allocations

Allocation Method	Check if used
By crop	
First come first served	
Area in district	
Other	
No specific policy	x

Worksheet 18. Enforcement Methods of Allocation Policies

Enforcement Method	Check if used
Fines	
Water Shut-off	
Other - Price Signals No specific policy	X

Notes:
At this time CVWD does not limit the amount of water a customer can use. The 'allocation' is used to determine the volume of water priced at the lowerst tier of the three-tier rate structure.

Worksheet 19. Representative Year

	Description
Representative year(s) based upon	[include year(s)]
First month of representative year	**Jan-09**
Last month of representative year	**Dec-09**

Notes:

(1) approximates year with average annual precipitation

Worksheet 20. Annual Agricultural Water Use (AF)

Planning Cycle

Source	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Agricultural Water Supplier Delivered						
Surface Water	**1,476**	**1,412**	**1,670**	**2,047**	**1,263**	**422**
Groundwater	**717**	**630**	**586**	**161**	**768**	**1,672**
Other (define)	**0**	**0**	**0**	**0**	**0**	**0**
subtotal	**2,193**	**2,042**	**2,256**	**2,208**	**2,031**	**2,094**
Other Water Supplies Used						
Surface Water	**0**	**0**	**0**	**0**	**0**	**0**
Groundwater (2)	**2,574**	**2,428**	**2,564**	**3,060**	**3,168**	**2,598**
Other (define)	**0**	**0**	**0**	**0**	**0**	**0**
subtotal	**2,574**	**2,428**	**2,564**	**3,060**	**3,168**	**2,598**
Total	4,767	4,470	4,820	5,268	5,199	4,692

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

Notes:
(1) Groundwater pumping on private land and land use forthcoming
(2) Data for 2015 private pumping estimated based on most recent 10-year average (2005-2014).

Worksheet 21. Agricultural Crop Data For 2014

Crop	Total Acreage	Irrigation Method	Planting Month	Harvest Month	ET crop(AF/Ac)	Cultural Practices(AF/Ac)	Leaching Requirement (AF/Ac)	Total Crop Water Needs (AF)
avocado	1,849	[Text]	[Text]	[Text]	1.13	0	0	2,089
lemon	207	[Text]	[Text]	[Text]	0.35	0	0	72
cherimoya/other fruit	185	[Text]	[Text]	[Text]	1.74	0	0	322
covered nursery	370	[Text]	[Text]	[Text]	2.62	0	0	969
field crops	141	[Text]	[Text]	[Text]	0.95	0	0	134
open nursery	415	[Text]	[Text]	[Text]	0.95	0	0	394
TOTAL	3,167	N/A	N/A	N/A	[Fraction]	0	0	3,981

Notes:

District used data for 2009

Worksheet 22. Irrigated Acres

	Planning Cycle					
	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Total Irrigated Acres	**3,286**	**3,288**	**3,293**	**3,293**	**3,136**	**N/A**

Notes:

Notes:
(1) Data available through December 31 2014; 2015 land use forthcoming

Worksheet 23. Multiple Crop Information

Cropping System	Rep. Year - 2009	Planning Cycle 1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Single-Cropped Acres	**3,286**	**3,288**	**3,293**	**3,293**	**3,136**	**N/A**
Inter-Cropping Acres	**[Numerical]**	**[Numerical]**	**[Numerical]**	**[Numerical]**	**[Numerical]**	**[Numerical]**
Double-Cropping Acres	**[Numerical]**	**[Numerical]**	**[Numerical]**	**[Numerical]**	**[Numerical]**	**[Numerical]**

(1) Data available through December 31 2014; 2015 land use forthcoming

Worksheet 24. Environmental Water Uses (AF)

Environmental Resources	Rep. Year - 2009	Planning Cycle 1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
From Supplier		**0**	**0**	**0**	**0**	**0**	**0**
Vernal pools		**0**	**0**	**0**	**0**	**0**	**0**
Streams		**0**	**0**	**0**	**0**	**0**	**0**
Lakes or reservoirs		**0**	**0**	**0**	**0**	**0**	**0**
Riparian Vegetation		**0**	**0**	**0**	**0**	**0**	**0**
Other [Identify]		**0**	**0**	**0**	**0**	**0**	**0**
TOTAL		**0**	**0**	**0**	**0**	**0**	**0**
All Sources		**0**	**0**	**0**	**0**	**0**	**0**
Vernal pools		**0**	**0**	**0**	**0**	**0**	**0**
Streams		**0**	**0**	**0**	**0**	**0**	**0**
Lakes or reservoirs		**0**	**0**	**0**	**0**	**0**	**0**
Riparian Vegetation		**0**	**0**	**0**	**0**	**0**	**0**
Other [Identify]		**0**	**0**	**0**	**0**	**0**	**0**
TOTAL		**0**	**0**	**0**	**0**	**0**	**0**

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

Worksheet 25. Recreational Water Uses (AF)

Planning Cycle

Recreational Facility	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Public Parks	**41**	**23**	**29**	**36**	**30**	**24**
City Pool	**3**	**4**	**4**	**4**	**3**	**2**
SB County Polo	**9**	**8**	**12**	**14**	**11**	**2**
Golf Range**	**15**	**12**	**12**	**13**	**11**	**11**

*** site has private well**

*** estimate (shared meter with agricultural customer)**

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

(1) Data available through December 31 2015

Worksheet 26. Municipal/Industrial Water Uses (AF)

Planning Cycle

Municipal/ Industrial Entity	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Municipal (1)						
	2,037	**1,916**	**2,193**	**2,076**	**1,650**	**1,553**
Industrial (2)						
	94	**80**	**91**	**87**	**80**	**66**
TOTAL	**2,131**	**1,996**	**2,284**	**2,163**	**1,730**	**1,619**

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

(1) Includes all residential, commercial, institutional, and landscape water uses

(2) Includes all industrial water uses.

Worksheet 27. Groundwater Recharge Water Uses (AF)

Planning Cycle

Location/ Groundwater Basin	Method of Recharge	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Commitments/Dedicated							
	NA	0	0	0	0	0	0
	NA	0	0	0	0	0	0
	NA	0	0	0	0	0	0
Voluntary/Opportunistic							
	NA	0	0	0	0	0	0
	NA	0	0	0	0	0	0
	NA	0	0	0	0	0	0
TOTAL		0	0	0	0	0	0

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

Worksheet 28. Transfers and Exchanges Water Uses

From What Agency	To What Agency	Type (Ag to M&I, M&I to Ag, or Ag to Ag)	Volume (AF) (2)
2009			
CVWD	**COMB Members**	**AG / M&I to M&I**	**600**
CVWD	**ID#I**	**AG / M&I to AG / M&I**	**303**
1st Year - 2011			
CVWD	**COMB Members**	**AG / M&I to M&I**	**800**
CVWD	**ID#I**	**AG / M&I to AG / M&I**	**501**
2nd Year - 2012			
CVWD	**ID#I**	**AG / M&I to AG / M&I**	**433**
3rd Year - 2013			
CVWD	**ID#I**	**AG / M&I to AG / M&I**	**362**
4th Year - 2014			
CVWD	**ID#I**	**AG / M&I to AG / M&I**	**130**
5th Year - 2015 (1)			
CVWD	**ID#I**	**AG / M&I to AG / M&I**	**256**

Notes:
Per Executive Order B-29-15, report water supplies and demands for 2013, 2014, and 2015 to the extent data is available.
(1) Data available through December 31 2015
(2) Water exchanged on acre-foot for acre-foot basis. No net loss of water within District.

Worksheet 29. Other Water Uses (AF)

		Planning Cycle					
Water Use	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)	
Temporary / Construction meters	**3**	**15**	**14**	**3**	**8**	**2**	
TOTAL	**3**	**15**	**14**	**3**	**8**	**2**	

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

Worksheet 30. Surface Water Supplies (AF)

Source	Diversion Restriction	Rep. Year - 2009	Planning Cycle 1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)	Anticipated Changes
Pre-1914 water rights	NA	0	0	0	0	0	0	none
CVP class I water contract	NA	0	0	0	0	0	0	none
SWP water contract	2,200 AF	0	0	0	474	761	476	none
Other imported water surface water	NA	0	0	0	0	0	0	none
Local surface water - Lake Cachuma	2,813 AF	2,533	2,172	2,923	3,697	2,198	468	(2)
Upslope drain water	NA	0	0	0	0	0	0	none
Transfers /Exchanges	SWP / ID# 1	303	501	433	362	130	246	none
TOTAL		2,836	2,673	3,356	4,533	3,089	1,190	

Notes:

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

(1) Data available through December 31 2015
(2) Potential future reduction; undetermined amount of reduction at this time.

Worksheet 31. Restrictions on Water Sources

Source	Restrictions*	Name of Agency Imposing Restrictions	Operational Constraints
Lake Cachuma	Amount of Water available	USBR	Yield of Cachuma Project limited to level below scheduled entitlement
SWP	Amount of Water available	DWR	SWP estimates 58 percent average delivery in normal year (DWR, 2013)

Notes:

*Examples of possible restrictions are amount of water supplied by DWR, USBR; environmental laws.

Worksheet 32. Groundwater Basins

Basin Name	Size(Sq. Mi.)	Usable Capacity(AF) (1)	Safe Yield(AF/Yr)
Carpinteria Groundwater Basin	**12**	**39,000**	**4,000**

Note:
(1) Total capacity of Basin is estimated at 700,000 AF.

Worksheet 33. Groundwater Management Plan

Written By **Carpinteria Valley Water District**

Year **1996**

Worksheet 34. Groundwater Supplies (AF)

Groundwater Basin	Diversion Restriction	Planning Cycle Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015	Anticipated Changes
CVWD Direct Pumping	(1)	1,488	1,365	1,174	312	1,434	2,943	(1)
Private Pumping (2)	(1)	2,574	2,428	2,564	3,060	3,168	2,598	(1)
TOTAL		4,062	3,793	3,738	3,372	4,602	5,541	

Notes:

(1) Estimated Basin safe-yield is approximately 4,000 AFY. CVWD anticipates that pumping would be increased up to the operational yield to offset demands; conservative estimate of long term average for CVWD pumping is approximately 1,700 AFY which is consistent with the basin safe yield

(2) Data for 2015 private pumping estimated based on most recent 10-year average (2005-2014).

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

Worksheet 35. Drainage Discharge (AF)

Surface/Subsurface Drainage Path	Planning Cycle						End Use	Inside/ Outside Service Area
	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)		
NA	0	0	0	0	0	0	NA	NA
NA	0	0	0	0	0	0	NA	NA
NA	0	0	0	0	0	0	NA	NA
NA	0	0	0	0	0	0	NA	NA
NA	0	0	0	0	0	0	NA	NA

Note:

Worksheet 36a. Surface Water Supply Quality**

			Planning Cycle				
Parameter	Units	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
TDS	(mg/L)	651	608	618	631	616	
Se		N/M	N/M	N/M	N/M	N/M	
B	(mg/L)	0.38	0.39	0.44	0.35	0.35	
Mo	(µg/L)	N/M	N/M	N/M	N/M	7.1	
As	(µg/L)	1.3	0.6	1.5	2.1	1.3	
Na	(mg/L)	45	44	47	48	55.7	
Cl	(mg/L)	22.2	18	18.7	18.7	31.6	
Pesticide: Diameth	(µg/L)	N/M	NA	NA	N/M	N/M	
Herbicide		N/M	N/M	N/M	N/M	N/M	
Fertilizer(NO3)	(mg/L)	0.37	NA	NA	NA	NA	

Notes:

NA	Not Applicable
ND	Not Detected
N/M	Not Measured as part of District Water Quality Reporting

Worksheet 36b. Groundwater Supply Quality**

			Planning Cycle				
Parameter	Units	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
TDS	(mg/L)	570	515	570	563	563	
Se		N/M	N/M	N/M	N/M	N/M	
B	(mg/L)	0.1	0.1	0.05	0.033	0.05	
Mo	(µg/L)	N/M	N/M	N/M	N/M	NA	
As	(µg/L)	ND	ND	ND	ND	ND	
Na	(mg/L)	50	48	48	49	49	
Cl	(mg/L)	39	30	33	33	33	
Pesticide: Diamethoate 60-51-		N/M	ND	ND	N/M	N/M	
Herbicide		N/M	N/M	N/M	N/M	N/M	
Fertilizer(NO3)	(mg/L)	17.83	10.6	10.5	8.5	8.75	

Notes:

NA	Not Applicable
ND	Not Detected
N/M	Not Measured as part of District Water Quality Reporting

Worksheet 37. Drainage Reuse Effects

Drainage Reuse Limitations (Check)

Analyte	Detected (Check)	Increased Leaching	Blending Supplies	Restricted Area of Use	Restricted Crops	Other
TDS	NA	NA	NA	NA	NA	NA
Se	NA	NA	NA	NA	NA	NA
B	NA	NA	NA	NA	NA	NA
Mo	NA	NA	NA	NA	NA	NA
As	NA	NA	NA	NA	NA	NA
Na	NA	NA	NA	NA	NA	NA
Cl	NA	NA	NA	NA	NA	NA
Pesticide	NA	NA	NA	NA	NA	NA
Herbicide	NA	NA	NA	NA	NA	NA
Fertilizer(NO3)	NA	NA	NA	NA	NA	NA
Other	NA	NA	NA	NA	NA	NA

Note:

Worksheet 38. Water Quality Monitoring Practices

Water Source	Monitoring Location	Measurement/ Monitoring Method or Practice	Frequency
[Text]	**[Text]**	**[Text]**	**[Numerical]**

See District AWMP Appendix K.

Worksheet 39. Water Quality Monitoring Programs for Surface/Sub-Surface Drainage

Monitoring Program	Analyses Performed	Frequency of Analysis
none	**NA**	**NA**

Note: Additional rows/columns can be added as applicable.

Worksheet 40. Surface and Other Water Supplies For 2009 (AF)

Source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CVP Class 1 Contracts	0	0	0	0	0	0	0	0	0	0	0	0	0
Pre-1914 Rights	0	0	0	0	0	0	0	0	0	0	0	0	0
SWP	0	0	0	0	0	0	0	0	0	0	0		0
Local Surface Water	106	49	118	204	281	224	390	392	268	231	202	69	2,533
Upslope Drain Water	0	0	0	0	0	0	0	0	0	0	0	0	0
Transfers & Exchanges	5	6	13	12	31	47	59	42	48	24	8	8	303
Recycled Water	0	0	0	0	0	0	0	0	0	0	0	0	0
Other [Identify]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	111	55	131	216	312	271	449	434	316	255	210	77	2,836

Notes:

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

Worksheet 41. Groundwater Supplies Summary For 2009 (AF)

	Pumped by the Water Supplier			Pumped within Service Area by Customers			
Month	Basin 1	Basin 2	Basin 3	Basin 1	Basin 2	Basin 3	TOTAL
January	**128**	**NA**	**NA**	**110**	**NA**	**NA**	**238**
February	**142**	**NA**	**NA**	**105**	**NA**	**NA**	**247**
March	**108**	**NA**	**NA**	**119**	**NA**	**NA**	**227**
April	**159**	**NA**	**NA**	**220**	**NA**	**NA**	**379**
May	**159**	**NA**	**NA**	**306**	**NA**	**NA**	**465**
June	**150**	**NA**	**NA**	**236**	**NA**	**NA**	**386**
July	**57**	**NA**	**NA**	**363**	**NA**	**NA**	**420**
August	**68**	**NA**	**NA**	**288**	**NA**	**NA**	**356**
September	**162**	**NA**	**NA**	**340**	**NA**	**NA**	**502**
October	**98**	**NA**	**NA**	**206**	**NA**	**NA**	**304**
November	**131**	**NA**	**NA**	**175**	**NA**	**NA**	**306**
December	**126**	**NA**	**NA**	**106**	**NA**	**NA**	**232**
TOTAL	**1,488**	**NA**	**NA**	**2,574**	**NA**	**NA**	**4,062**

Notes:

Worksheet 42. Effective Precipitation Summary (AF)

Month	Representative Year - 2009 (1)	1st Year - 2011 (1)	2nd Year - 2012 (1)	3rd Year - 2013 (1)	4th Year - 2014 (1)	5th Year - 2015 (1)
January	404.15	342.65	1,344.70	945.18	0.00	1,211.53
February	3,726.60	2,948.82	0.00	0.00	1,970.35	369.01
March	597.44	3,717.82	1,833.01	571.08	1,386.32	298.72
April	0.00	0.00	2,245.02	193.29	404.15	210.86
May	0.00	395.36	0.00	246.00	0.00	0.00
June	0.00	289.93	0.00	0.00	0.00	597.44
July	0.00	0.00	0.00	0.00	0.00	0.00
August	0.00	0.00	0.00	0.00	0.00	0.00
September	0.00	0.00	0.00	0.00	0.00	0.00
October	2,756.46	903.56	0.00	0.00	0.00	246.00
November	0.00	911.88	1,878.79	439.29	632.58	0.00
December	2,298.43	237.22	1,932.20	0.00	2,618.19	0.00
TOTAL	9,783.08	9,747.25	9,233.73	2,394.85	7,011.60	2,933.56

Notes:

(1) Effective precipitation values based on formula by Stramm, Gilbert, USBR, 1967.

Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

Worksheet 43. Applied Water (AF)

Planning Cycle

	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Applied Water (from Worksheet 20) (1)	**2,193**	**2,042**	**2,256**	**2,208**	**2,031**	**2,094**

Note:

(1) Total only includes surface water and ground water delivered to agricultural customers by CVWD.

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

Worksheet 44. Quantify Water Use (AF)

Water Use		Rep. Year - 2009	Planning Cycle 1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015
Crop Water Use (1)	(from Worksheet 21)	**4,767**	**4,470**	**4,820**	**5,268**	**5,199**	**4,692**
1	Crop Evapotranspiration	**0**	**0**	**0**	**0**	**0**	**0**
2	Leaching	**0**	**0**	**0**	**0**	**0**	**0**
3	Cultural practices	**0**	**0**	**0**	**0**	**0**	**0**
Conveyance & Storage System (2)		**259**	**358**	**350**	**390**	**436**	**413**
4	Conveyance seepage	**0**	**0**	**0**	**0**	**0**	**0**
5	Conveyance evaporation	**0**	**0**	**0**	**0**	**0**	**0**
6	Conveyance operational spills	**0**	**0**	**0**	**0**	**0**	**0**
7	Reservoir evaporation	**0**	**0**	**0**	**0**	**0**	**0**
8	Reservoir seepage	**0**	**0**	**0**	**0**	**0**	**0**
Environmental Use (Consumptive)							
9	Environmental use – wetlands (from Worksheet 24)	**0**	**0**	**0**	**0**	**0**	**0**
10	Environmental use – Other (from Worksheet 24)	**0**	**0**	**0**	**0**	**0**	**0**
11	Riparian vegetation (from Worksheet 24)	**0**	**0**	**0**	**0**	**0**	**0**
12	Recreational use (from Worksheet 25)	**0**	**0**	**0**	**0**	**0**	**0**
Municipal and Industrial							
13	Municipal (from Worksheet 26)	**2,037**	**1,916**	**2,193**	**2,076**	**1,650**	**1,553**
14	Industrial (from Worksheet 26)	**94**	**80**	**91**	**87**	**80**	**66**
Outside the District (3)							
15	Transfers or Exchanges out of the service area (from Worksheet 28)	**0**	**0**	**0**	**0**	**0**	**0**
Conjunctive Use							
16	Groundwater recharge (from Worksheet 27)	**0**	**0**	**0**	**0**	**0**	**0**
Other	(from Worksheet 29)	**0**	**0**	**0**	**0**	**0**	**0**
Total		**7,157**	**6,824**	**7,454**	**7,821**	**7,365**	**6,724**

Notes:

Per Executive Order B-29-15, report water demands for 2013, 2014, and 2015 to the extent data is available.

(1) Includes District pumping and private pumping.

(2) Calculated

(3) District experiences no net loss of water via exchanges.

Worksheet 45. Quantify Water Leaving the District (AF)

		Planning Cycle					
		Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015
1	Surface drain water leaving the service area	**0**	**0**	**0**	**0**	**0**	**0**
2	Subsurface drain water leaving the service area	**0**	**0**	**0**	**0**	**0**	**0**
Subtotal		**0**	**0**	**0**	**0**	**0**	**0**

Notes:

Worksheet 46. Irrecoverable Water Losses* (AF)

	Planning Cycle					
	Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
Flows to saline sink	**0**	**0**	**0**	**0**	**0**	**0**
Flows to perched water table	**0**	**0**	**0**	**0**	**0**	**0**
System Losses (calculated)	**259**	**358**	**350**	**390**	**436**	**413**
Subtotal	**259**	**358**	**350**	**390**	**436**	**413**

Notes:

Worksheet 47. Quantify Water Supplies (AF)

	Water Supplies	Rep. Year - 2009	Planning Cycle 1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
1	Surface Water* (summary total from Worksheet 40)	**2,836**	**2,673**	**3,356**	**4,533**	**3,089**	**1,190**
2	Groundwater (summary total from Worksheet 41)	**4,062**	**3,793**	**3,738**	**3,372**	**4,602**	**5,541**
3	Annual Effective Precipitation (summary total from Worksheet 42)	**9,783**	**9,747**	**9,234**	**2,395**	**7,012**	**2,934**
4	Water purchases	**0**	**0**	**0**	**0**	**0**	**0**
Subtotal		**16,681**	**16,213**	**16,328**	**10,300**	**14,703**	**9,665**

Notes:

*Subtract water purchases if included in totals; water purchases will be included on line 4.
Per Executive Order B-29-15, report water supplies for 2013, 2014, and 2015 to the extent data is available.

Worksheet 48. Budget Summary (AF)

	Water Accounting	Planning Cycle Rep. Year - 2009	1st Year - 2011	2nd Year - 2012	3rd Year - 2013	4th Year - 2014	5th Year - 2015 (1)
1	Subtotal of Water Supplies (Worksheet 47)	**16,681**	**16,213**	**16,328**	**10,300**	**14,703**	**9,665**
2	Subtotal of Water Uses (Worksheet 44)	**7,157**	**6,824**	**7,454**	**7,821**	**7,365**	**6,724**
3	Drain Water Leaving Service Area (Worksheet 45)	**0**	**0**	**0**	**0**	**0**	**0**
	Excess Deep Percolation (1)	**9,524**	**9,389**	**8,874**	**2,479**	**7,338**	**2,941**

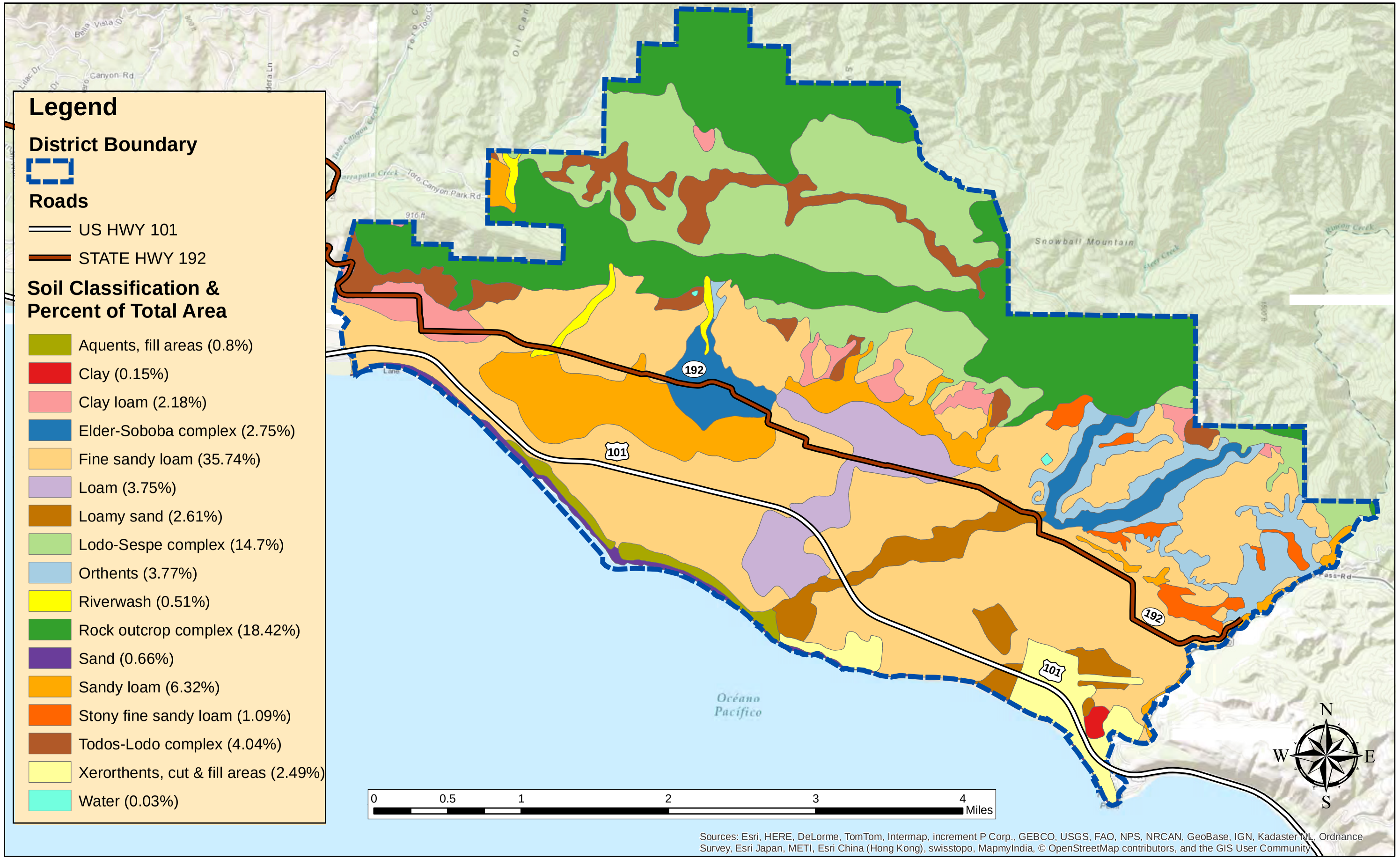
Notes:
(1) General estimate as calculated from sum of lines 2 and 3, then subtracted from line 1.

Per Executive Order B-29-15, report water supplies and demands for 2013, 2014, and 2015 to the extent data is available.

Appendix D

Soils Map

USDA Natural Resources Conservation Service - Soil Classifications



March 2016

Created by CVWD Engineering

Appendix E

District Water Rates and Charges

FY 2015-16
Water Rates and Charges

TABLE I
2015-16
Water Rates (unit cost)

	Basic UNIT	Pressure Zone I UNIT	Pressure Zone II UNIT
Residential, Commercial, Industrial & Public Authority:			
BASE[1]	$3.40	$3.66	$3.84
MID LEVEL	$4.55	$4.81	$4.99
PEAK	$6.50	$6.76	$6.94
Agricultural / Irrigation:			
TIER 1 [2]	$1.92	$2.18	$2.36
TIER 2	$2.25	$2.51	$2.69
TIER 3	$2.50	$2.76	$2.94
Residential Equivalency Fee:	$24.66	per residence per month	

1 unit = 100 cubic feet (HCF) or 748 gallons
Pressure Zone I = Connections served by Gobernador Reservoir
Pressure Zone II = Connections served by Shepard Mesa Tank

TABLE II
Monthly Basic and State Water Project Charges
(Master-meter Residential Accounts see note 3 below)

Meter Size:	***2015-16***			
	Basic	SWP[3]	Drought[4]	Total
5/8"	$5.63	$30.00	$2.25	$37.88
3/4"	$5.63	$30.00	$2.25	$37.88
1"	$9.38	$50.00	$3.75	$63.13
11/2"	$18.75	$100.00	$7.50	$126.25
2"	$30.00	$160.00	$12.00	$202.00
3"	$60.00	$320.00	$24.00	$404.00
4"	$93.75	$500.00	$37.50	$631.25
6"	$187.50	$1,000.00	$75.00	$1,262.50

TABLE III
Monthly Capital Improvement Program (CIP) Charge and Drought Surcharge[4]

CIP			Drought Surcharge		
2015-16			***2015-16***		
Rate:	$2.75	per HCF	Rate:	$0.40	per HCF
Minimum	$16.50	6 HCF	Minimum	$2.40	6 HCF
Maximum	$275.00	100 HCF	Maximum	$40.00	100 HCF
Agriculture	$30.25	per res.		$4.40	per res.

The CIP rate and Drought Surcharge are multiplied by the 5-year monthly average water consumption by account. The MINIMUM monthly charge is 6 HCF per dwelling unit or account. The MAXIMUM monthly charge is 100 HCF per dwelling unit or account.

TABLE IV
Monthly Service Charges - Fire Accounts

Service Size:	***2015-16***			
	Basic	SWP[3]	Drought[4]	Total
2"	$3.75	$20.00	$1.50	$25.25
3"	$8.44	$45.00	$3.38	$56.82
4"	$15.00	$80.00	$6.00	$101.00
6"	$33.75	$180.00	$13.50	$227.25
8"	$60.00	$320.00	$24.00	$404.00
10"	$93.75	$500.00	$37.50	$631.25

[1] BASE = 5 year Dec. to Mar. water consumption by account / dwelling unit; 6 HCF minimum
MID LEVEL = 20% of BASE
PEAK = all consumption in excess of BASE + MID LEVEL

[2] Tier 1 = 100% of 5-year average monthly consumption or pre-defined water need based on land use activity.
Tier 2 = 20% of Tier 1
Tier 3 = all consumption in excess of Tier 1 + Tier 2

[3] SWP = State Water Project // All master-metered accounts will pay a Dwelling Equivalency Fee (DEQ) equalizing the per dwelling unit SWP and Drought-related service charges to the level of a 3/4" meter

[4] The Drought Surcharges are temporary service charges established to pay for additional District expenses related to the ongoing drought emergency conditions.

Appendix F

District's Emergency Response Plan

Carpinteria Valley Water District
Water System Emergency Response Plan

Prepared by:

Carpinteria Valley Water District

January 4, 2005

Name:
Copy Number:

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Appendices

A Action Plans
B System and Facility Information
C Emergency Phone Lists
D Public Notices and Press Releases
E California Statewide Emergency Notification Plan
F Incident Reports and Forms
G ERP Certification Form

Acronyms and Abbreviations

AP	action plan
ASDWA	Association of State Drinking Water Administrators
ATSDR	Agency for Toxic Substances and Disease Registry
AWWA	American Water Works Association
BSL	biosafety lab
BWO	Boil Water Order
CAMAL Net	California Mutual Aid Laboratory Network
CDC	Center for Disease Control
CDHS	California Department of Health Services
CST	Civilian Support Team
DHS	Department of Homeland Security
DWP	Drinking Water Program
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
EWQSK	Emergency Water Quality Sampling Kit
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
GM	General Manager
gpm	gallons per minute
HAZMAT	hazardous materials
HHS	Health and Human Services
ICS	Incident Command System
LD	Laboratory Director
LEPC	Local Emergency Planning Committees
LRN	Laboratory Response Network
MDL	Microbial Disease Laboratory

MSDS	Material Safety Data Sheet
MWDSC	Metropolitan Water District of Southern California
NRWA	National Rural Water Association
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Administration
PIO	Public Information Officer
PWS	Public Water System
RMP	Risk Management Plan
SCADA	Supervisory Control and Data Acquisition
SD	Security Director
SEMS	Standardized Emergency Management System
SRLB	Sanitation and Radiation Laboratories Branch
UWA	Unsafe Water Alert
VA	vulnerability assessment
WMD	Weapons of Mass Destruction
WTP	water treatment plant
WUERM	Water Utility Emergency Response Manager
WUOCM	Water Utility Emergency Operations Center Manager

1.0 Introduction

This section presents the purpose, goals, requirements, access control, and plan overview of the Emergency Response Plan (ERP) for CVWD. *Note that the ERP Activation process is described in Section 5.0.*

1.1 Purpose

The purpose of this ERP is to provide CVWD with a standardized response and recovery protocol to prevent, minimize, and mitigate injury and damage resulting from emergencies or disasters of man-made or natural origin.

The ERP also describes how CVWD will respond to potential threats or actual terrorist scenarios identified in the vulnerability assessment (VA), as well as additional emergency response situations. Included in this ERP are specific action plans (APs) that will be used to respond to events and incidents.

1.2 Goals

The goals of this ERP are to:

- Rapidly restore water service after an emergency.
- Ensure adequate water supply for fire suppression.
- Minimize water system damage.
- Minimize impact and loss to customers.
- Minimize negative impacts on public health and employee safety.
- Provide emergency public information concerning customer service.

1.3 Requirement

This ERP has been designed to comply with Section 1433(b) of the Safe Drinking Water Act (SDWA) as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188, Title IV – Drinking Water Security and Safety), California Government Code Section 8607.2 – Public Water System Plans, California Health and Safety Code, Sections 116460, 116555 and 116750, and California Waterworks Standards, Section 64560.

CVWD has provided the required certification to the United States Environmental Protection Agency (USEPA) that this emergency response plan incorporates the results of the VA completed for the system and includes plans, procedures, and identification of equipment that can be implemented or used in the event of a terrorist attack on the water system. CVWD has also provided a copy of the ERP to the local California Department of Health Services (CDHS) Drinking Water Field Operations Branch District Office.

Whenever the ERP is changed or updated, a revised copy, or the specific revised documents, will be sent to the CDHS District Office.

Guidance from the following documents is incorporated in this ERP:

- "California Emergency Response Plan Guidance" (CDHS, Version 1.0, December 2003).
- "Guidance for Water Utility Response, Recovery & Remediation Actions For Man-Made And / Or Technological Emergencies" (USEPA 810-R-02-001).
- "Large Water System Emergency Response Plan Outline: Guidance to Assist Community Water Systems in Complying with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002" (USEPA 810-F-03-007, July 2003).
- "Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents" (USEPA-817-D-03-001 to 007, Interim Final – December 2003).
- "Small and Medium Water System Emergency Response Plan Guidance to Assist Community Water Systems in Complying with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002."
- "Emergency Planning Guidance Public and Private Water Utilities." March 1999. California Office of Emergency Services (OES) and California Utilities Emergency Association.

1.4 Access Control

Because of the sensitive nature of the information contained in this ERP, an access control protocol has been established under the direction of the CVWD Security Director (SD).

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1.5 Plan Overview

This ERP is organized into eight sections and appendices, as described below:

Section 1.0: Introduction: Describes the purpose, goals, regulatory requirements, access control protocol, and overall organization of the ERP.

Section 2.0: Emergency Planning Process Information: Describes CVWD's emergency planning partnerships, mutual aid agreements, emergency response policies, procedures and documents, and summarizes the scenarios from the VA that are addressed in the ERP.

Section 3.0: Water System Information: Provides specific information about CVWD's water system, identifies emergency resources, and identifies alternate and backup water sources.

Section 4.0: SEMS/ICS Integration and Organization: Presents emergency response chain-of-command and information and describes how CVWD will use the Standardized Emergency Management System/Incident Command System (SEMS/ICS) system to manage emergencies.

Section 5.0: Concept of Operations: Describes CVWD's polices, procedures, and plans to mitigate emergency incidents, including how threats may be received into the utility, ERP activation, response capabilities, personnel safety provisions, and protective action protocols.

Section 6.0: Communications Procedures: Describes CVWD's chain of command and provides notification procedures and contact lists for internal and external contacts, including public notice procedures.

Section 7.0: Water Quality Sampling: Includes information and procedures regarding water quality sampling procedures and equipment. Also provides information on available laboratory resources in California.

Section 8.0: Emergency Response, Recovery, and Termination: Describes the three phases of an emergency: response, recovery, and termination. General actions and guidance is provided for each phase, and these procedures should be used in conjunction with the specific action plans in Appendix A.

Section 9.0: Emergency Response Plan Approval, Update, Training, and Exercises: Describes the emergency response training program and the ERP review, approval, and update processes.

Section 10.0: References and Links

Appendices:
A. Action Plans
B. System and Facility Information
C. Emergency Phone Lists
D. Public Notices and Press Releases
E. CA Statewide Emergency Notification Plan
F. Incident Reports and Forms
G. ERP Certification Form

2.0 Emergency Planning Process Information

This section presents the CVWD planning partnerships and discusses the relationship between this ERP and other CVWD related plans.

2.1 General Information

2.1.1 Planning Partnerships

CVWD has established emergency planning partnerships with other parties who have agreed to help the utility in an emergency situation. A list of these agencies and a brief description of their emergency capabilities is provided below.

Agency	Capability
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Agency	Capability
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

In the event of an attack on the water system, some or all of these agencies, as well as other state and federal agencies, may be called upon for assistance. A complete list of emergency response agencies with their telephone contact numbers is provided in Section 6.3.3.

2.1.2 Mutual Aid Agreements

In addition to the partnerships outlined above, CVWD has established mutual aid agreements with the following organizations:

Organization	Nature of Agreement
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

2.1.3 Relationship Between ERP and Other Plans

This ERP is intended to assist CVWD's managers and staff in responding to emergencies and malevolent acts (i.e., attacks) that affect the water system. The ERP is supplemented and referenced by the plans, procedures, policies and agreements shown in the table below

Document	Relationship to ERP
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]

Document	Relationship to ERP
	[redacted]
[redacted]	[redacted]

2.2 Disaster Events or Scenarios

Specific APs have been developed to address each of the high-risk threat scenarios identified in CVWD's vulnerability assessment. APs are tailored ERP actions that address specific major events. For security reasons, the procedures outlined in these documents are intentionally general in nature, omitting confidential details and effected assets. The specific APs are attached in the appendices following this main ERP document.

2.2.1 Natural Disasters

CVWD has considered the threats posed by natural events and weather-related phenomena. Specific AP(s) have been developed to guide a timely and prudent response should such threats be realized. These detailed APs are found in the attached appendices. Considered natural disasters include:

Natural Disaster	Primary AP No.	Secondary AP No.
[redacted]	[redacted]	
[redacted]	[redacted]	
[redacted]	[redacted]	
[redacted]	[redacted]	
[redacted]	[redacted]	

2.2.2 Events Caused by Human Intervention (Man-made Threats)

CVWD has developed specific AP documents, found in the appendices, to respond to the following threats that were identified in the vulnerability analysis:

Event / Threat	Primary AP No.	Secondary AP No.
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	
[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]

3.0 Water System Information

This section presents the core elements of the CVWD ERP, including the system-specific information, roles and responsibilities in an emergency, communication procedures, personnel safety, identification of alternate water sources, emergency and chemical supplies, and property protection.

3.1 System Specific Information

This section contains the CVWD Public Water System (PWS) identification and emergency contacts, as well as basic information to describe the water sytsem.

System Identification Number	4210001	
System Name and Address	Carpinteria Valley Water District 1301 Santa Ynez Ave Carpinteria, CA 93013	
Directions to District Office	Located at the corner of Santa Ynez Avenue and Via Real Ave.	
Number of Service Connections/Population Served[1]	4,000 service connections	18, 500 population[1]
Type of Source	[redacted]	[redacted]
Interconnections and Purchased Water Agreements	[redacted]	[redacted]
Type of Treatment Provided	[redacted]	
Number of Storage Tanks	[redacted]	[redacted]
Average Water Demand	[redacted]	
Maximum and Peak Water Demand	[redacted]	[redacted]
Emergency Contact Person(s)	Charles Hamilton General Manager	[redacted]
	Bob Mc Donald District Engineer	[redacted]

3.2 General System Map/Service Area Map

The following maps and drawings of the CVWD's system are provided below (***or in Appendix B***) for reference.

3.2.1.1 Distribution System Map

See Appendix B

3.2.1.2 Pressure Boundary Map

See Appendix B

3.2.1.3 Site Plans and Facility "As-Built" Engineering Drawings

[redacted]

3.2.1.4 Operating Procedures and System Descriptions including Backup Systems

[redacted]

3.2.1.5 SCADA System/Process Control Systems Operations

A top level schematic of the SCADA system has been included in this document and is provided for reference, as follows:

Scada diagram here

[redacted]

3.3 Critical System Components

Included below is an outline of system components deemed critical to operation of CVWD. Information on the location of the asset is included, as well as descriptive information such as entry restrictions or special equipment or tool needs.

Asset	Location	Description
[redacted]		

Asset	Location	Description
[redacted]		

3.4 Identification of Alternate Water Sources

3.4.1 Alternate Raw Water Sources

[redacted]

Each of these raw water services can supplement the water supply if the other sources are compromised.

3.4.2 Interconnects and Agreements with Other Utilities

[redacted]

3.4.3 Water Sources for Short-term Outages

Possible alternate water supply options for short-term outages include:

Short-term water supply options

[redacted]

Additional water supply equipment is available from:

Emergency water supply equipment sources

[redacted]

3.5 Emergency Water Supply calculations

3.5.1 Amount of Water Needed for Various Durations

Typical residential water usage in the United States is on the order of 300 to 500 gallons per residence per day, or 100 to 150 gallons per capita per day. Although these amounts can typically be significantly reduced during crisis situations, CVWD has found it useful to develop an estimate for the quantity of supplemental water required for a number of potential outage scenarios. These estimates are as follows:

Outage Period	Number of Customers (Service Connections) Affected	Quantity Needed
1 hour	[redacted]	[redacted]
12 hours	[redacted]	[redacted]
1 day	[redacted]	[redacted]
2 days	[redacted]	[redacted]
1 week	[redacted]	[redacted]

3.5.2 Estimated Emergency Supply of Water

CVWD has estimated the amount of water storage available in the system under an emergency situation according to the following formula:

Emergency supply of water = (amount of storage + backup/emergency supply) / (system demand)

Calculations for CVWD: [redacted]

[redacted]

3.6 Emergency Equipment and Supplies

The equipment and chemical supplies that are arranged to respond to incidents are described in this section. In addition, the individual APs have specific equipment requirements.

3.6.1 Facility Emergency Equipment List

CVWD has identified additional sources of operational equipment and repair parts in excess of normal usage that can be used in the event of an emergency situation. The decision regarding what type and quantity of additional equipment to have available is based on the results of the specific scenarios and critical assets identified in CVWD's vulnerability assessment.

A list of equipment sources, including vendors, chemical suppliers, service contractors, and the equipment, materials and services that they provide is provided below. CVWD also has a mutual aid agreement with several neighboring utilities and local businesses (see Section 2.1.2).

Equipment/Supply Description	Location	Specific Function & Capability	Responsible Person/Title	Telephone Number	Inventory/Restocking Frequency
Heavy Equipment:					
Dump Trucks	[redacted]	[redacted]		[redacted]	
Skip Loaders	[redacted]	[redacted]	[redacted]	[redacted]	
Backhoes	[redacted]	[redacted]	[redacted]	[redacted]	
Dozers	[redacted]	[redacted]	[redacted]	[redacted]	
Water trucks	[redacted]	[redacted]	[redacted]	[redacted]	

Equipment/Supply Description	Location	Specific Function & Capability	Responsible Person/Title	Telephone Number	Inventory/Restocking Frequency
	[redacted]		[redacted]	[redacted]	
Communication Equipment:					
Portable Radios	[redacted]	[redacted]	[redacted]	[redacted]	
Radio Batteries	[redacted]	[redacted]	[redacted]	[redacted]	
Cell Phone Rentals					
General Equipment:					
Air Compressors	[redacted]	[redacted]	[redacted]	[redacted]	
Fans and Blowers	[redacted]	[redacted]	[redacted]	[redacted]	
Generators	[redacted]	[redacted]	[redacted]	[redacted]	
Shop Vacuums	[redacted]	[redacted]	[redacted]	[redacted]	
Pumps	[redacted]	[redacted]	[redacted]	[redacted]	
Personnel Protective					

Equipment/Supply Description	Location	Specific Function & Capability	Responsible Person/Title	Telephone Number	Inventory/Restocking Frequency
Equipment:					
SCBA	[redacted]	[redacted]	[redacted]	[redacted]	
Tyveks	[redacted]	[redacted]	[redacted]	[redacted]	
Boots	[redacted]	[redacted]	[redacted]	[redacted]	
Respirators	[redacted]	[redacted]	[redacted]	[redacted]	
Cartridges	[redacted]	[redacted]	[redacted]	[redacted]	
Gloves	[redacted]	[redacted]	[redacted]	[redacted]	
Bulk Supplies:					
Sand	[redacted]	[redacted]		[redacted]	
Absorbents	[redacted]	[redacted]	[redacted]	[redacted]	

3.6.2 Personnel Protective and Other Emergency Equipment

CVWD has established written procedures for using and maintaining emergency response equipment. These procedures apply to any emergency equipment relevant to a response involving a toxic chemical, including all detection and monitoring equipment, alarms and communications systems, and personnel protective equipment not used as part of normal operations. Summary procedures are listed below:

- How and when to use the equipment properly.
- How and when the equipment should receive routine maintenance.
- How and when the equipment should be inspected and tested for readiness.
- Training requirements.

3.6.3 Telephone Equipment

Standard land-based telephones are potentially useful for communication during an emergency. CVWD

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3.6.4 VHF Radio Communications

CVWD

Utility

3.6.4.1 VHF Communications Channel

Channel	Use Group / Frequency

3.6.4.2 Trunked Radios (Mobile)

Serial Number	Storage Location	EOC Designation

Serial Number	Storage Location	EOC Designation

3.6.5 Citizen's Band Radio / Military Radios

It may be necessary to request assistance from CB radio operators or the military, if other systems are not available.

CVWD is aware that CB and most readily-available military radios do not provide secure communication.

3.7 Property Protection

In the event of a real or potential malevolent event, the Water Utility Emergency Response Manager (WUERM) will make the determination as to what water system facilities should be immediately "locked down," including the implementation of specific access control procedures and the establishment of a security perimeter. The possibility of secondary malevolent events will be considered, given that the initial act may be diversionary.

CVWD personnel involved in an emergency response will take all necessary measures to protect potential evidence for law enforcement, should the event be declared a crime scene.

Specific lockdown procedures for each of CVWD's major facilities are:

[redacted]

4.0 SEMS/ICS Integration and Organization

The Standardized Emergency Management System is the system required by Government Code §8607(a) for managing response to multi-agency and multi-jurisdiction emergencies in California.

4.1 Five Levels of SEMS

There are five designated levels in the SEMS organization, as shown below. When resources become depleted or are not available at the field or local level, requests for resources are moved up through these levels until they are filled.

The type and severity of the incident determines the extent of activation for each level.

Field Response: The Field Response Level is where the Incident Command System is applied. At this level, emergency response personnel and resources are managed under ICS to carry out tactical decisions and activities in direct response to an incident or threat.

Local Government: Local Government includes ***City of Carpinteria, Santa Barbara County, Carpinteria School District, and Carpinteria Sanitary District, Carpinteria Summerland Fire District, Carpinteria Cemetery District, and Carpinteria Valley Water District.***

Operational Area: The Operational Area concept represents the intermediate level of the state's emergency organization, consisting of ***county and all political subdivisions***, including ***water districts*** and ***other special districts***, within the county area.

Regional: Because of its size and geography, the state of California has been divided into six mutual aid regions by the Governor's OES. In SEMS, the regional level manages and coordinates information and resources among operational areas within the mutual aid region and also between the operational areas and the state level.

State: The state level manages and coordinates state resources in response to the emergency needs of the other levels. This level manages and coordinates mutual aid among the mutual aid regions and between the regional and state levels. The state level also serves as the coordination and communication link between the state and federal disaster response system.

4.2 Five Principle Functions of SEMS

There are five principle functions within SEMS at each of the five organizational levels. They are Management ("Command" at the Field Level), Operations, Planning/Intelligence, Logistics, and Finance/Administration. These functions are modular in their design and can expand or contract depending on the needs of the incident.

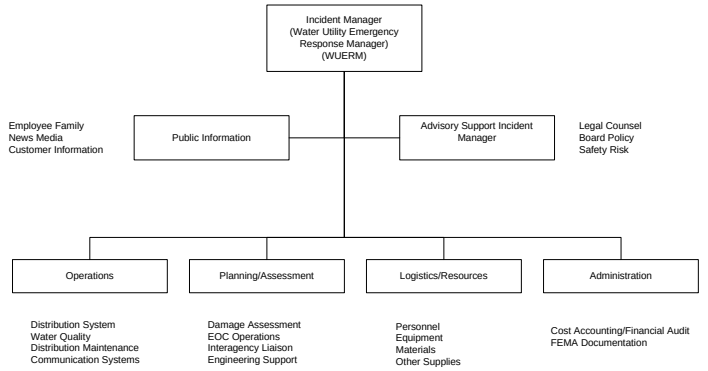
A summary of the functions and the responsibiilties of each section, as they relate to CVWD's Operations during an emergency, is provided in the table below.

Function	Responsibilities
Management	• Serves as Command Staff and/or Incident Commander at the Field Level. • Directs Water System Emergency Operations Center (EOC). • May Serve as WUERM.
Operations	• Responsible for management of all operations directly applicable to the primary mission. • Operations Section Chief activates and supervises organizational elements in accordance with incident AP and directs execution of the AP. • Coordinates emergency response activities at the water utility EOC level. • Implements priorities established by management or Incident Command. • Field Coordinators - Operations staff who are linked to water utility personnel at other fixed facilities or who are assigned to incidents within the water utiilty. - Receive and pass information up the chain of command. - Receive and coordinate requests for services and support.
Planning/Intelligence	• Oversees the collection, evaluation, verification, and display of current information related to the emergency. - Understand current situation. - Predict probable course of the incident events. - Prepare alternative strategies and control operations for the incident. • Responsible for preparing action plans and maintaining documentation related to the emergency.
Logistics	• Provides facilities, services, and material in support of the Incident. • Oversees the acquisition, storing, and distribution of essential resources and support services needed to manage the emergency. • Tracks the status of resources. • Provides services to all field units in terms of obtaining and meeting their personnel, materials and equipment needs including communications.
Finance/Administration	• Responsible for all financial, administrative and cost analysis aspects of the incident. • Prepares vendor contracts, maintains records of expenditures for personnel and equipment, and maintains records and processes claims. • Provides preliminary estimates of damage costs and losses.

4.3 CVWD Incident Command Structure

The following graphics illustrate the expanding nature of the ICS and show model ICS structures that can be used during an emergency. The intent is for the command structure to be expanded and contracted as necessary to provide the best fit for a particular situation. This template includes three different command structures for different-sized utilities, and for different levels of emergencies. Choose the template or templates that work best for your utility and edit them as necessary. Individual's names can be added to the graphics to designate specific roles and responsibilities.

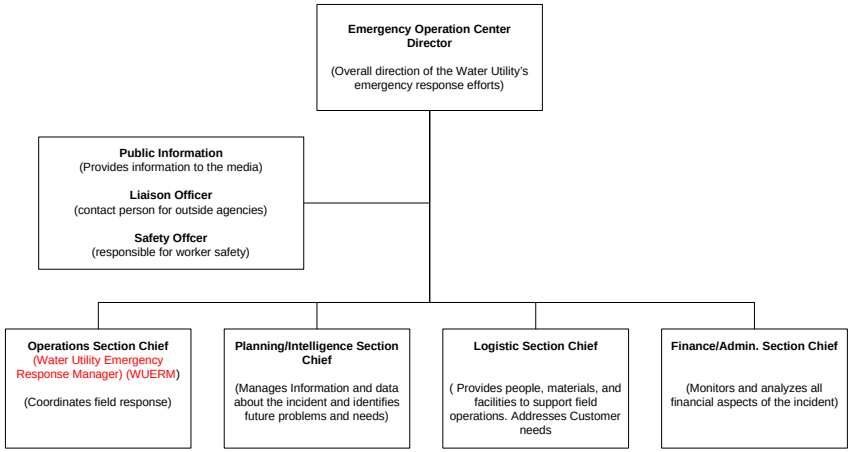
EXAMPLE OF SMALL WATER UTILITY UTILIZING A SEMS ORGANIZATION CHART



Section Leader Assignments

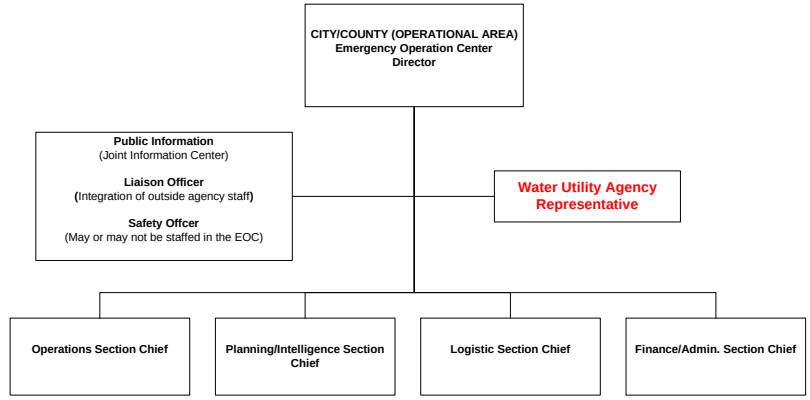
SECTION	PRIMARY	ALTERNATE
Incident Manager	General Manager or Water Utility Emergency Response Manager (WUERM)	Chief Engineer
Operations	Water Quality/District Superintendent or WUERM	Field Main. Superintendent
Planning/Asssessment	Head of Engineering Services	Principal Engineer
Logistics/Resources	Asst. Field Maintenance Superintendent	Field Supervisor
Administration	Admin. Manager Accounting	Personnel Administrator Human Resources
COMMAND STAFF	**PRIMARY**	**ALTERNATE**
Public Information	Public Education Coordinator	Customer Service Admin.
Advisory Support	Safety Coordinator	Assistant Safety Coordinator

EXAMPLE OF A LARGE UTILITY UTILIZING A SEMS ORGANIZATIONAL CHART



Depending on the size and scope of the emergency, the Water Utility Emergency Response Manager (WUERM) may serve as the Emergency Operations Center Director until the position is delegated to a general manager or replacement for the duration of the incident.

EXAMPLE OF A CITY/COUNTY (OPERATIONAL AREA) EMERGENCY OPERATIONS CENTER WITH WATER UTILITY AGENCY REPRESENTATIVE



Water Utilities may be required to assign staff to the City or County (Operational Area) Emergency Operations Center (EOC) to coordinate with Public Health or any of the Sections that might need information or assistance. Typically, Water Utility Staff would report to the EOC as an Agency Representative and can move down, in the organization, to any of the sections as needed. Initially, the Water Utility Agency Representative would check in with the Liaison Officer, if one is not present, then he/she would report to the EOC Director.

4.4 Emergency Operations Center

4.4.1 EOC Description

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CVWD

SD GM) SD GM

Local Government Agency

CVWD

GM

Local Government

Local Government CVWD

CVWD

telephone. If Telephone communications are out of service emergency radios shall be used. CVWD should

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5.0 Concept of Operations

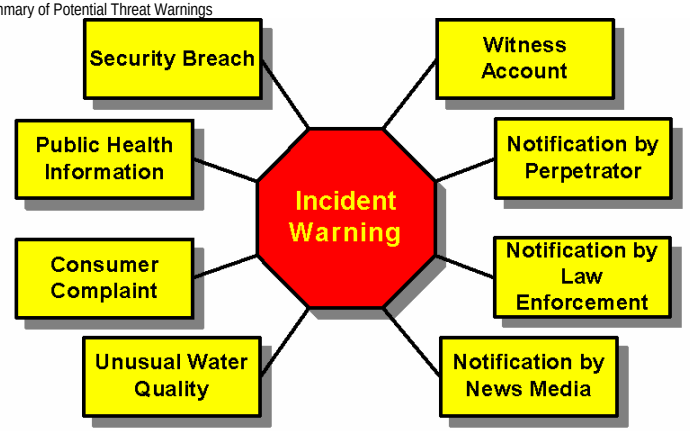
5.1 Decision Process

This section defines the decision process to be followed to determine if and when the ERP should be activated.

5.1.1 Threat Warning

The "threat warning" is the initial occurrence or discovery that triggers an evaluation of whether or not to activate the ERP. A description of the possible types of threat warnings that CVWD may encounter is provided below. If any of these conditions are met, then a Threat Warning will be issued by the GM.

FIGURE 1
Summary of Potential Threat Warnings



5.1.1.1 Threat Warning Conditions

Security Breach. Physical security breaches caused by relaxed operations, such as unsecured doors or criminal acts such as trespassing, are probably the most common threat warnings.

Witness Account. Employees or neighbors may see suspicious activity, such as trespassing, breaking and entering, and other types of tampering, that they report to local law enforcement or water utility.

Notification by Perpetrator. A threat may be made directly to the water utility, either verbally or in writing. Historical incidents would indicate that verbal threats made over the phone are more likely than written threats.

Notification by Law Enforcement. CVWD may receive notification about a threat directly from law enforcement. Such a threat could be a result of a report of suspicious activity or gathered by law enforcement intelligence.

Notification by News Media. A threat to contaminate the water supply might be delivered to the news media, or the media may discover a threat. A conscientious reporter should immediately report such a threat to the police, and either the reporter or the police would immediately contact the water utility.

Unusual Water Quality. All unusual changes in water quality should be investigated. Results should be ruled out that can be explained by the analytical detection method or on-line monitoring system (*i.e.*, false positives/false negative, known interferences, instrument reliability) or results from a known cause (*e.g.*, overdosing of coagulant).

Consumer Complaint. An unexplained or unusually high incidence of consumer complaints about the aesthetic qualities of drinking water may indicate potential contamination. Many chemicals can impart a strong odor or taste to water, and some may discolor the water.

Public Health Notification. The first indication that contamination has occurred may be victims showing up in local emergency rooms and health clinics. An incident triggered by a public health notification is unique in that at least a segment of the population has been exposed to a harmful substance.

5.1.2 ERP Activation

Once a threat warning is issued by the GM or his/her designee, the threat decision process begins. The WUERM or designated alternate should immediately be notified since this person will be involved in this decision process.

The threat decision process is considered in three successive stages: "possible," "credible," and "confirmed." As the threat escalates through these three stages, the actions that might be considered also change. The following table describes the stages, actions that will be taken, and activation of the ERP. The WUERM is responsible for working through the threat decision process and implementing the ERP as needed.

Decision Process Stage	Actions Taken	ERP Activation Level
Stage 1 Possible Threat	Evaluate available information. Review findings from VA. Determine if threat is possible. (Could something have actually happened?)	Implement precautionary response actions.
Stage 2 Credible Threat	Determine that threat is credible by establishing corroborating information.	Activate portions of ERP. • Initiate internal and external notifications.

Decision Process Stage	Actions Taken	ERP Activation Level
	Highly credible source. Health department/customer reports. Unusual monitoring results.	• Issue public health advisories. • Initiate water sampling and analysis. Consider partial or full activation of CVWD EOC.
Stage 3 Confirmed Major Event	Confirm threat by verifying definitive evidence and information that establishes the major event. Perform water sampling and analysis.	Fully implement ERP. Immediately initiate appropriate APs. Fully activate CVWD EOC.

5.2 Response Capability Identified in the Water System VA

This section describes the response capabilities for CVWD that were identified in the water system VA.

Response Type	Title	Description
Procedures	Emergency Operating Procedures	A set of procedures that define employee responses to specific types of emergency events.
Procedures	Coordination with Local Police Force	An agreement with local law enforcement units regarding the support the utility can expect from the agency and the type of training and support the utility will provide to responding police agencies.
Communication	Public Address or Other Warning System	Used to notify people within a facility of an incident. Should a building or entire facility need to be evacuated, it is important to have a means by which everyone can be notified.
Mitigation	Fire Brigade at the Plant	Training and equipping a group of first responders from the plant population.

5.3 Personnel Safety

The safety of CVWD staff, emergency responders, and the public is paramount during an emergency. This section provides basic safety information and procedures to be followed in an emergency, including a toxic or potentially toxic release of chlorine or other chemical agents from a water treatment plant. Additional information regarding proper procedures

during and after a chemical release can be found in CVWD's Risk Management Plan and in the associated AP. This section will cover Facility Protective Actions, Personnel Accountability, Public Notification for Protective Actions, and Emergency First Aid procedures.

5.3.1 Facility Protective Actions

Facility protective actions include sheltering-in-place, evacuation**,** and a combination of the two. When determining the appropriate protective action decision, the CVWD GM/SD or designee will carefully consider:

- If a hazardous material is involved, its characteristics, amount, release rate, physical state, ambient temperature, and location
- The employees at risk and the capability and resources to recommend a protective action.
- The time factors involved in the emergency and their effect on the selected protective action.
- The effect of the present and predicted meteorological conditions (on the control of the hazardous material, storm warnings, flood stage level, etc.) and the feasibility of the protective actions.
- The capability to communicate with both the employees at risk and emergency response personnel before, during, and after the emergency.
- The capabilities and resources of the facility to implement, control, monitor, and terminate the protective action.

5.3.1.1 Evacuations

- Facility evacuation should follow the pre-designated evacuation routes from buildings and plant grounds as shown in Appendix B.
- These evacuation routes are posted *in the Board Room, on the bulletin board in the main office and in the operations building. Additionally lighted exit sign are located at each exit.*
- If an evacuation is ordered by the GM/SD, all employees shall report to the pre-designated assembly areas shown on the evacuation plans to be accounted for by their *supervisor.*
- Supervisors are responsible to assure their disabled employees are provided with adequate assistance during the evacuation.

5.3.1.2 Sheltering-in-place

- Sheltering in place should occur in the pre-designated facilities and locations as described in Section 5.5.1 and as shown in Appendix B.
- Locations should be equipped with emergency medical supplies and provisions.

5.3.2 Personnel Accountability

- All designated assembly areas are indicated on the facility evacuation plans.
- All personnel are responsible to report to their designated assembly area.
- ***Supervisors*** are responsible to assure all their personnel have reported after an ordered evacuation.
- Personnel who are not accounted for at the assembly area must be reported to the GM/SD to assure a proper response is coordinated. This response may include checking with other assembly areas, radio communication, or organization of a formal search.
- No search of a contaminated area should be performed unless all rescue personnel are fully equipped and trained for the expected hazards.

5.3.3 Off-site Protective Actions

Some hazardous materials hazards have the potential to affect off-site personnel and the local response agency may request support in making protective action decisions for the general public surrounding your facility.

CVWD will respond to requests from the local agencies for recommendations, or protective actions for the general population surrounding the facility.

5.3.4 First Aid and Emergency Medical Treatment

- Call 911 for medical assistance.
- Assure emergency medical care is provided to injured persons, as necessary until off-site medical personnel arrive.
- If trained, provide emergency first aid for victims of heart attack, strokes, severe bleeding, and shock.
- ***GM/SD should designate*** a supervisor to coordinate off-site ambulance and medical assistance.
- Victims may need to be decontaminated if the emergency involves hazardous material.
- Control the scene to avoid further spread of contamination.
- Obtain accurate information on the health hazards of the material from Local Emergency Response Team, Safety Officer, MSDSs, or the Poison Control Center.
- Determine if there is a risk of secondary contamination to personnel or emergency transport vehicles/hospitals.
- If needed, follow your pre-determined decontamination protocol, which should include removing wet or exposed clothing, flushing affected skin and hair with water, and using soap or shampoo for oily substances.
- Provide post-emergency medical evaluation as required by Occupational Safety and Health Administration (OSHA).

5.4 Protective Action Protocols

The protocols that CVWD uses for sheltering-in-place and for evacuation are described below.

5.4.1 Sheltering-in-Place Protocol

Evacuation during emergency incidents is sometimes, but by no means always, necessary. The emergency situation can escalate so rapidly that there would be no time to evacuate personnel. For hazardous weather conditions, a prudent course of action, for the protection of the potentially-affected employees/personnel, would be to remain inside with the doors and windows closed.

The SD or GM is responsible for determining whether sheltering-in-place is the most appropriate response to protect the vulnerable employees. If the decision is to shelter-in-place, then the affected employees will be advised to follow these guidelines to reduce the chance of being injured:

- Provide information on the procedure to employees and visitors on the facility public address system. If the information is provided to a local agency at their request, it should be coordinated through the Facility EOC.
- Close all doors to the outside and close and lock the windows.
- Inform staff to assemble at the ***parking lot area***
- Close as many internal doors as possible.
- If an outdoor explosion is possible, close drapes, curtains, and shades over windows, stay away from windows to prevent potential injury from flying glass.
- *During a Hazardous materials release emergency a shelter in place will be called with special consideration to the location. If located in the administration buildings, ensure that all windows and door are closed and cooling or heating systems are off. If located in the operations building, ensure that the doors are closed and ventilations systems are off.*

5.4.2 Evacuation Procedures

This evacuation procedure identifies the areas to be evacuated, as well as the warnings and instructions to personnel that must be provided. The assembly and shelter locations are identified in the posted facility evacuation plan.

5.4.2.1 Evacuation Areas

The evacuated areas may be expanded by the on-site or off-site Incident Commander. An incident resulting in off-site consequences (hazardous materials incident) shall determine evacuation requirements in conjunction with appropriate external agencies.

Decisions on evacuation are incident-specific and must be made at the time of incident. Estimated vulnerable zones that may be provided with the incident specific checklists should be used for planning purposes only and should not be used peremptorily in an emergency response situation.

5.4.2.2 Evacuation Warning and Instruction

Once the area to be evacuated has been identified, it is necessary to inform employees that they must evacuate:

- **Facility Personnel**
  - Public address system: Using either voice and/or tones that are pre-established and exercised evacuation routes and procedures.
  - Person-to-person: Not very rapid but can be very thorough.
  - Combination of both public address and person-to-person.
- **General Public (Responsibility of Local Public Responders)**

  Although protective actions for the general public are the responsibility of the Local Government this information may be helpful if you are requested to provide recommendations to the local Incident Commander:
  - Door-to-door: Requires significant personnel and is a slow process but is very thorough.
  - Public address system (from a mobile unit or within a building): Requires fewer personnel than door-to-door and is quicker to accomplish but is not as thorough.
  - Combination of Door-to Door and Public Address system: Dependent on the area to be evacuated a combination of methods of instruction may be warranted.

The method used to accomplish the evacuation will be determined by the Incident Commander and will be incident and site-specific. The evacuees should be told to report to their designated assembly areas and wait for further instructions.

5.4.3 Evacuee Assembly Areas

Evacuee assembly areas must be pre-designated for each area of the facility. Depending upon the conditions and requirements for the particular emergency, the Incident Commander may move or modify assembly area locations. The location of the Evacuee Assembly Areas are:

Parking Lot 1 for front office personnel

Parking lot 2 for Operations personnel

Each manager/supervisor shall be responsible for head counts, assembly security and safety and will communicate with the Incident Commander to obtain support for various needs, such as food, water, medical aid, or transportation.

5.4.4 Shelter Locations

As necessary, the Incident Commander will select the most appropriate shelter from pre-identified shelter locations from the following list:

Board room or front office for office personnel.

Operations meeting room or operations personnel.

Once the shelter location has been determined, the shelter information will be disseminated to:

- Incident site personnel.
- Assembly area personnel.
- EOC, if activated.
- Responders on-site: for example, the communications coordinator and the medical unit, ***Carpinteria/Summerland Fire Department.***

Once the facility employees are notified to evacuate they will proceed to their designated shelter.

Carpinteria/Summerland Fire Department will be notified of the shelter locations and be provided with information on any injuries or the type of hazardous material and any known exposures.

Once an area is evacuated, the SD or designee must secure the area. Security personnel operating in or around an evacuated area must not be located in a hazardous or potentially hazardous area that would necessitate the use of personnel protective clothing or place them in an unsafe condition.

6.0 Communication Procedures

In general, communications during an emergency response will proceed along the chain of command of the SEMS/ICS. The number of people notified will increase as the incident expands and decrease as the incident contracts toward its conclusion.

The type and extent of the disaster will dictate the normal and/or alternative methods of communication that will be used. The possibility of a coordinated attack that targets the water, power, and communications systems must be considered. In this case, it would be reasonable to assume that some methods of communication will either be unavailable or limited to certain areas during an emergency. It is anticipated that employees will know upon arrival at their duty stations which communication systems are functional and which are not. This information should be relayed to the CVWD Information Officer upon discovery.

CVWD uses the ICS for its command structure during water emergencies. The table below describes the ICS command structure positions and shows which individuals will hold the various positions during different emergency situations (recognizing that at different stages of an event or for different severity of events that the person/position responsible in the ICS changes).

6.1 CVWD Chain of Command

CVWD Primary Position Descriptions and Assignment-

Name and Title	Responsibilities during an Emergency	Contact Numbers
Charles Hamilton Incident Commander	Sets incident objectives and priorities. Responsible for management of incident. Coordinates all emergency response activities between agencies. Communicates with all participants including those outside water utility.	Office: 805-684-2816 Cell: 805-331-0128 Home: 805-560-0927
Charles Hamilton Water Utility Emergency Response Manager	Overall management and decision making for the water system. WUERM is lead for managing the emergency and contacting the regulatory agencies. All communications to external parties are approved by the WUERM.	Office: 805-684-2816 Cell: 805-331-0128 Home: 805-560-0927

Bob McDonald Alternate WUERM	Takes over for primary WUERM if primary WUERM is unavailable.	Office: 805-684-2816 Cell: 805-512-0312 Home: 805-649-0734
Omar Castro Water Utility Emergency Operations Center Manager (WUOCM)	Heads water utility's EOC. Provides operational and resource management during an emergency.	Office: 805-684-2816 Cell: 805-331-0049 Home: 805-640-0778
Charles Hamilton Public Information Officer PIO	Member of the command staff and reports directly to the Incident Commander. Interfaces with media and disseminates public information. Plans the information strategy.	Office: 805-684-2816 Cell: 805-331-0128 Home: 805-560-0927
Bob McDonald Liaison Officer	Member of the command staff On-scene contact for representatives from other agencies.	Office: 805-684-2816 Cell: 805-512-0312 Home: 805-649-0734
Omar Castro Safety Officer	Develops and recommends measures for assuring personnel safety. Assess and anticipates hazardous and unsafe conditions.	Office: 805-684-2816 Cell: 805-331-0049 Home: 805-640-0778
Norma Rosales Office Administrator	Responsible for administrative functions in the office. Receives customer phone calls and maintains a log of complaints and calls. In an emergency, could provide a standard carefully pre-scripted message for customers who call with general questions.	Office: 805-684-2816 Cell: 805-896-1350 Home: 805-641-1458
Brian King Technical Specialist Water Quality Manager	In charge of collecting samples, having samples analyzed by certified labs, receiving the results. Determines the quality of the water being served meets all drinking water and public health requirements.	Office: 805-684-2816 Cell: 805-331-0019 Home: 805-898-3825
Jon Paola Technical Specialist Water Treatment Plant (WTP) Operator	In charge of running water treatment plant. Performs inspections, maintenance, sampling of the WTP and relaying critical information to the WUERM. Assess WTP facilities and treatment provided and provides recommendations to the WUERM.	Office: 805-684-2816 Cell: 805-453-4113 Home: 805-684-1066

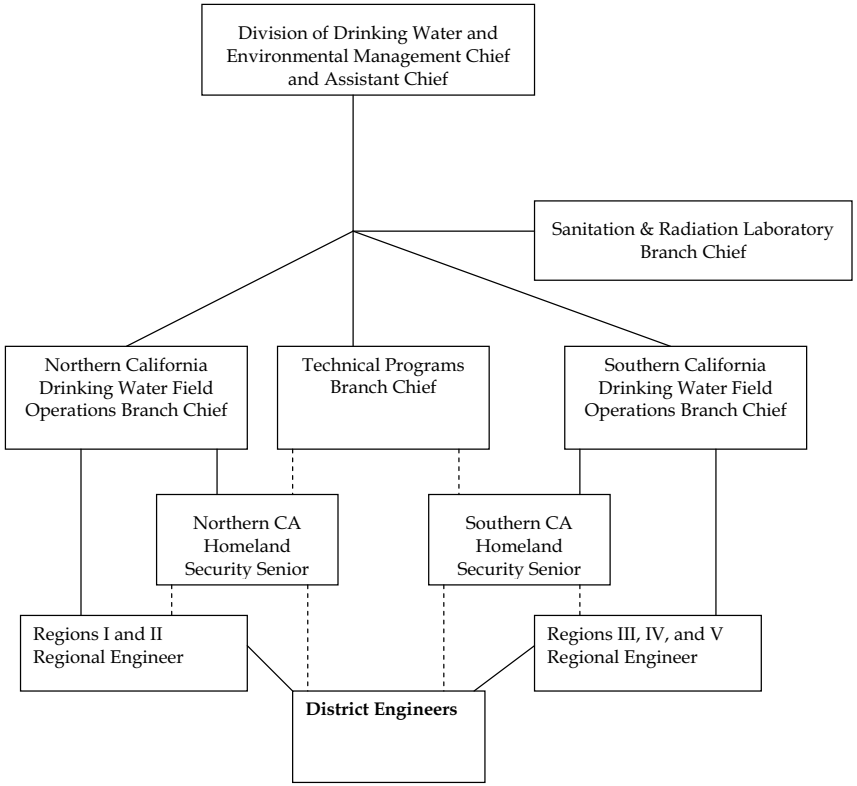
Brian King Technical Specialist Water System Operator	In charge of operating the water system. Performs inspections, maintenance, sampling of the system and relaying critical information to the WUERM. Assess facilities and provides recommendations to the WUERM.	Office: 805-684-2816 Cell: 805-331-0019 Home: 805-898-3825
Danny Rada Technical Specialist Field Staff	Delivers water quality notices or door hangers. Provides backup to water system operator. Conducts site inspections of all facilities.	Office: 805-684-2816 Cell: 805-331-0105 Home: 805-560-6953

6.2 Drinking Water Field Operation Branch – Chain of Command

The primary contact for the CVWD during any emergency is the District Engineer. CVWD will contact the District Engineer in the event of any emergency.

From the District Engineer, authority moves up the line to the Regional Engineer, Branch Chiefs, Assistant Division Chief, to finally the Chief of the Division.

The following flow chart shows the chain of command structure within the California Department of Health Services Drinking Water Program (DWP). The CDHS DWP Web site has a map showing all the contact information for each District Office and District Engineer. http://www.dhs.ca.gov/ps/ddwem/technical/dwp/dwpindex.htm. The figure can be modified to show your utility's command structure, and you can add names and contact numbers from the CDHS DWP Web site.



6.3 Notification Procedures

6.3.1 Initial Notifications

First Responders (911): If the situation is an emergency that needs response from local fire, law enforcement, medical or HAZMAT team, calling 911 should be the first immediate call.

CVWD is aware that if the water system staff calls 911 from a cell phone, then the call is routed to the nearest California Highway Patrol Office, which may be in another city or county, and not in the immediate local 911 area. Direct phone numbers have been obtained from local first responders for the different 911 areas that are served by CVWD. These numbers are shown in the Table C-1 in Appendix C.

6.3.2 Internal Contact List

The contact information in Table C-2 in Appendix C represents the network of CVWD personnel and serves as the primary means of contacting internal staff.

If it becomes necessary to contact the staff member's family or emergency contact, the PIO will have primary responsibility for making the notification. The ***Human Resources Manager*** will assist the PIO with family member communications as needed.

6.3.3 External Contact List

Tables C-3, C-4, C-5, C-6, and C-7 in Appendix C contain contact information for the local and national agencies that CVWD may need to notify. The WUERM will make the decision as to which of these agencies needs to be notified, and at what point in the threat evaluation the calls should be made. The PIO or Liaison Officer will serve as the water utility point of contact for these agencies.

In addition to the External Contact List in Appendix C, CVWD maintains an Emergency Notification Plan (Appendix E) that includes day and evening phone numbers for the CDHS District Engineer and/or staff, CA State OES, and County Personnel. The Notification Plan also includes procedures for notifying the affected service area, and it is updated whenever there is a personnel change.

> Note: Each PWS in California can obtain a specific Emergency Notification Plan form from their CDHS District Engineer. It is typically mailed/emailed with the Annual Reports and has current contact information for the CDHS DE, district staff and County Personnel.

6.3.4 Additional Information on State of California Agencies

The initial notification response to any emergency should be to call 911 for the needed first responder and then to the CDHS DWP. The CDHS DWP is the Drinking Water Primacy Agency in California and has regulatory jurisdiction over all public water systems in the state.

Contact to the CDHS DWP should be to their District Engineer. If the water system is unable to contact the District Engineer (or one of their staff), the water system should use the California OES Warning Center Phone Number: 1-800-852-7550, which is a 24/7 phone number. A second phone number for the OES Warning Center is 916-845-8911.

A duty officer will answer the California OES Warning Center phone call and refer to statewide emergency phone numbers. In order to assist the duty officer-it will expedite response if you request the CDHS duty officer. The CDHS duty officer will then call management staff in the DWP to respond to the emergency.

The District Engineer will be able to assist CVWD with:

- Inspections of water treatment plants, storage facilities, and watersheds (chemical contamination, sewage spills, erosion, and drainage diversions).
- Water quality sampling.
- Consulting with water system staff/operators.
- Providing technical assistance.
- Documenting the disaster's effect on the water system through photographs and reports.
- Keeping local officials advised of the current drinking water situation.
- Review plans and specifications for reconstruction projects, and issue amended permits as needed.
- Laboratory sampling analysis.

6.3.5 Critical Customers Contact List

In addition to the agencies listed in the previous tables in Appendix C, Table C-8 in Appendix C contains contact information for CVWD's Critical Care Customers (Primary Notification) and Large Water Users (Secondary Notification). The WUERM will decide if the PIO will notify some or all of these customers in the event of an emergency involving the water system.

CVWD's Water Quality Emergency Notification Plan, as required under Section 116460, California Health and Safety Code, is included in Appendix E of this ERP.

6.3.6 Contact Information for Fire-fighting Water Alternate Sources

If the water becomes contaminated with substances that render it unsafe to be used for fire-fighting, then an order will be issued to discontinue use of the affected fire hydrants. Alternate sources for fire-fighting water are shown in Table C-9 in Appendix C.

6.3.7 Contact Information for Bulk and Bottled Water Suppliers

CVWD has identified agencies and private companies as shown in Table C-10 in Appendix C that could provide water supplies (bottled or bulk) in the event of an incident.

6.4 Public Notice Procedures

6.4.1 Media Notification

Effective communication with the public is a key element of this ERP. CVWD personnel have been instructed to direct all media questions or information requests related to an emergency situation to CVWD's Public Information Officer, PIO. The PIO is the official spokesperson for CVWD and is the only CVWD employee who is authorized to speak directly to public media representatives.

Table C-11 in Appendix C provides contact information for the various media agencies that CVWD PIO might use to disseminate information to the public.

6.4.2 Public Notification

A Boil Water Order (BWO), Unsafe Water Alert (UWA), or Do Not Drink Notice can be issued by one, or a combination of the following agencies:

- CDHS DWP. Designated personnel: District Engineer, Regional Engineer or Branch Chief.
- Local County Health Department. Designated personnel: County Health Officer or Director of Environmental Health Department for small water systems under county jurisdiction.
- Affected Water System. Designated personnel: responsible person in charge of the affected water system (i.e., Director of Water Quality, Manager, Director of Water Department, Director of Public Works, Owner, etc.).

NOTE: If the water system feels the event/circumstance requires IMMEDIATE issuance of a BWO/UWA and that public health is in serious risk, they may issue a BWO/UWA without first contacting the CDHS District Engineer. If that is the case, the water system must notify CDHS, the County Health Officer and the Environmental County Health Department immediately after issuing a BWO/UWA. Usually a water system will not issue a public notice without the approval (or advisement/guidance from CDHS) as they do not want to take on the sole responsibility for the public notice. In that sense CDHS, will partner with the water system to make the public health decision whether to issue a BWO/UWA or not..

In the event that a BWO, UWA, or Do Not Drink Notice is issued by CVWD, the GM is the person who has the authority to issue the public notice.

If a BWO or UWA is issued, the General Manager will notify the PIO in the EOC immediately.

CVWD will ensure that all public notifications (BWO, UWA, or Do Not Drink Notices) will be coordinated with the CDHS District Engineer, County Environmental Health Department, and the County Public Health Officer prior to issuing a public notice.

CVWD will notify the CDHS District Engineer, the County Environmental Health Department and the County Public Health Officer prior to or immediately after issuing a

public notice. Notice must be given to a person rather than a message left on voicemail. Table C-12 in Appendix C shows the primary, 1st Alternate and 2nd Alternate contacts for the County Public Health Officer and the County Environmental Health Department.

CVWD has prepared a series of public notices and press releases for use during various emergency situations in accordance with CDHS guidance. These notices can be found in Appendix D.

A summary of each of the notices, including guidance on when to issue each of them, is provided below.

Consumer Alert During Water Outages or Periods of Low Pressure: If the water system is experiencing power outages, water outages, or low-pressure problems, a consumer alert may be issued to the public. The notice provides consumers information on conserving water and how to treat the water with household bleach if the water quality is questionable.

BWO: A BWO should be issued when minimum bacteriological water quality standards cannot be reasonably assured. To assure public health protection a BWO should be issued as soon as it is concluded by the designated personnel that the water supply is or may be biologically unsafe. Examples of these situations include:

1. Biological contamination of water supply system, including but not limited to:
   - Positive total or fecal coliform bacteriological samples.
   - Prolonged water outages in areas of ruptured sewer and/or water mains.
   - Failed septic tank systems in close proximity to ruptured water mains.
   - Ruptured water treatment, storage, and/or distribution facilities in areas of known sewage spills.
   - Known biological contamination.
   - Cross-connection contamination problems.
   - Illness attributed to water supply.
2. Unusual system characteristics, including but not limited to:
   - Prolonged loss of pressure.
   - Sudden loss of chlorine residual.
   - Severe discoloration and odor.
   - Inability to implement emergency chlorination.
3. Implemented due to treatment inadequacies.

UWA/Do Not Drink: In the event a water quality emergency due to known or suspected chemical (non-bacteriological) contamination to the water system a UWA or Do Not Drink should be issued. Water should not be used for drinking and cooking, but may be used for sanitation purposes. Examples of these situations include:

1. Known or suspected widespread chemical or hazardous contamination in water supply distribution, including but not limited to:
   - Ruptured water distribution system (storage tanks, mains) in area of known chemical spill coupled with loss of pressure.
   - Severe odor and discoloration.
   - Loss of chlorine residual.
   - Inability of existing water treatment process to neutralize chemical contaminants prior to entering the distribution system.
2. Threatened or suspected acts of sabotage confirmed by analytical results, including but not limited to:
   - Suspected contamination triggered by acts of sabotage or vandalism.
3. Emergency use of an unapproved source to provide a supplemental water supply.

UWA/Do Not Use: In the event a known or suspected contamination event occurs to the water system, where the contaminate may be chemical, biological, or radiological, a UWA or Do Not Use should be issued. Water should not be used for drinking, cooking, or sanitation purposes. Examples of these situations include:

1. Known or suspected widespread chemical or hazardous contamination in water supply distribution, including but not limited to:
   - Terrorist contamination event.

6.5 Cancellation of Public Notification

Once a BWO/UWA is issued, the only agency that can rescind the public notice is the drinking water primacy agency.

CDHS DWP will not lift the BWO until two rounds, collected one day apart, of coliform bacteria samples have been analyzed and the results are negative. CVWD will fax two sets of sample results to the CDHS DWP District Office for final approval before rescinding the BWO.

Special chemical sampling will be required to rescind an UWA. CVWD will contact the CDHS DWP District Office to determine required sampling.

7.0 Water Quality Sampling

During an emergency, there are several types of water quality sampling that may need to be analyzed depending on the actual event. If it is natural disaster, flood or power outage, sampling will probably only include bacteriological samples, turbidity and chlorine residual samples if the system is chlorinated. However, if the event is a terrorist act or contamination event, the sampling will include a full scan of Weapons of Mass Destruction (WMD) chemical, radiological, and microbiological (unless the actual contaminant used is known).

7.1 Laboratory Resources

In general there are four different types or ownership of laboratory facilities in California that can analyze drinking water samples, which are listed below:

1. Commercial/private laboratories
2. County Public Health Laboratories
3. State Department of Health Services Laboratories
4. Research Facility/Specialty Laboratories

In general, laboratories are grouped into two broad categories: chemical or biological. Chemical laboratories include general environmental chemistry laboratories, radiological laboratories, and specialty laboratories that may be able to handle and analyze exotic contaminants, such as chemical weapons and radionuclides. Biological laboratories include environmental microbiology laboratories and the Laboratory Response Network (LRN) that typically analyze clinical samples for pathogens and select biotoxins.

7.2 CDHS Laboratory

The CDHS Sanitation and Radiation Laboratories Branch (SRLB) is organized within the Division of Drinking Water and Environmental Management. SRLB is the State's primary drinking water quality testing laboratory and is the only State laboratory capable of measuring environmental radiation. Its primary mission is to provide analytical services, reference measurements and technical support pertaining to the State's Drinking Water and Radiological Health Programs.

SRLB has two laboratories: the Southern California Section is located in Los Angeles and performs microbiological, inorganic and organic testing in various water matrices; the Northern California Section, located in Richmond, carries out inorganic and organic analyses in water, and radiochemical testing in various environmental matrices in addition to water. The SRLB in conjunction with the CDHS Microbial Disease Laboratory (MDL) does microbiological analyses including biotoxins.

7.3 California Mutual Aid Laboratory Network

The CDHS SRLB—in conjunction with the water utilities, USEPA Region 9 laboratory in Richmond, Lawrence Livermore National Laboratory, and the California Department of Water Resources—have formed a laboratory network, the California Mutual Aid Laboratory Network (CAMAL Net), to address laboratory capacity issues associated with possible drinking water-related contamination events. CAMAL Net establishes a triage system to process samples when water systems or commercial laboratory methods are not available or the water system lacks capacity within their own lab. The CAMAL Net system will not handle any samples where field screening indicates that the sample may contain a Center for Disease Control (CDC)-listed WMD agent. The list of WMD agents can be found on the CDC Web page at http://www.bt.cdc.gov/. Any request for analysis through the CAMAL Net system needs to be approved by the CDHS DWP District Engineer in CVWD's jurisdiction prior to collection of water quality samples to be processed.

7.4 Chemical Analysis Classification

The CDHS, along with its stakeholders and federal partners, are in the process of developing an algorithm to assist California water systems, public health agencies, law enforcement, and first responders with the identification of possible chemical agents in drinking water contamination events. A draft version has been developed, and it is anticipated that a final version will be released in the near future. The final version will become an appendix to this ERP.

7.5 Biological Analysis Classification

The LRN for Bioterrorism has ranked laboratories (Level A, B, C or D) based on the type of safety procedures they practice.

- Level A Lab uses a Class II biosafety lab (BSL) cabinet.
- Level B Lab is a BSL-2 facility + BSL-3 safety practices.
- Level C Lab is a BSL-3 facility.
- Level D Lab is a BSL-4 facility.
- Level A Labs are used to rule out and forward organisms.
- Level B Labs are used for limited confirmation and transport.
- Level C Labs are used for molecular assays and reference capacity.
- Level D Labs are used for the highest level of characterization.

Currently, in California there are 28 Level A labs, 10 Level B labs, and two Level C labs. The two Level C laboratories are the Los Angeles County Public Health Laboratory in Los Angeles, California and the CDHS MDL in Richmond, California. Lawrence Livermore National Laboratory is also a Level C laboratory, but access to that lab is restricted. The only Level D laboratories available in the LRN are the national laboratories, such as those at the CDC and the Department of Defense. These laboratories test and characterize samples that pose challenges beyond the capabilities of the Level A, B, and C reference labs and provide support for other LRN members during a serious outbreak or terrorist event. The most

dangerous or perplexing pathogens are handled only at the Bio-Safety Level 4 laboratories at CDC and the United States Army Medical Research Institute of Infectious Diseases.

7.6 Natural Disaster

During a natural disaster, flood, earthquake, fire etc., sample collection and analysis will be available to CVWD by the normal laboratory resources. Sampling will primarily consist of regulatory bacteriological samples and turbidity to show that the system has been flushed out. CVWD may also collect chlorine residual samples throughout the system with a field chlorine test kit.

7.7 Terrorist Event/Contamination Event

Once a threat warning has occurred and CVWD has deemed the threat confirmed, it will be necessary to collect water quality samples. The decisions made from the time of the threat warning to the time the threat is confirmed is specific to each individual event. This "credibility stage" may take between 2 and 8 hours and should involve consultation with local first responders, CDHS DWP (Drinking Water Primacy Agency), local Health Department, and the regional Federal Bureau of Investigation (FBI) office. For more detail on sampling during various stages of threat confirmation, see Action Plans 1A, 1B, and 1C.

Assuming the threat is credible enough to warrant water quality sampling, several state and federal agencies are involved to collect samples, transport the samples to appropriate laboratory, and analyze the samples.

CVWD's first step in this process will be to contact the CDHS District Engineer so the utility can notify the CDHS-SRLB of the incoming samples. The following steps are described in more detail below:

- Emergency Water Quality Sampling Kit (EWQSK)
- Sample Collection
- Laboratory Required for Analysis
- Sample Transport
- Sample Analysis

7.7.1 Emergency Water Quality Sampling Kit

CVWD's EWQSK contains sample bottles need for chemical, radiological, and microbiological analysis that can be split into three complete sample sets. A complete list of the EWQSK contents is provided in Appendix B. The EWQSK should remain sealed before the sample is collected. Since some of the sample bottles contain reagents that expire, the bottles in each kit are replaced annually.

7.7.2 Sample Collection

Several types of samples may need to be collected depending on the event. Sampling protocol includes:

- CVWD will collect samples for public health to determine if the water is safe for consumption using the EWQSK for public health.
- CVWD will assist the FBI as requested to collect samples for the crime scene investigation.
- CVWD will also provide assistance as requested to responding agencies such as local HAZMAT, FBI, California National Guard Civilian Support Team (CST), or USEPA.
- Proper personal protection material will be used at all times to minimize exposure to any possible agent, and all personnel involved in sampling activities will be properly trained.

7.7.3 Laboratory

Depending on the results of the field screening and actual event, the required laboratories will be notified and prepared to accept the samples. If an EWQSK (supplied by CVWD or CDHS DWP) is used, the CAMAL Net and the LRN will be notified and involved in the process for laboratory selection. The first step in this process is for the District Engineer working with CVWD to contact SRLB.

7.7.4 Sample Transport

Depending on the responding agencies and field screening results, the ICS will decide how the samples will be transported to the appropriate lab. Since the samples may be used for the crime investigation, proper chain-of-custody must be maintained. The possible agencies, depending on the event, are local HAZMAT teams, CHP, FBI, CST, or USEPA.

7.7.5 Sample Analysis

Once the samples are delivered to the appropriate laboratory, they may be split for analysis to different laboratories. The CDHS SRLB laboratory will handle the transport and laboratory testing protocols. Sample results will be shared through the ICS. Sample analysis may take days to weeks to complete depending on the complexity of analysis.

7.8 CVWD Water Sampling and Monitoring Procedures

The ***CVWD*** will have the primary responsibility for all water sampling and monitoring activities during an actual or potential contamination event. The City of Santa Barbara Estero Treatment Plant Laboratory Director (LD) will provide technical support and advice to the local emergency management agency or HAZMAT team as needed throughout the incident.

The LD will also play a key role in the interpretation and communication of monitoring or lab results and will consult directly with the WUERM on significant findings.

Specific information and procedures regarding water sampling and monitoring is included the following table:

Contaminant	Sampling/Monitoring Procedures	Quantity of Required Samples	Responsible Individual
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]			[redacted]
[redacted]			[redacted]

The CVWD does not maintain a laboratory but has the following analytical capabilities:

Coli-alert tests, Colorimeter based, Chlorine residual and pH.

If outside laboratory assistance is needed, CVWD will contact the following laboratory facilities:

Outside Laboratory Name	Contact Number	Capabilities
[redacted]	[redacted]	[redacted]

8.0 Emergency Response, Recovery, and Termination

8.1 Response Phase

8.1.1 Initial Response

When a situation occurs that is judged to be of an emergency, "out of the ordinary," or of a suspicious nature, the person who first notices the situation should determine whether an immediate response by police, fire, or emergency medical services is necessary. If so, immediately call 911 to report the incident. Next, report the incident to your supervisor.

General information to be reported from CVWD facilities (or incident sites) includes:

- What has happened?
- What can be done about it?
- What is needed?
- An assessment of whether the situation calls for activation of the CVWD's EOC.

Additionally, immediate specific information should include the status of CVWD's:

- Personnel
- Equipment
- Vehicles
- Communications capabilities
- Facilities

The employee who first noticed the incident and the Supervisor that responded should:

1. Notify the WUERM or the Alternate WUERM as soon as possible.
2. Remain in a safe location in the vicinity to meet and assist medical, fire, and police personnel and other first responders as necessary.

8.1.2 Damage Assessment

Damage assessment is used to determine the extent of damage, estimate repair or replacement costs, and identify the resources needed to return the damaged system to full operation. This assessment is accomplished during the emergency response phase of the event, before the recovery phase is implemented.

The WUERM is responsible for establishing a Damage Assessment Team.

The CVWD Damage Assessment Team will be led by *the Operations Manager, with representatives from engineering*. Team composition may vary, however, depending upon the nature and extent of the emergency.

Damage assessment procedures should follow the guidelines established for system operability checks and determination of operability/serviceability. At a minimum, the damage assessment team will:

- Conduct an initial analysis of the extent of damage to the system or facility.
- Estimate the repairs required to restore the system or facility; the estimate should consider supplies, equipment, rental of specialized equipment (e.g., cranes), and additional staffing needs.
- Provide this estimate to the procurement representative for a cost estimate to conduct repairs.

Appendix F contains a damage assessment form that can be used for all CVWD facilities.

8.2 Recovery phase

8.2.1 Recovery Planning

During emergency response operations, the Incident Commander or WUERM will appoint a Recovery Manager. The Recovery Manager is responsible for selecting a recovery team and developing a recovery strategy prior to emergency termination.

The CVWD Recovery Manager will be a senior operations representative familiar with the systems that may be affected by the emergency. He/she will have the responsibility and authority to coordinate recovery planning; authorize recovery activities; protect the health and safety of workers and the public; and initiate, change, or recommend protective actions. Additional responsibilities include:

- Facilitate the transition from emergency to recovery operations.
- Develop, implement, and maintain the Recovery Plan.
- Coordinate all vendor and contractor activities that occur on site.
- Ensure that the appropriate safety inspections have been completed.
- Coordinate the completion of emergency repairs and schedule permanent repairs.
- Notify key agencies of emergency repair status and the scheduled completion of system repairs.
- Complete permanent repair and/or replacement of system facilities.
- Review press releases prior to distribution.
- Release repaired facilities and equipment for normal use.
- Replace, or authorize the replacement of, materials and supplies used in the emergency.

- Document all recovery activities.

The Recovery Manager determines the expertise and selects the personnel necessary for the recovery team. In general, the composition of the recovery team is based on the nature and extent of the emergency and includes:

- Technical advisors to the Recovery Manager, which may include external experts such as industrial hygienists or fire protection specialists.
- Utility personnel with the technical expertise to direct post-incident assessment activities and to analyze the results. Maintenance, operations, and engineering staff are expected to fill these positions.
- PIO, who will respond to inquiries or concerns from employees, the public, the news media, and outside agencies. The PIO should be prepared to provide information regarding the results of the incident investigation, the extent of on-site and off-site impacts, and the status of recovery operations.

8.2.2 Recovery Activities

The following activities will be directed by the Recovery Manager and will be executed by the recovery team as required following an incident or emergency situation.

- Notify all appropriate regulatory agencies that recovery phase is underway.
- Install warning signs, barriers, and shielding as needed.
- Take measures to protect workers and the public from hazardous exposures.
- Complete detailed evaluations of all affected water utility facilities and determine priorities for permanent repair, reconstruction, or replacement at existing or new locations.
- Begin repair activities design and make bids for contractor services.
- Make necessary repairs to the system and un-tag repaired facilities and equipment.
- Restore all telecommunications, data processing, and similar services to full operation.
- Complete assessment of losses and costs for repair and replacement, determine approximate reimbursements from insurance and other sources of financial assistance, and determine how residual costs will be financed by the water utility.
- Define needs for additional staff, initiate recruitment process, and adopt temporary emergency employment policies as necessary.
- Execute agreements with vendors to meet service and supply needs.
- Address needs for handling and disposing of any hazardous waste generated during recovery activities.
- Control discharges as a result of recovery activities within regulatory and environmental compliance limits.

- Reevaluate need for maintaining the emergency management organization; consider returning to the normal organizational structure, roles, and responsibilities when feasible.
- Collect cost accounting information gathered during the emergency and prepare request for Emergency Disaster Funds (follow FEMA and State OES requirements).
- Debrief staff to enhance response and recovery efforts in the future by identifying lessons learned, developing action plans and follow-up mechanisms, and providing employee assistance programs if needed.
- Prepare After-Action Reports as required. Complete reports within 6 months of the event (90 days for public utilities which are part of a city or county government.).

8.3 Termination and review phase

The Recovery Manager will officially terminate the recovery phase when normal operations are resumed at all facilities affected by the emergency. Termination and review actions include the following:

- Initiate permanent reconstruction of damaged water utility facilities and systems.
- Obtain inspections and/or certifications that may be required before facilities can be returned to service.
- Restore water utility operations and services to full pre-event levels.
- Determine how emergency equipment and consumable materials should be replenished, decontaminated, repaired or replaced.
- Identify operational changes that have occurred as a result of repair, restoration, or incident investigation.
- Document the recovery phase, and compile applicable records for permanent storage.
- Continue to maintain liaison as needed with external agencies.
- Update training programs, the CVWD ERP, and standard operating procedures, as needed, based upon lessons learned during the emergency response and recovery phases of the event.

9.0 Emergency Plan Approval, Update, Training, and Exercises

This section of the ERP describes the plan review and approval process, the practice and update schedule, plan for assessment of the ERP effectiveness and training, exercises, and drills of the ERP.

9.1 Plan Review and Approval

The CVWD process for review and approval of the ERP is described in the sections below.

9.1.1 CVWD Approval Authority

This plan is intended to be a living document that is reviewed regularly and updated as needed to ensure that the information it contains is correct. The ERP will be reviewed and approved by the WUERM, GM, and other approval personnel. The plan will undergo an initial review and approval process and will be reviewed and signed off by the SD after each revision. A revision log is found in the front of the ERP binder.

9.1.2 Local Government Approval

Local Government will review this plan annually for coordination and consistency with the ***City of Carpinteria's*** emergency planning programs.

9.2 Practice and Update Schedule

The schedule for training, updating, and review of the ERP is discussed below.

9.2.1 Schedule and Responsibility for Training and Exercises

A schedule for general security training and incident-specific exercises/drills for testing of the emergency response plan will be developed and reviewed annually.

The exercises, drills, and training sessions will be conducted annually or more frequently if the SD deems it necessary.

The SD will be responsible for the organization and management of the security-training program.

9.2.2 Schedule for ERP Review and Update

The SD will review and update the ERP and APs as follows:

- Annually prior to the annual ERP/AP training sessions.
- Upon update of the VA.

- Following the ERP exercises.
- Within 2 months of any significant plant modification or water system change.
- Immediately when there is a utility staff change where the staff member was named in the ERP.
- Immediately when there is a change in the roles and responsibilities of anyone involved in response activities.
- Immediately upon changes in internal and external contact information.

9.3 Assessment of ERP Effectiveness

To evaluate the effectiveness of the ERP and to ensure that procedures and practices developed under the ERP are adequate and are being implemented properly, the CVWD staff will perform audits of the program on a periodic basis.

One method of audit will be through exercises and drills. Members of CVWD management will act as observers during the exercises and will evaluate the staff's performance in responding to emergency incidents as well as the overall effectiveness of the ERP in accomplishing their goals. CVWD management will review the results of the evaluation, and the ERP and APs will be updated as appropriate to incorporate any lessons learned from the exercises.

The ERP program will also be discussed as an agenda item during the GM's meeting each time the VA is updated. At this time, CVWD management and staff will discuss the need to update or augment the ERP based on new information regarding threats or critical asset vulnerability.

The SD will maintain a file of ERP assessment and after-action reports.

9.4 Training, Exercises, and Drills

All CVWD personnel who may be required to respond to emergencies will receive initial and refresher training class on this ERP. The training will be conducted annually or when any of the following occurs:

- New employees are hired.
- Special emergency assignments are designated to operations staff.
- New equipment or materials are introduced.
- Procedures are updated or revised.

The training will consist of the following programs:

Orientation Sessions: The orientation sessions will include basic instruction and explanation of the ERP and AP procedures. Written tests may be used to ensure some level of comprehension by the attendees.

Table Top Workshop: Table top workshops involve developing scenarios that describe potential problems and providing certain information necessary to address the problems.

Employees will be presented with a fabricated major event. Next they will verbally respond to a series of questions and then evaluate whether their responses match what is written in the ERP.

Functional Exercises: The functional exercise is designed to simulate a real major event. A team of simulators is trained to develop a realistic situation. By using a series of pre-scripted messages, the simulation team sends information in to personnel assigned to carry out the ERP procedures. Both the simulators and personnel responding to the simulation are focused on carrying out the procedures to test the validity of the ERP.

Full-scale Drills: Emergency response personnel and equipment are actually mobilized and moved to a scene. A problem is presented to the response personnel, and they respond as directed by the ERP and the Incident Commander or WUERM at the scene.

10.0 References and Links

The following is a list of references and Internet links that provide additional water system security and ERP information.

California Department of Health Services Drinking Water Program: CDHS DWP is the Drinking Water Primacy Agency for all California public water systems serving over 200 service connections. CDHS has published a guidance document to assist California public water systems in developing or revising their emergency response plans. General information, as well as the guidance document and its appendices, is available at http://www.dhs.ca.gov/ps/ddwem/homeland/default.htm.

Department of Homeland Security (DHS): DHS is the overall lead agency for homeland security issues. DHS will become involved in incident response if needed. General information is available at http://www.dhs.gov/dhspublic.

United States Environmental Protection Agency: USEPA has numerous resources available. The following are key sources:

- Water Infrastructure Security information, guidance, and training information can be found at http://www.epa.gov/safewater/security/index.html.
- Information on Local Emergency Planning Committees (LEPCs) can be found at http://www.epa.gov/ceppo/lepclist.htm.

The Center for Disease Control and Prevention: The CDC develops resources to assist hospital staff, clinics, and physicians in diagnosing diseases related to terrorism, reporting incidences of disease, and controlling the spread of infection. Information on emergency preparedness and response can be found at http://www.bt.cdc.gov/.

- To assist in the development of a Public Health Response Plan, the CDC published a planning guidance document entitled *The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials* (July 2001), which can be found at http://www.bt.cdc.gov/Documents/Planning/PlanningGuidance.pdf.
- *Interim Recommended Notification Procedures for Local and State Public Health Department Leaders in the Event of a Bioterrorist Incident* can be found at http://www.bt.cdc.gov/EmContact/Protocols.asp.

Federal Emergency Management Agency (FEMA): FEMA's mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery. FEMA takes the lead if an incident is assigned to DHS. General information can be found at http://www.fema.gov. In addition, several online training courses relevant to emergency management are available on-line from FEMA at http://training.fema.gov/EMIWeb/IS/crslist.asp.

The American Water Works Association (AWWA): USEPA training developed through partnership with AWWA covers the entire spectrum of security issues including assessing vulnerabilities, emergency response plans, and risk communication. AWWA information can be accessed at http://www.awwa.org. Specific AWWA resources can be found at http://www.awwa.org/communications/offer/secureresources.cfm.

The Association of State Drinking Water Administrators (ASDWA): ASDWA has information on water security planning, training, and links to state programs and other information sources. Go to the security link at http://www.asdwa.org/.

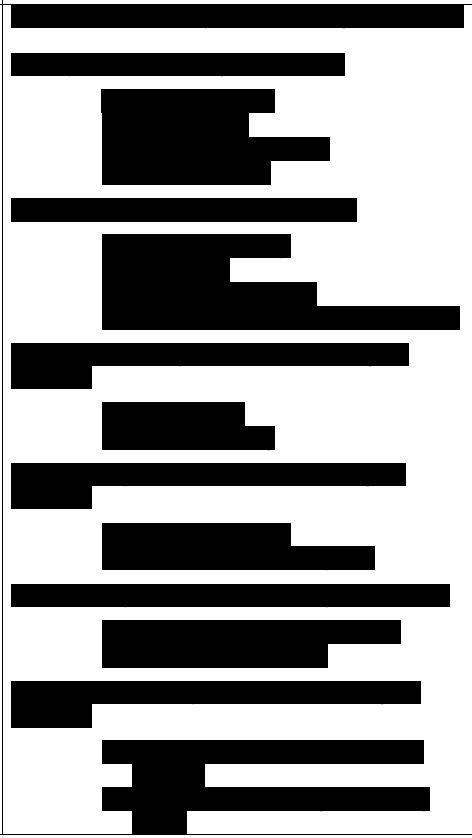
National Rural Water Association (NRWA): NRWA developed the SEMS Software Program, which can be loaded on a personal computer. It is based on NRWA/ASDWA's *Security Vulnerability Self-Assessment Guide for Small Drinking Water Systems Serving Populations Between 3,300 and 10,000.* More information can be found at http://www.nrwa.org/.

Agency for Toxic Substances and Disease Registry (ATSDR): ATSDR is directed by congressional mandate to perform specific functions concerning the effect on public health of hazardous substances in the environment. These functions include public health assessments of waste sites, health consultations concerning specific hazardous substances, health surveillance and registries, response to emergency releases of hazardous substances, applied research in support of public health assessments, information development and dissemination, and education and training concerning hazardous substances. More information can be found at http://www.atsdr.cdc.gov/.

Appendix A
Action Plans

AP 1A - Threat of or Actual Contamination to Water System

POSSIBLE STAGE

AP Summary:	This Action Plan applies to the intentional introduction of a contaminant into the water system. The contaminant could be introduced at any point within the system, including raw water, treatment facilities, distribution system including distribution pipes, finished water storage, or pump stations. The adversary may or may not give notice of the contaminant or provide the location. Contamination may have actually occurred or it may be a hoax.	
Initiation and Notification:		*Use this AP if you receive any incident warning (see types of warnings to left) indicating possible contamination of your water system* *If you have evidence that corroborates the warning, or if collective information indicates that contamination is likely,* ***GO TO AP 1B – CREDIBLE STAGE****.* *If there is confirmed evidence and/or definitive information that the water system has been contaminated.* ***GO TO AP 1C – CONFIRMED STAGE.***

AP 1A - Threat of or Actual Contamination to Water System

POSSIBLE STAGE

	[redacted]	
Initiation and Notification:	[WUERM] [Alternate WUERM] [redacted]	*The individual who first notices or receives the threat warning should contact the [WUERM] immediately by whatever means of communication may be available.*
Equipment Identified:	[redacted]	*This equipment is available to assist in the execution of this AP.*
Specific Activities:		
I. Assess the Problem	[redacted]	*Threat Warning Report Forms help document, organize and summarize information about a*

AP 1A - Threat of or Actual Contamination to Water System

POSSIBLE STAGE

	[redacted]	*security incident. The individual who discovers the incident warning, the [WUERM], or another designated individual may complete the form. Only the form that corresponds to the type of threat warning needs to be completed. Completion of the form should not distract emergency responders from more urgent matters.* *Threat Evaluation Worksheets help organize information about a threat warning that will be used during the Threat Evaluation Process. The individual responsible for conducting the Threat Evaluation (e.g., the [WUERM]) should complete this worksheet.*
II. Isolate and Fix the Problem	[redacted]	*Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section XX of the ERP.* *The immediate operational response actions are primarily intended to limit exposure of customers to potentially contaminated water.* *See EPA Toolbox Module 2, Section 3.3.2 for guidance on containing contaminants and evaluating movement of potentially contaminated water through distribution systems.*
III. Monitoring	[redacted]	*Site Characterization is intended to gather critical information to support the 'credible' stage of threat*

AP 1A - Threat of or Actual Contamination to Water System

POSSIBLE STAGE

	[redacted]	*evaluation.* *If signs of a hazard are evident during the site approach, the team should halt their approach and immediately inform the [WUERM] of their findings. The site may then be turned over to the HAZMAT Team.* *The [WUERM] may determine the threat is credible based preliminary information before the site characterization has been completed.*
IV. Recovery and Return to Safety	[redacted]	*You should determine whether or not the threat is 'credible' **within 2 to 8 hours (preferably within 2 hours)** from the time the threat is deemed 'possible', depending on the effectiveness of the containment strategy.* *If the threat is not deemed 'credible', the samples obtained during site characterization should be stored in case the situation changes and analysis is determined to be necessary.*
V. Report of Findings	[redacted]	*The Utility [Security Director] should file an internal report for the Utility's files, and also provide information as requested to Local Law Enforcement.*
VI. AP-1A Revision Dates		

AP 1B - Threat of or Actual Contamination to Water System

CREDIBLE STAGE

AP Summary:	This Action Plan applies to the intentional introduction of a contaminant into the water system. The contaminant could be introduced at any point within the system, including raw water, treatment facilities, distribution system including distribution pipes, finished water storage, or pump stations. The adversary may or may not give notice, identify the contaminant, or provide the location. Contamination may have actually occurred or it may be a hoax.
[redacted]	[redacted] [WUERM] [Alternate WUERM] [redacted] [WUERM] [WUERM] [WUERM] [redacted] [Information Officer] [IO] [redacted]

[redacted]	[redacted]	[redacted]
[redacted]		
[redacted]	[redacted]	
[redacted]	[redacted]	
[redacted]		

[redacted]	[redacted]	[redacted]
V. Report of Findings	E. File incident reports.	*The Utility [Security Director] should file an internal report for the Utility's files, and also provide information as requested to Local Law Enforcement and other outside agencies.*
VI. AP-1B Revision Dates		

AP 1C - Contamination to Water System

CONFIRMED STAGE

AP Summary:	[redacted]	
Initiation and Notification:	[redacted]	

AP 1C - Contamination to Water System

CONFIRMED STAGE

	[redacted]	
Initiation and Notification:	[redacted] [WUERM] [Alternate WEURM]	[redacted] *[WUERM]* *[WUERM]* *[WUERM]* *[Information Officer] [IO]*
Equipment Identified:	[redacted]	[redacted]

AP 1C - Contamination to Water System

CONFIRMED STAGE

Specific Activities:		
I. Assess the Problem	[redacted]	[redacted]
I. Assess the Problem	[redacted]	[redacted]
II. Isolate and Fix the Problem	[redacted] (ERP Section XX)	[redacted]

AP 1C - Contamination to Water System

CONFIRMED STAGE

	[redacted]	
III. Monitoring	[redacted]	
IV. Recovery and Return to Safety	[redacted]	[redacted]

AP 1C - Contamination to Water System CONFIRMED STAGE		
V. Report of Findings	[redacted]	*[Security Director]* [redacted]
VI. AP-1C Revision Dates		

AP 2 - Structural Damage from Explosive Device		
AP Summary:	[redacted]	
Initiation and Notification:	[redacted] CVWD [redacted] [WUERM] Alternate WUERM] [WUERM] [redacted]	*[WUERM]* [redacted]
Initiation and Notification:	[redacted] CVWD [redacted]	[redacted] *[WUERM]*

AP 2 - Structural Damage from Explosive Device

	[redacted]	[WUERM]
Equipment Identified:	[redacted]	[redacted]
Specific Activities:		
I. Assess the Problem	[redacted]	[redacted]

AP 2 - Structural Damage from Explosive Device

	[redacted]	
II. Isolate and Fix the Problem	[redacted] (ERP Section XX) [redacted]	
III. Monitoring	[redacted]	
IV. Recovery and Return to Safety	[redacted]	[WUERM] [redacted] [WUERM] [redacted]

AP 2 - Structural Damage from Explosive Device		
V. Report of Findings	[redacted]	*[Security Director]* [redacted]
VI. AP-2 Revision Dates		

AP 3 – Employee Assaulted with Weapon (Armed Intruder)		
AP Summary:	[redacted]	
Initiation and Notification:	[redacted]	[redacted]
Equipment Identified:	[redacted]	[redacted]

AP 3 – Employee Assaulted with Weapon (Armed Intruder)

Specific Activities:		
I. Assess the Problem	[redacted]	[redacted]
II. Isolate and Fix the Problem	[redacted]	
III. Monitoring	[redacted]	[redacted]

AP 3 – Employee Assaulted with Weapon (Armed Intruder)

	[redacted]	
IV. Recovery and Return to Safety	[redacted]	
V. Report of Findings	[redacted]	
VI. AP-3 Revision		

AP 3 – Employee Assaulted with Weapon (Armed Intruder)	
Dates	

AP4 – SCADA Security		
AP Summary:	[redacted]	
Initiation and Notification:	Notify immediately upon discovery of the attack: • [WUERM], • Data (IT) Manager Others as appropriate (for example): • Internet Service Provider • Computer Equipment Vendor • Computer Emergency Response Team	[redacted] *[WUERM]* [redacted]
Equipment Identified:	[redacted]	[redacted]

AP4 – SCADA Security

	[redacted]	
Specific Activities:		
I. Assess the Problem	[redacted]	[redacted]
II. Isolate and Fix the Problem	[redacted]	[redacted]

AP4 – SCADA Security

	[redacted]	[redacted]
III. Monitoring	[redacted]	[redacted]
IV. Recovery and Return to Safety	[redacted]	[redacted]
IV. Recovery and Return to Safety	[redacted]	[redacted]

AP4 – SCADA Security

	[redacted]	[redacted]
V. Report of Findings	[redacted]	[redacted]
VI. AP-4 Revision Dates		

AP5 – IT Security

AP Summary:	[redacted]	
Initiation and Notification:	[redacted] [WUERM] [redacted]	[redacted]
Initiation and Notification:	[redacted]	[redacted]

AP5 – IT Security

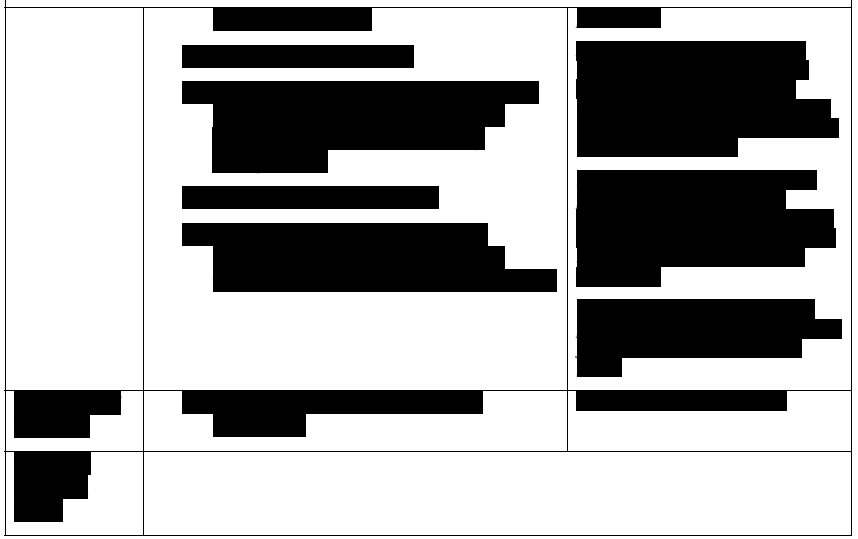
	[redacted]	[redacted]
Equipment Identified:	[redacted]	[redacted]
Specific Activities:	[redacted]	[redacted]

AP5 – IT Security

[redacted]	[redacted]	[redacted]

AP5 – IT Security

AP5 – IT Security



[redacted]

[WUERM]

- [WUERM]
- [Alternate WUERM]

[redacted]

[redacted]

	[redacted]	
II. Isolate and Fix the Problem	[redacted]	
II. Isolate and Fix the Problem	[redacted]	

	[redacted]	
III. Monitoring	[redacted]	
IV. Recovery and Return to Safety	[redacted]	
V. Report of Findings	[redacted]	
VI. AP-7 Revision Dates		

AP 8A – Natural Event (Flood)

- [WUERM]
- [Alternate WUERM]

[WUERM]

AP 8A – Natural Event (Flood)

AP 8A – Natural Event (Flood)

[redacted]

[IO]

[redacted]

AP 8A – Natural Event (Flood)

[redacted]

[WUERM] [IO]

[redacted]

http://www.fema.gov/nfip

[redacted]

AP 8A – Natural Event (Flood)

	[redacted]	
[redacted]	[redacted]	
[redacted]		

[redacted]		
[redacted]	[redacted]	[redacted]

[redacted]

[redacted]

	[redacted]	
[redacted]	[redacted]	
IV. Recovery And Return to Safety	[redacted]	

	[redacted]	
V. Report of Findings	[redacted]	
VI. AP-8B Revision Dates		

AP 8C – Natural Event (Tsunami)

AP Summary:	[redacted]
Initiation and Notification:	[redacted]
Equipment Identified:	[redacted]

AP 8C – Natural Event (Tsunami)

Specific Activities:	
I. Assess the Problem	[redacted]
II. Isolate and Fix the Problem	[redacted]

AP 8C – Natural Event (Tsunami)

II. Isolate and Fix the Problem	[redacted]	
II. Isolate and Fix the Problem	[redacted]	
II. Isolate and Fix the Problem	[redacted]	

AP 8C – Natural Event (Tsunami)

	[redacted]	
III. Monitoring	[redacted] CVWD [redacted]	

AP 8C – Natural Event (Tsunami)

	[redacted]	
IV. Recovery And Return to Safety	[redacted] [IO]	
IV. Recovery And Return to Safety	[redacted]	

AP 8C – Natural Event (Tsunami)

	[redacted]	
IV. Recovery And Return to Safety	[redacted]	

AP 8C – Natural Event (Tsunami)

	[redacted]	
IV. Recovery And Return to Safety	[redacted]	

AP 8C – Natural Event (Tsunami)

	[redacted]	
IV. Recovery And Return to Safety	[redacted]	
V. Report of Findings	[redacted]	
VI. AP-8C Revision Dates		

AP 8D – Natural Event (Earthquake)

AP Summary:	[redacted]	
Initiation and Notification:	[redacted]	[redacted]
Equipment Identified:	[redacted]	[redacted]
Specific Activities:		
I. Assess the Problem	[redacted]	[redacted]

AP 8D – Natural Event (Earthquake)

	[redacted]	[redacted]
I. Assess the Problem	[redacted]	
II. Isolate and Fix the Problem	[redacted]	
III. Monitoring	[redacted]	

AP 8D – Natural Event (Earthquake)

	[redacted]	
IV. Recovery And Return to Safety	[redacted]	
V. Report of Findings	[redacted]	
VI. AP-8D Revision Dates		

AP 9 – Water Supply Interruption

AP Summary:	[redacted]	
Initiation and Notification:	[redacted]	
Equipment Identified:	[redacted]	
Specific Activities:		
I. Assess the Problem	[redacted]	
II. Isolate and Fix the Problem	[redacted]	

AP 9 – Water Supply Interruption

	[redacted]	
II. Isolate and Fix the Problem	[redacted] CVWD [redacted]	
II. Isolate and Fix the Problem	[redacted]	

AP 9 – Water Supply Interruption

	[redacted]	
III. Monitoring	[redacted]	[redacted]
IV. Recovery and Return to Safety	[redacted]	[redacted]

AP 9 – Water Supply Interruption

	[redacted]	
V. Report of Findings	[redacted]	
VI. AP-9 Revision Dates		

AP 10A – Bomb Threat (Telephone / In Person)

AP Summary:	This Action Plan applies to the receipt of a bomb threat via telephone or in person. It is important to develop this plan in counsel with the local police and the local fire department services.	
Initiation and Notification:	[redacted] [WUERM]	[redacted]
Equipment Identified:	[redacted]	
Specific Activities:		
I. Assess the Problem	[redacted]	[redacted]
II. Isolate and Fix the Problem	[redacted]	[redacted]

AP 10A – Bomb Threat (Telephone / In Person)

	[redacted] CVWD [redacted] CVWD [redacted] [WUERM] [redacted] CVWD CVWD [redacted]	[redacted] CVWD [redacted]
II. Isolate and Fix the Problem	[redacted] [Information Officer], [IO] [redacted]	[redacted]

AP 10A – Bomb Threat (Telephone / In Person)

	[redacted] [WUERM] [redacted] [Information Officer], [IO], [redacted]	
III. Monitoring	[redacted]	[redacted]
IV. Recovery and Return to Safety	[redacted]	
V. Report of Findings	[redacted]	[redacted] *[Security Director]* [redacted]

AP 10A – Bomb Threat (Telephone / In Person)		
		[redacted]
VI. AP 10A Revision Dates		

AP 10B – Bomb Threat (Suspicious Package / Letter)		
AP Summary:	[redacted]	
Initiation and Notification:	[redacted] [WUERM] [redacted]	[redacted]
Equipment Identified:		
Specific Activities		
I. Assess the Problem	[redacted]	[redacted] [WUERM]

AP 10B – Bomb Threat
(Suspicious Package / Letter)

I. Assess the Problem	[redacted]	[redacted]
II. Isolate and Fix the Problem	[redacted] [WUERM] [redacted]	[redacted]
II. Isolate and Fix the Problem	[redacted] CVWD [redacted] [Information Officer] [IO] [redacted]	[redacted]

AP 10B – Bomb Threat
(Suspicious Package / Letter)

	[redacted]	
III. Monitoring	[redacted]	
IV. Recovery and Return to Safety	[redacted]	
V. Report of Findings	[redacted]	[redacted] *[Security Director]* [redacted]
VI. AP 10B Revision Dates		

AP 10C – Bomb Threat (Written Threat Received)

AP Summary:	This Action Plan applies to the receipt of a written bomb threat. It is important to develop this plan in counsel with your local police and local fire department.	
Initiation and Notification:	[WUERM]	
Equipment Identified:		
Specific Activities		
I. Assess the Problem		
II. Isolate and Fix the Problem		

AP 10C – Bomb Threat (Written Threat Received)

	[WUERM] CVWD CVWD [Information Officer] [IO]	
III. Monitoring		

AP 10C – Bomb Threat (Written Threat Received)		
	[redacted]	
IV. Recovery and Return to Safety	[redacted]	
V. Report of Findings	[redacted]	*[Security Director]* [redacted]
VI. AP 10C Revision Dates		

Appendix B
System and Facility Information

SYSTEM SHUT DOWN AND ISOLATION PLAN

SYSTEM COMPONENT	METHOD OF SHUTDOWN OR ISOLATION		LOCATION & PERSON TO PERFORM SHUTDOWN OR ISOLATION		SPECIAL REQUIREMENTS
	Automated	Manual	SCADA Controlled	Manual Operation	
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Distribution System Isolation Plan

[redacted]

[redacted]

[redacted]

[redacted]

CA Dept. of Health Services Recommended Emergency Sampling Kit

Quantity Per Kit	Total Quantity Needed (50 Kits)	Size	Description	Supplier	Page No.	MFG Number	Catalog No.	Quantity to Order	Unit Price	Extended Price
3	150	1 L	Wheaton Glass 24/case	VWR	190	219820	16159-903	7	$166.46	**$1,165.22**
4	200	1 L	Amber Glass 12/case	VWR	176		15900-142	17	$26.20	**$445.40**
3	150	2 1/2 L	Amber Glass 6/case	VWR	179		15900-192	25	$26.10	**$652.50**
5	250	40 ml	Amber Glass Vials 72/case	VWR	175		15900-024	4	$70.15	**$280.60**
2	100	125 ml	125 ml (4 oz) Nalgen Polypropylene Wide Mouth Bottle 12/case	Fischer Scientific	191	2105-0004	02893A	9	$19.74	**$177.66**
3	150	1/2 Gal	Plastic 64 oz Type F Natural	Mayfair Plastics				150	$0.458	**$68.70**
2	100	125 ml	Amber Glass w/septa 12/case	VWR	176		15900-146	9	$17.75	**$159.75**
2	100	250 ml	Disposable Plastic Bac-t Bottle w/thiosulfate (Forest Biomedical)	Eagle Pitcher				100	$1.50	**$150.00**
2	100	10 L	Collapsible Carboy LDPE Cubitainers 12/case	VWR	189		EP 160-2-5	9	$58.74	**$528.66**
4	200	pair	Vinyl gloves (disposable) Large 1000/case	VWR	746		PH2D7852	1	$177.41	**$177.41**
2	100	each	Moldex Type N95 particulate respirator 20/pk	Fischer Scientific	1544	1501	19-003-245A	5	$21.07	**$105.35**
2	100	each	Disposable Lab Jacket Kimberly Clark "Kleen Guard" Size XL 15/case	Fischer Scientific	35	36544	17-981-41H	7	$80.00	**$560.00**
2	100	each	Bouton Softsides Goggle	Central Stores			45-132-12500	100	$1.89	**$189.00**
12	600	feet	50' Coil 3/8-in I.D. 1/2 -in O.D. Tygon Laboratory tubing R-3606	VWR	1807	AJC00027	63010-122	4	$73.05	**$292.20**

2	100	each	Connector Clamps with thumbscrew 10/pack	Fischer Scientific	410		14-198A	10	$14.18	**$141.80**

CA Dept. of Health Services Recommended Emergency Sampling Kit

Quantity Per Kit	Total Quantity Needed (50 Kits)	Size	Description	Supplier	Page No.	MFG Number	Catalog No.	Quantity to Order	Unit Price	Extended Price
10	500	9 x 18	Zip-lock LDPE Sample Bags Nalgene 250/case	VWR	55	6255-0918	56766-130	2	$139.45	**$278.90**
1	50	roll	Lab grade marker tape 1" (12/case)	VWR	926		36425-067	4	$50.04	**$200.16**
1	50	each	Biohazard Bags 12 x 24 (200/case)	VWR	52		11215-898	1	$119.16	**$119.16**
4	200	each	Anticeptic wipes (pads) 200/case	VWR	1945		21899-553	1	$123.80	**$123.80**
10	500	grams	Sodium Thiosulfate granules Mallinckrodt 500 grams	VWR	2320		MK809612	1	$37.95	**$37.95**
40	2000	each	Adhesive labels 500/roll	Stock				4	$5.00	**$20.00**
2	100	30.8 Qt	Collapsible Cooler (Igloo Softmate 48)	Igloo			Softmate 48	100	$32.36	**$3,236.00**
1	50	30 Gal	Plastic Storage Bin (Sterilite Ultra)	Sterilite Corp.		17454204	Ultra 30 Gal	54	$11.49	**$620.46**
									Total	**$9,831.03**
								Price per Kit		**$196.62**

Appendix C
Emergency Phone Lists

TABLE C-1

911 Area	Direct Phone Number
Santa Barbara Sheriff	805- 684-4561

The individual(s) who discover the threat or emergency situation will immediately notify CVWD's 24-hour Call Center. The ***Dispatcher at the Call Center*** will then notify the Water Utility Emergency Response Manager or WUERM. The remainder of the CVWD staff will be notified according to the table below.

TABLE C-2

Name and Title	Responsibilities during an Emergency	Contact Numbers
[redacted]	[redacted]	[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]
[redacted]		[redacted]

TABLE C-3

Local Agencies	Name	Contact Numbers
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

TABLE C-4

County Agencies	Name	Contact Numbers
County Public Health Officer	Elliot Schulman M.D.	805-681-4373
County Director of Environmental Health Department	Rick Merryfield	805-681-4900
County OES	General Number	805-681-5526
County HAZMAT Team	General Number	805-686-8170

TABLE C-5

State Agencies	Name	Contact Numbers
CDHS District Engineer	Kurt Souza If can't get a hold of "DE", call the CA Warning Center's 24/7 phone number and ask for the CDHS Duty Officer. A CDHS manger will be contacted and call the water system	[redacted]
Department of Water Resources	General	818-543-4600, 916-657-1134
Department of Fish and Game	OSPR	805-568-1229
Department of Toxic Substances Control	Dorothy Rice	916-323-3577
Regional Water Quality Control Board	Todd Stanley	805-542-4769
CA OES (State OES)	Warning Center (Ask for CDHS Duty Officer-Drinking Water Program)	(800) 852-7550 24/7 (916) 845-8911 24/7

TABLE C-6

Federal Agencies	Name	Contact Numbers
FBI	Randy J Aden (SSRA)	805-642-3995
EPA	Mavin Young	415-972-3561
Department of Homeland Security (DHS)	General	202-282-8000
Health and Human Services (HHS)	General	877-696-6775
Center for Disease Control (CDC)	General	888-246-2675
ATF	General	805-348-1820 or 888-283-2662

TABLE C-7

Vendors / Contractors	Name	Contact Numbers
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

TABLE C-8

Customer Name	Critical Care Customers	Large Water Users	Primary Contact Information	Secondary Contact Information
Veterans Building and Clinic	Yes	No	City of Carpinteria 805-684-5405	SB County Health Department 805-684-8681
Carpinteria Unified School District	yes	yes	Cindy Abbott 805-684-4511	
Cate School	yes	yes	Sandy Pierce 805-684-4127	Tano Vega 805-684-4127
Ridgeland Mutual Water Co	no	yes	Dick Van Antwerp 805-969-4966	

TABLE C-9

Firefighting Water Source	Contact Information	Quantity Available
Montecito Water District	Bob Roebuck, Montecito Water	Interties for water direct into our system
Jamison Lake	Bob Roebuck, Montecito Water	Lake full
Lake Casitas	John Johnson, Casitas Water	Lake Full

TABLE C-10

Supplier	Contact Information
Arrowhead Water	Contact Person: John Andrews Office phone: 805-653-0253 Mobile phone:

TABLE C-11

Media Type	Contact Information
Santa Barbara News Press	Camilla Cohee, 805-564-5280
KEYT	News Room, 805-882-3933
KRUZ,	Pat Cantwell, 805-682-2895
KBKO (Spanish Speaking radio)	805-879-1490

TABLE C-12

County Agency	Name	Contact Numbers
County Health Department	Primary: Roger E. Heroux, M.P.A.	805- 681-5102
County Health Department	1st Alternate: Peggy Langle	805-681-5102
County Health Department	2nd Alternate:	805-681-5102
County Health Officer	Primary: Elliot Schulman, MD	805-681-5102
County Health Officer	1st Alternate: Michele Mickiewicz	805-681-5102
County Health Officer	2nd Alternate: Jane Overbaugh	805-681-5102

Appendix D
Public Notices and Press Releases

PUBLIC NOTICE

CONSUMER ALERT DURING WATER OUTAGES OR PERIODS OF LOW PRESSURE

1. If you are experiencing water outages or low water pressure, immediately discontinue any non-essential water usage. This includes all outdoor irrigation and car washing. Minimizing usage will reduce the potential for the water system to lose pressure or completely run out of water. Please notify your water system of the outage or low pressure.

2. If the water looks cloudy or dirty, you should not drink it. Upon return of normal water service, you should flush the hot and cold water lines until the water appears clear and the water quality returns to normal.

3. If you are concerned about the water quality or are uncertain of its safety, you may add eight drops of household bleach to one gallon of water and let it sit for 30 minutes or alternatively, if you are able, water can be boiled for one minute at a rolling boil to ensure its safety.

4. Use of home treatment devices does not guarantee the water supply is safe after low pressure situations.

5. Do not be alarmed if you experience higher than normal chlorine concentrations in your water supply since the California Department of Health Services is advising public water utilities to increase chlorine residuals in areas subject to low pressure or outages.

6. The California Department of Health Services has also advised public water systems to increase the bacteriological water quality monitoring of the distribution system in areas subject to low pressure. They may be collecting samples in your area to confirm that the water remains safe. You will be advised if the sampling reveals a water quality problem.

7. Your water system is committed to make certain that an adequate quantity of clean, wholesome, and potable water is delivered to you. We recommend that you discuss the information in this notice with members of your family to ensure that all family members are prepared should water outages or low water pressure occur.

FECHA:

ORDEN DE HERVIR EL AGUA

Hierva su Agua antes de Usarla

Falta de seguir este aviso podría tener resultados estómago o enfermedad intestinal

Debido a la [falta de agua (water outage), falta de electricidad (power outage), inundacion (flood), incendio (fire), temblor (earthquake) or other emergency], durante [date, month, etc.], el Departamento de California de Servicios de Salud en conjunción con la Carpinteria y el Condado de [County name] esta aconsejando a todos usuarios de el sistema de [water system name] que hiervan el agua de canilla o usen agua embotellada para beber y cocinar como medida de seguridad.

Que debo hacer?

NO BEBA EL AGUA SIN ANTES HERVIRLA. Hierva toda el agua, déjela hervir por un minuto, y déjela reposar antes de usarla, o utilize agua embotellada. Agua hervida o embotellada debe ser usada para beber y para preparar la comida hasta el próximo aviso. Hierviendo morta a bacteria y otros organismos en el agua. [or Este es el metodo preferido para asegurar que el agua esta segura para beber.]

Optional alternative to include for prolonged situations where it fits.

- Otro método de purificación del agua para los residentes que no tengan gas o electricidad disponibles es utilizar blanqueador líquido de uso doméstico (Clorox®, Purex®, etc.). Para hacerlo, añada 8 gotas (o 1/4 cucharadita) de blanqueador por galón de agua clara, o 16 gotas (o media cucharadita) por galón de agua turbia, mézclelo bien y déjelo descansar 30 minutos antes de utilizarlo. Este procedimiento de purificación causa que el agua huela y tenga sabor a cloro, lo que indica que ha sido desinfectada de manera adecuada.
- También se puede utilizar tabletas de purificación del agua siguiendo las instrucciones del fabricante.
- Hay agua potable disponible en los siguientes sitios: 1301 Santa Ynez Avenue
  Traiga un recipiente limpio para el agua (con una capacidad máxima de 5 galones).

Le informaremos cuando las pruebas demuestren que no hay bacterias y que usted ya no necesita hervir su agua. Anticipamos que resolveremos el problema el [date of expected resolution in Spanish day-month-year].

Para mas información, por favor póngase en contacto con:
Contacto del sistema de agua: Omar Castro al 805-684-2816 o escribiendo a 1301 Santa Ynez Avenue.
Departamento de Salud de California: 805-566-1326.
Condado de Santa Barbara: (805) 681-5280

Por favor comparta esta información con otros que pueden tomar de esta agua, colocando este aviso en lugares visibles, o remitiéndolo por correo, o entregandolo manualmente. Es de particular interés distribuir este aviso ampliamente si usted lo recibe representando un negocio, un hospital u hogar de infantes u hogar de ancianos o comunidad residencial.

Date:

UNSAFE WATER ALERT

Carpinteria Valley Water District water is possibly contaminated with [an unknown substance]

DO NOT DRINK YOUR WATER

Failure to follow this advisory could result in illness.

An unknown substance has been added to the drinking water supplied by the Carpinteria Valley Water District due to a recent [intrusion; break-in] at [one of the wells; our pumping plant; storage tank; distribution system; specific facility]. The California Department of Health Services, Santa Barbara County Health Department, and Carpinteria Valley Water District are advising residents of Carpinteria Valley to NOT USE THE TAP WATER FOR DRINKING AND COOKING, HAND WASHING, OR BATHING UNTIL FURTHER NOTICE.

What should I do?

- DO NOT DRINK YOUR TAP WATER---USE ONLY BOTTLED WATER. Bottled water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice and food preparation until further notice.
- DO NOT TRY AND TREAT THE WATER YOURSELF. Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting water stand will not make the water safe.
- Potable water is available at the following locations: City Hall at 5775 Carpinteria Avenue and the Water District Office at 1301 Santa Ynez Avenue. Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that the water is safe again. We expect to resolve the problem within [estimated time frame].

For more information call:
Water Utility contact: Charles Hamilton, General Manager, 805-684-2816, 1301 Santa Ynez Avenue
California Department of Health Services at: Kurt Souza, District Engineer, 805-566-1326
Local County Health Department: (805) 681-5280

This notice is being sent to you by Carpinteria Valley Water District California Public Water System ID # 421-0001. Date Distributed:

Please share this information with all other people who receive this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

Date:

BOIL WATER ORDER

Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

BOIL YOUR WATER BEFORE USING

Failure to follow this advisory could result in stomach or intestinal illness.

Due to the recent event [e.g., water outage, power outage, flood, fire, earthquake or other emergency situation], the California Department of Health Services in conjunction with the [County Name] County Health Department, and [Water System name] Water System are advising residents of [City, Town, System] to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil for one (1) minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking and food preparation until further notice. Boiling kills bacteria and other organisms in the water.

Optional alternative to include for prolonged situations where it fits.

- An alternative method of purification for residents that do not have gas or electricity available is to use fresh liquid household bleach (Clorox®, Purex®, etc.). To do so, add 8 drops (or 1/4 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/2 teaspoon) per gallon of cloudy water, mix thoroughly, and allow to stand for 30 minutes before using. A chlorine-like taste and odor will result from this purification procedure and is an indication that adequate disinfection has taken place.
- Water purification tablets may also be used by following the manufacturer's instructions.
- Optional: Potable water is available at the following locations: [List locations]
  Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information call:
Water Utility contact: [Name, title, phone & address of responsible utility representative].
California Department of Health Services – Drinking Water Field Operations Branch- District Office at [(805) 566-1326].
Local Environmental Health Jurisdiction: [Santa Barbara County at (805) 681-5102].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Carpinteria Valley Water District
Press Release

Media Contact: Charles Hamilton, Carpinteria Valley Water District

Date:

Water Contamination Emergency

Insert instructions and alerts *here*

Appendix E
California Statewide Emergency Notification Plan

State of California—Health and Human Services Agency
DEPARTMENT OF HEALTH SERVICES

ARNOLD SCHWARZENEGGER
Governor

WATER QUALITY EMERGENCY NOTIFICATION PLAN

Name of Utility: Carpinteria Valley Water District

Physical Location/Address: City of Carpinteria and unincorporated areas of Carpinteria Valley

The following persons have been designated to implement the plan upon notification by the State Department of Health Services that an imminent danger to the health of the water users exists:

Water Utility: Contact Name & Title	**Email Address**	**Telephone Day**	**Evening**	**Cell**
1. Charles B. Hamilton	[redacted]	[redacted]	[redacted]	[redacted]
2. Bob Mc Donald	[redacted]	[redacted]	[redacted]	[redacted]
3. Omar Castro	[redacted]	[redacted]	[redacted]	[redacted]

The implementation of the plan will be carried out with the following State and County Health Department personnel:

State & County Health Departments: Contact Name & Title	**Telephone Day**	**Evening**
1. Kurt Souza, District Engineer	**(805)**	[redacted]
California Department of Health Services	**566-1326**	[redacted]
2. Mir Ali, Engineer	**((805)**	[redacted]
California Department of Health Services	**566-1326**	[redacted]
3. County Environmental Health Department	**(805)**	[redacted]
Local Primacy Agency	**681-5102**	[redacted]

4. If the above personnel cannot be reached, contact:

Office of Emergency Services Warning Center (24 hrs) (800) 852-7550 or (916) 845-8911
When reporting a water quality emergency to the Warning Center, please ask for the California Department of Health Services – Drinking Water Program Duty Officer.

NOTIFICATION PLAN

Attach a written description of the method or combination of methods to be used (radio, television, door-to-door, sound truck, etc.) **to notify customers in an emergency.** For each section of your plan give an estimate of the time required, necessary personnel, estimated coverage, etc. Consideration must be given to special organizations (such as schools), non-English speaking groups, and outlying water users. Ensure that the notification procedures you describe are practical and that you will be able to actually implement them in the vent of an emergency. Examples of notification plans are attached for large, medium and small communities.

Report prepared by:

_____ _____
Signature and Title Date

PLAN I (Medium Community)

[redacted]

Appendix F
Incident Reports and Forms

Written Threat Report Form

INSTRUCTIONS

The purpose of this form is to summarize significant information from a written threat received by a drinking water utility. This form should be completed by the WUERM or an individual designated by incident command to evaluate the written threat. The summary information provided in this form is intended to support the threat evaluation process; however, the completed form is not a substitute for the complete written threat, which may contain additional, significant details.

The written threat itself (e.g., the note, letter, e-mail message, etc.) may be considered evidence and thus should be minimally handled (or not handled at all) and placed into a clean plastic bag to preserve any forensic evidence.

Remember, tampering with a drinking water system is a crime under the SDWA Amendments!

SAFETY

A suspicious letter or package could pose a threat in and of itself, so caution should be exercised if such packages are received. The US Postal Service has issued guidance when dealing with suspicious packages (http://www.usps.com/news/2001/press/pr01_1022gsa.htm).

THREAT NOTIFICATION

Name of person receiving the written threat: _____

Person(s) to whom threat was addressed: _____

Date threat received: _____ **Time threat received:** _____

How was the written threat received?

☐ US Postal service ☐ Delivery service ☐ Courier
☐ Fax ☐ E-mail ☐ Hand delivered
☐ Other _____

If mailed, is the return address listed? ☐ Yes ☐ No

If mailed, what is the date and location of the postmark? _____

If delivered, what was the service used (list any tracking numbers)? _____

If Faxed, what is the number of the sending fax? _____

If E-mailed, what is the e-mail address of sender? _____

If hand-delivered, who delivered the message? _____

DETAILS OF THREAT

Has the water already been contaminated? ☐ Yes ☐ No

Date and time of contaminant introduction known? ☐ Yes ☐ No

Date and time if known: _____

Location of contaminant introduction known? ☐ Yes ☐ No

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station
☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir
☐ Distribution main ☐ Hydrant ☐ Service connection
☐ Other _____

Address: _____

Additional Site Information: _____

Name or type of contaminant known? ☐ Yes ☐ No

Type of contaminant

☐ Chemical ☐ Biological ☐ Radiological

Specific contaminant name/description: _____

Mode of contaminant introduction known? ☐ Yes ☐ No

Method of addition: ☐ Single dose ☐ Over time ☐ Other _____

Amount of material: _____

Additional Information: _____

Motive for contamination known? ☐ Yes ☐ No

☐ Retaliation/revenge ☐ Political cause ☐ Religious doctrine
☐ Other _____

Describe motivation: _____

NOTE CHARACTERISITCS

Perpetrator Information:

Stated name: _____
Affiliation: _____
Phone number: _____
Location/address: _____

Condition of paper/envelop:

☐ Marked personal ☐ Marked confidential ☐ Properly addressed
☐ Neatly typed or written ☐ Clean ☐ Corrected or marked-up
☐ Crumpled or wadded up ☐ Soiled/stained ☐ Torn/tattered
☐ Other: _____

How was the note prepared?

☐ Handwritten in print ☐ Handwritten in script ☐ Computer typed
☐ Machine typed ☐ Spliced (e.g., from other typed material)
☐ Other: _____

If handwritten, does writing look familiar? ☐ Yes ☐ No

Language:

☐ Clear English ☐ Poor English
☐ Another language: _____
☐ Mixed languages: _____

Writing Style

☐ Educated ☐ Proper grammar ☐ Logical
☐ Uneducated ☐ Poor grammar/spelling ☐ Incoherent
☐ Use of slang ☐ Obscene
☐ Other: _____

Writing Tone

☐ Clear ☐ Direct ☐ Sincere
☐ Condescending ☐ Accusatory ☐ Angry
☐ Agitated ☐ Nervous ☐ Irrational
☐ Other: _____

SIGNOFF

Name of individual who received the threat:

Print name _____
Signature _____ Date/Time: _____

Name of person completing form (if different from written threat recipient):

Print name _____
Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.6 – Interim Final December 2003

IT Incident Response and Reporting Checklist

Date_____ Time_____
Status:

- ☐ Site Under Attack
- ☐ Past Incident
- ☐ Repeated Incidents
- ☐ Unresolved

Contact Information:

Name _____
Title _____
Utility _____
Direct-dial phone _____
E-mail _____
Location / Site involved _____
Street Address _____
City _____
State/ZIP _____

1. What is the nature of the emergency? (Check all that apply)
   - ☐ Denial of Service attack
   - ☐ Unauthorized electronic monitoring
   - ☐ Network intrusion
   - ☐ Insider attack
   - ☐ Probe/scan
   - ☐ Malicious code (virus, Trojan horse, worm)
   - ☐ Website defacement
   - ☐ Other (explain)
2. Is there just one, or more than one, incident involved simultaneously?
3. Is this a single or multi-site incident?
4. What is the extent of penetration / infection?
5. Estimate the duration of attack
6. What is the entry point of the incident (network, the phone line, etc)?
7. What resources will be required to deal with this incident? (A Computer Emergency Response Team with a forensic expert might be needed immediately to analyze a major incident versus simply disconnecting the compromised equipment from the Internet for later analysis)
8. What is the source of the attack?
9. What is the target of the attack?
10. Impact of attack
11. Has there been a loss or compromise of business data?
12. What type of data has already been compromised or is at risk?

13. How critical is this data?
14. Affect on customers (Customers might be sensitive, based on the intensity level of the intellectual property loss. It could be a violation of privacy legislation versus a serious theft of software property, critically affecting a customer's enterprise-level business)
15. Estimate system downtime
16. Document damage to systems
17. Estimate financial loss
18. Has there been damage to the integrity or delivery of water or services?
19. Describe
20. Other utility systems affected
21. Severity of attack (include financial loss)

☐ Low ☐ Medium ☐ High

22. Did the attacker gain root, administrative or system access?
23. How was the incident detected?
    - ☐ Intrusion detection system or audit logs
    - ☐ External complaint
    - ☐ User report
    - ☐ Other
24. What are the known symptoms?
25. What utility areas are affected?
26. What systems are affected?

    Gather as much information as possible about the systems, including suspected systems. For example:

    - ☐ Operating system
    - ☐ Platform
    - ☐ Applications
    - ☐ IP addresses
    - ☐ Associated or suspected user IDs
    - ☐ Most recent changes applied
    - ☐ Other related items
27. Are the backups of the perceived affected systems available (provide all of the information regarding online, onsite, or offsite backups)?

See www.cert.org/tech_tips/intruder_detection_checklist.html for more information on detecting an intruder.

Maintaining Crime Scene Integrity*

Security breaches and suspicious activity need to be evaluated to determine if the actions are a result of "normal" activity, such as a construction crew working in the area, or the result of activity that could result in an intentional threat to the safety or security of the facility and it operations.

- As soon as **you** recognize that the threat is/was intentional and particularly if the actions of the threatening individuals are suspected to have been successful, **you** must notify facility management ([Security Director]/[General manager]).
- The (**[SD]/[GM]**) should immediately notify the local law enforcement agency responsible for criminal investigation at the facility as soon as they have verified a credible threat.
- **No personnel** from CVWD facility should enter the area where any possible criminal activity might have occurred so as not to disturb the area. All signs of inappropriate entrance to the facility and any physical activity of the suspects must be available for evaluation by law enforcement without any disturbance.
- **CVWD facility staff** and/or **law enforcement** may collect water samples prior to the collection of physical evidence.
- **CVWD facility staff** should collect samples outside of the boundaries of the suspected crime scene, if possible, to avoid concerns about the integrity of the crime scene.
- The **CVWD facility [GM]** should pre-designate a qualified laboratory that can assist in analysis, if the sample is suspected to contain water that has been intentionally contaminated, to insure chain of evidence custody. Law enforcement may require the collection of an additional sample set to be analyzed by their designated lab.
- **CVWD facility staff** should be aware of possible physical evidence of contamination that might include discarded PPE, equipment (such as pumps and hoses), or containers with residual material. Special care should be taken by facility personnel to avoid moving or disturbing any potential physical evidence.
- **CVWD facility staff** should notify [SD]/[GM] of any obvious physical evidence of contamination.
- **CVWD facility staff** should not handle any physical evidence except at the direction of the appropriate law enforcement agency.
- Any photographs or videos taken by **CVWD facility staff** should be reported to law enforcement for proper handling to ensure integrity of the evidence.

The **CVWD [SD]/[GM]** if appropriate, should clearly designate the area of suspected criminal activity to assure that facility personnel do not inadvertency enter the area and disturb evidence.

The **CVWD [SD]/[GM]** can instruct security personnel to stand by and/or lock doors/gates, and/or string tape or rope to restrict entrance, as appropriate.

The **[SD]/[GM]** should balance the needs of both the public health concerns and the concerns of possible criminal activity in their decisions to protect the crime scene.

** Adapted from EPA Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents Module 3: Site Characterization and Sampling Guide Section 3.6.*

Phone Threat Report Form

INSTRUCTIONS

This form is intended to be used by utility staff that regularly answer phone calls from the public (e.g., call center operators). The purpose of this form is to help these staff capturer as much information from a threatening phone call while the caller is on the line. It is important that the operator keep the caller on the line as long as possible in order to collect additional information. Since this form will be used during the call, it is important that operators become familiar with the content of the form. The sections of the form are organized with the information that should be collected during the call at the front of the form (i.e., Basic Call Information and Details of Threat) and information that can be completed immediately following the call at the end of the form (i.e., the description of the caller). The information collected on this form will be critical to the threat evaluation process.

Remember, tampering with a drinking water system is a crime under the SDWA Amendments

THREAT NOTIFICATION

Name of person receiving the call: _____

Date phone call received: _____ Time phone call received: _____

Time phone call ended: _____ **Duration of phone call:** _____

Originating number: _____ **Originating name:** _____

*If the number/name is not displayed on the caller ID, press *57 (or call trace) at the end of the call and inform law enforcement that the phone company may have trace information.*

Is the connection clear? ☐ Yes ☐ No

Could call be from a wireless phone? ☐ Yes ☐ No

DETAILS OF THREAT

Has the water already been contaminated? ☐ Yes ☐ No

Date and time of contaminant introduction known? ☐ Yes ☐ No

Date and time if known: _____

Location of contaminant introduction known? ☐ Yes ☐ No

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station

☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir

☐ Distribution main ☐ Hydrant ☐ Service connection

☐ Other _____

Address: _____

_____

Additional Site Information: _____

_____

Name or type of contaminant known? ☐ Yes ☐ No

Type of contaminant

☐ Chemical ☐ Biological ☐ Radiological

Specific contaminant name/description: _____

_____

Mode of contaminant introduction known? ☐ Yes ☐ No

Method of addition: ☐ Single dose ☐ Over time ☐ Other _____

Amount of material: _____

Additional Information: _____

_____

Motive for contamination known? ☐ Yes ☐ No

☐ Retaliation/revenge ☐ Political cause ☐ Religious doctrine

☐ Other _____

Describe motivation: _____

CALLER INFORMATION

Basic Information:

Stated name: _____

Affiliation: _____

Phone number: _____

Location/address: _____

Caller's Voice:

Did the voice sound disguised or altered? ☐ Yes ☐ No

Did the call sound like a recording? ☐ Yes ☐ No

Did the voice sound? ☐ Male / ☐ Female ☐ Young / ☐ Old

Did the voice sound familiar? ☐ Yes ☐ No

If 'Yes,' who did it sound like? _____

Did the caller have an accent? ☐ Yes ☐ No

If 'Yes,' what nationality? _____

How did the caller sound or speak?

☐ Educated ☐ Well spoken ☐ Illiterate

☐ Irrational ☐ Obscene ☐ Incoherent

☐ Reading a script ☐ Other _____

What was the caller's tone of voice?

☐ Calm	☐ Angry	☐ Lisping	☐ Stuttering/broken
☐ Excited	☐ Nervous	☐ Sincere	☐ Insincere
☐ Slow	☐ Rapid	☐ Normal	☐ Slurred
☐ Soft	☐ Loud	☐ Nasal	☐ Clearing throat
☐ Laughing	☐ Crying	☐ Clear	☐ Deep breathing
☐ Deep	☐ High	☐ Raspy	☐ Cracking

☐ Other _____

Were there background noises coming from the caller's end?

☐ Silence

☐ Voices describe _____

☐ Children describe _____

☐ Animals describe _____

☐ Factory sounds describe _____

☐ Office sounds describe _____

☐ Music describe _____

☐ Traffic/street sounds describe _____

☐ Airplanes describe _____

☐ Trains describe _____

☐ Ships or large boats describe _____

☐ Other: _____

SIGNOFF

Name of call recipient:

Print name _____

Signature _____ Date/Time: _____

Name of person completing form (if different from call recipient):

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.5 – Interim Final December 2003

Public Health Information Report Form Instructions

The purpose of this form is to summarize significant information about a public health episode that could be linked to contaminated water. This form should be completed by the WUERM or an individual designated by incident command. The information compiled in this form is intended to support the threat evaluation process. In the case of a threat warning due to a report from public health, it is likely that the public health agency will assume incident command during the investigation. The drinking water utility will likely play a support role during the investigation, specifically to help determine whether or not water might be the cause.

PUBLIC HEALTH NOTIFICATION

Date and Time of notification: _____

Name of person who received the notification: _____

Contact information for individual providing the notification

Full Name: _____

Title: _____

Organization: _____

Address: _____

Day-time phone: _____

Evening phone: _____

Fax Number: _____

E-mail address: _____

Why is this person contacting the drinking water utility? _____

_____

Has the state or local public health agency been notified? ☐ Yes ☐ No

If "No," the appropriate public health official should be immediately notified.

DESCRIPTION OF PUBLIC HEALTH EPISODE

Nature of public health episode:

☐ Unusual disease (mild) ☐ Unusual disease (severe) ☐ Death

☐ Other: _____

Symptoms:

☐ Diarrhea ☐ Vomiting/nausea ☐ Flu-like symptoms

☐ Fever ☐ Headache ☐ Breathing difficulty

☐ Other: _____

Describe symptoms: _____

_____

Causative Agent: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

☐ Chemical ☐ Biological ☐ Radiological

Describe _____

_____

Estimate of time between exposure and onset of symptoms: _____

Exposed Individuals:

Location where exposure is thought to have occurred

☐ Residence ☐ Work ☐ School

☐ Restaurant ☐ Shopping mall ☐ Social gathering

☐ Other: _____

Additional notes on location of exposure: _____

_____

Collect addresses for specific locations where exposure is thought to have occurred.

Is the pattern of exposure clustered in a specific area? ☐ Yes ☐ No

Extent of area

☐ Single building ☐ Complex (several buildings) ☐ City block

☐ Neighborhood ☐ Cluster of neighborhoods ☐ Large section of city

☐ Other: _____

Additional notes on extent of area: _____

_____

Do the exposed individuals represent a disproportionate number of:

☐ Immune compromised ☐ Elderly ☐ Children

☐ Infants ☐ Pregnant women ☐ Women

☐ Other: _____

☐ None, no specific groups dominate the makeup of exposed individuals

EVALUATION OF LINK TO WATER

Are the symptoms consistent with typical waterborne diseases, such as gastrointestinal disease, vomiting, or diarrhea? ☐ Yes ☐ No

Does the area of exposure coincide with a specific area of the system, such as a pressure zone or area feed by a specific plant? ☐ Yes ☐ No

Were there any consumer complaints within the affected area? ☐ Yes ☐ No

Were there any unusual water quality data within the affected area? ☐ Yes ☐ No

Were there any process upsets or operational changes? ☐ Yes ☐ No

Was there any construction/maintenance within the affected area? ☐ Yes ☐ No

Were there any security incidents within the affected area? ☐ Yes ☐ No

SIGNOFF

Name of person completing form:

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.8 – Interim Final December 2003

Security Incident Report Form

INSTRUCTIONS

The purpose of this form is to help organize information about a security incident, typically a security breach, which may be related to a water contamination threat. The individual who discovered the security incident, such as a security supervisor, the WUERM, or another designated individual may complete this form. This form is intended to summarize information about a security breach that may be relevant to the threat evaluation process. This form should be completed for each location where a security incident was discovered.

DISCOVERY OF SECURITY INCIDENT

Date/Time security incident discovered: _____

Name of person who discovered security incident: _____

Mode of discovery:

☐ Alarm (building) ☐ Alarm (gate/fence) ☐ Alarm (access hatch)

☐ Video surveillance ☐ Utility staff discovery ☐ Citizen discovery

☐ Suspect confession ☐ Law enforcement discovery

☐ Other _____

Did anyone observe the security incident as it occurred? ☐ Yes ☐ No

If "Yes", complete the 'Witness Account Report Form'

SITE DESCRIPTION

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station

☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir

☐ Distribution main ☐ Hydrant ☐ Service connection

☐ Other _____

Address: _____

_____

Additional Site Information: _____

_____

BACKGROUND INFORMATION

Have the following "normal activities" been investigated as potential causes of the security incident?

☐ Alarms with known and harmless causes ☐ Utility staff inspections

☐ Routine water quality sampling ☐ Construction or maintenance

☐ Contractor activity ☐ Other _____

Was this site recently visited *prior* to the security incident? ☐ Yes ☐ No

If "Yes," provide additional detail below

Date and time of previous visit: _____

Name of individual who visited the site: _____

Additional Information: _____

_____

Has *this location* been the site of previous security incidents? ☐ Yes ☐ No

If "Yes," provide additional detail below

Date and time of most recent security incident: _____

Description of incident: _____

_____

_____

What were the results of the threat evaluation for this incident?

☐ 'Possible' ☐ 'Credible' ☐ 'Confirmed'

Have security incidents occurred at *other locations* recently? ☐ Yes ☐ No

If "Yes", complete additional 'Security Incident Reports' (Appendix 8.3) for each site

Name of 1st additional site: _____

Name of 2nd additional site: _____

Name of 3rd additional site: _____

SECURITY INCIDENT DETAILS

Was there an alarm(s) associated with the security incident? ☐ Yes ☐ No

If "Yes," provide additional detail below

Are there sequential alarms (e.g., alarm on a gate and a hatch)? ☐ Yes ☐ No

Date and time of alarm(s): _____

Describe alarm(s): _____

Is video surveillance available from the site of the security incident? ☐ Yes ☐ No

If "Yes," provide additional detail below

Date and time of video surveillance: _____

Describe surveillance: _____

Unusual equipment found at the site and time of discovery of the security incident:

☐ Discarded PPE (e.g., gloves, masks) ☐ Empty containers (e.g., bottles, drums)
☐ Tools (e.g., wrenches, bolt cutters) ☐ Hardware (e.g., valves, pipe)
☐ Lab equipment (e.g., beakers, tubing) ☐ Pumps or hoses
☐ None ☐ Other _____

Describe equipment: _____

Unusual vehicles found at the site and time of discovery of the security incident:

☐ Car/sedan ☐ SUV ☐ Pickup truck
☐ Flatbed truck ☐ Construction vehicle ☐ None
☐ Other _____

Describe vehicles (including make/model/year/color, license plate #, and logos or markings): ___

Signs of tampering at the site and time of discovery of the security incident:

☐ Cut locks/fences ☐ Open/damaged gates, doors, or windows
☐ Open/damaged access hatches ☐ Missing/damaged equipment
☐ Facility in disarray ☐ None
☐ Other _____

Are there signs of sequential intrusion (e.g., locks removed from a gate and hatch)? ☐ Yes ☐ No

Describe signs of tampering: _____

Signs of hazard at the site and time of discovery of the security incident:

☐ Unexplained or unusual odors ☐ Unexplained dead animals
☐ Unexplained dead or stressed vegetation ☐ Unexplained liquids
☐ Unexplained clouds or vapors ☐ None
☐ Other _____

Describe signs of hazard: _____

SIGNOFF

Name of person responsible for documenting the security incident:

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.3 – Interim Final December 2003

SUSPECT DESCRIPTION FORM

GENERAL APPEARANCE

Gender:
Male
Female

Race:
☐ White
☐ Black
☐ Middle Eastern

☐ Hispanic
☐ Asian
☐ Native American

Other_____

Hair:
Color
Style
Texture
Sideburns

Eyes:
Color
Shape
Glasses (type)

Physical Characteristics:
Age
Height
Weight
Build

Distinguishing Marks (describe):
Scars
Tattoos
Gang Insignia

Other:
Left Handed / Right Handed

CLOTHING

Color/Type:

Layered Shirts/Blouse

Cap/Hat

Coat/Jacket

Tie

Pants

Shoes

Stockings

Gloves

Jewelry

Bag/Backpack
Purse/Briefcase

SUSPECT DEMEANOR

☐Apologetic
☐Calm
☐Belligerent
☐Angry
☐Threatening
☐Nervous
☐Confused

DISTINGUISHING TRAITS

Speech
Accent
Gait / Limp

FACIAL CHARACTERISTICS

Skin:
Color
Texture

Describe shape of:
Mouth
Lips
Ears
Cheeks
(full or sunken)
Nose
Neck
Eyes
Eyebrows

Presence of:
Adam's Apple
Chin clefts
Wrinkles

Hair:
Mustache
Beard
Other

Describe any:
Facial piercing
Ear piercing

WEAPON (describe if any)

☐ Handgun
☐ Long gun
☐ Knife

Direction of Escape

What did the suspect say?

VEHICLE

Color
Make
Model
Body Style
Damage / Rust
Antenna
Bumper Sticker
Wheel Covers

License Number_____

BOMB THREAT CHECKLIST

Be Calm and Courteous *Give a co-worker a signal to "listen in"*

Date: _____Time call started:
_____Time call ended:

Check call display for phone number (if available) _____

EXACT WORDING OF BOMB THREAT:

What can you tell me?

When is the bomb going to explode?

What kind of bomb is it?

Where is the bomb right now?

What does the bomb look like?

What will cause the bomb to explode?

Did you place the bomb?

Why?

What is your name?

REMARKS:

CALLER'S VOICE

☐ Male
☐ Female

☐ Old (Age?)____
☐ Young (Age?)____

☐ Calm
☐ Excited

☐ Soft
☐ Loud

☐ Angry
☐ Cracking Voice

☐ Laughter
☐ Crying

☐ Normal
☐ Disguised

☐ High pitched
☐ Deep

☐ Nasal
☐ Slurred

☐ Distinct
☐ Ragged

☐ Rapid
☐ Slow

☐ Raspy
☐ Stutter

☐ Lisp
☐ Heavy Breather

☐ Clearing Throat
☐ Intoxicated

☐ Pleasant
☐ Whisper

☐ Familiar (who?)_____

☐_Accent (type?) _____

FAMILIARITY WITH FACILITY

☐ Much
☐ Some
☐ None

BACKGROUND SOUNDS

☐ Street
☐ Party Sounds

☐ Office Noises
☐ Train

☐ Voices
☐ Airplane

☐ PA System
☐ Animals

☐ Local Music
☐ Static on line

☐ Long Distance
☐ Motors

☐ Bells
☐ Whistles

☐ Factory Machinery
☐ Crockery

☐ Household sounds
☐ Bedlam

___Chanting
___Other

Inform the caller that the building is occupied and the detonation of a bomb could result in death or serious injury to many innocent people.

BOMB THREAT LANGUAGE

☐ Well Spoken
☐ Incoherent

☐ Foul
☐ Irrational

☐ Taped
☐ Deliberate

☐ Abusive
☐ Righteous

☐ Message read by threat maker

Threat Evaluation Worksheet

INSTRUCTIONS

The purpose of this worksheet is to help organize information about a contamination threat warning that would be used during the Threat Evaluation Process. The individual responsible for conducting the Threat Evaluation (e.g., the WUERM) should complete this worksheet. The worksheet is generic to accommodate information from different types of threat warnings; thus, there will likely be information that is unavailable or not immediately available. Other forms in the Appendices are provided to augment the information in this worksheet.

THREAT WARNING INFORMATION

Date/Time threat warning discovered: _____

Name of person who discovered threat warning: _____

Type of threat warning:

☐ Security breach ☐ Witness account ☐ Phone threat
☐ Written threat ☐ Law enforcement ☐ Unusual water quality
☐ News media ☐ Consumer complaints ☐ Public health notification
☐ Other _____

Identity of the contaminant: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

☐ Chemical ☐ Biological ☐ Radiological

Describe _____

Time of contamination: ☐ Known ☐ Estimated ☐ Unknown

If known or estimated, provide additional detail below

Date and time of contamination: _____

Additional Information: _____

Mode of contamination: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

Method of addition: ☐ Single dose ☐ Over time ☐ Other _____

Amount of material: _____

Additional Information: _____

Site of contamination: ☐ Known ☐ Suspected ☐ Unknown

If known or suspected, provide additional detail below

Number of sites: _____

Provide the following information for each site.

Site #1

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station
☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir
☐ Distribution main ☐ Hydrant ☐ Service connection
☐ Other _____

Address: _____

Additional Site Information: _____

Site #2

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station
☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir
☐ Distribution main ☐ Hydrant ☐ Service connection
☐ Other _____

Address: _____

Additional Site Information: _____

Site #3

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station
☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir
☐ Distribution main ☐ Hydrant ☐ Service connection
☐ Other _____

Address: _____

Additional Site Information: _____

ADDITIONAL INFORMATION

Has there been a breach of security at the suspected site? ☐ Yes ☐ No
If "Yes", review the completed 'Security Incident Report'

Are there any witness accounts of the suspected incident? ☐ Yes ☐ No
If "Yes", review the completed 'Witness Account Report'

Was the threat made verbally over the phone? ☐ Yes ☐ No
If "Yes", review the completed 'Phone Threat Report'

Was a written threat received? ☐ Yes ☐ No
If "Yes", review the completed 'Written Threat Report'

Are there unusual water quality data or consumer complaints? ☐ Yes ☐ No
If "Yes", review the completed 'Water Quality/Consumer Complaint Report'

Are there unusual symptoms or disease in the population? ☐ Yes ☐ No
If "Yes", review the completed 'Public Health Report'

Is a 'Site Characterization Report' available? ☐ Yes ☐ No
If "Yes", review the completed 'Site Characterization Report'

Are results of sample analysis available? ☐ Yes ☐ No
If "Yes", review the analytical results report, including appropriate QA/QC data

Is a 'Contaminant Identification Report' available? ☐ Yes ☐ No
If "Yes", review the completed 'Sample Analysis Report'

Is there relevant information available from external sources? ☐ Yes ☐ No

Check all that apply

☐ Local law enforcement ☐ FBI ☐ DW primacy agency
☐ Public health agency ☐ Hospitals / 911 call centers ☐ US EPA / Water ISAC
☐ Media reports ☐ Homeland security alerts ☐ Neighboring utilities
☐ Other _____

Point of Contact: _____

Summary of key information from external sources (provide detail in attachments as necessary):

_____
_____
_____
_____
_____
_____

THREAT EVALUATION

Has normal activity been investigated as the cause of the threat warning? ☐ Yes ☐ No

Normal activities to consider

☐ Utility staff inspections ☐ Routine water quality sampling
☐ Construction or maintenance ☐ Contractor activity
☐ Operational changes ☐ Water quality changes with a known cause
☐ Other _____

Is the threat 'possible'? ☐ Yes ☐ No

Summarize the basis for this determination: _____

Response to a 'possible' threat:

☐ None ☐ Site characterization ☐ Isolation/containment
☐ Increased monitoring/security ☐ Other _____

Is the threat 'credible'? ☐ Yes ☐ No

Summarize the basis for this determination: _____

Response to a 'credible' threat:

☐ Sample analysis ☐ Site characterization ☐ Isolation/containment
☐ Partial EOC activation ☐ Public notification ☐ Provide alternate water supply
☐ Other _____

Has a contamination incident been confirmed? ☐ Yes ☐ No

Summarize the basis for this determination: _____

Response to a confirmed incident:

☐ Sample analysis ☐ Site characterization ☐ Isolation/containment
☐ Full EOC activation ☐ Public notification ☐ Provide alternate water supply
☐ Initiate remediation and recovery
☐ Other _____

How do other organizations characterize the threat?

Organization	Evaluation	Comment
☐ Local Law Enforcement	☐ Possible ☐ Credible ☐ Confirmed	
☐ FBI	☐ Possible ☐ Credible ☐ Confirmed	
☐ Public Health Agency	☐ Possible ☐ Credible ☐ Confirmed	
☐ Drinking Water Primacy Agency	☐ Possible ☐ Credible ☐ Confirmed	
☐ Other	☐ Possible ☐ Credible ☐ Confirmed	
☐ Other	☐ Possible ☐ Credible ☐ Confirmed	

SIGNOFF

Name of person responsible for threat evaluation:

Print name _____
Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.2 – Interim Final December 2003

Water Quality/Consumer Complaint Report Form

INSTRUCTIONS - *This form is provided to guide the individual responsible for evaluating unusual water quality data or consumer complaints. It is designed to prompt the analyst to consider various factors or information when evaluating the unusual data. The actual data used in this analysis should be compiled separately and appended to this form. The form can be used to support the threat evaluation due to a threat warning from unusual water quality or consumer complaints, or another type of threat warning in which water quality data or consumer complaints are used to support the evaluation. Note that in this form, water quality refers to both specific water quality parameters and the general aesthetic characteristics of the water that might result in consumer complaints.*

Threat warning is based on: ☐ Water quality ☐ Consumer complaints ☐ Other

What is the water quality parameter or complaint under consideration?

Are unusual consumer complaints corroborated by unusual water quality data?

Is the unusual water quality indicative of a particular contaminant of concern? For example, is the color, order, or taste associated with a particular contaminant?

Are consumers in the affected area experiencing any unusual health symptoms?

What is 'typical' for consumer complaints for the current season and water quality?
Number of complaints.
Nature of complaints.
Clustering of complaints

What is considered to be 'normal' water quality (i.e., what is the baseline water quality data or level of consumer complaints)?

What is reliability of the method or instrumentation used for the water quality analysis?
Are standards and reagents OK?
Is the method/instrument functioning properly?

Based on recent data, does the unusual water quality appear to be part of a gradual trend (i.e., occurring over several days or longer)?

Are the unusual water quality observations sporadic over a wide area, or are they clustered in a particular area?
What is the extent of the area? Pressure zone. Neighborhood. City block. Street. Building.

If the unusual condition isolated to a specific area:
Is this area being supplied by a particular plant or source water?
Have there been any operational changes at the plant or in the affected area of the system?
Has there been any flushing or distribution system maintenance in the affected area?
Has there been any repair or construction in the area that could impact water quality?

SIGNOFF

Name of person completing form:

Print name _____
Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.7 – Interim Final December 2003

Witness Account Report Form

INSTRUCTIONS

The purpose of this form is to document the observations of a witness to activities that might be considered an incident warning. The individual interviewing the witness, or potentially the witness, should complete this form. This may be the WUERM or an individual designated by incident command to perform the interview. If law enforcement is conducting the interview (which may often be the case), then this form may serve as a prompt for "utility relevant information" that should be pursued during the interview. This form is intended to consolidate the details of the witness account that may be relevant to the threat evaluation process. This form should be completed for each witness that is interviewed.

BASIC INFORMATION

Date/Time of interview: _____

Name of person interviewing the witness: _____

Witness contact information

Full Name: _____

Address: _____

Day-time phone: _____

Evening phone: _____

E-mail address: _____

Reason the witness was in the vicinity of the suspicious activity: _____

_____

_____

WITNESS ACCOUNT

Date/Time of activity: _____

Location of activity:

Site Name: _____

Type of facility

☐ Source water ☐ Treatment plant ☐ Pump station

☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir

☐ Distribution main ☐ Hydrant ☐ Service connection

☐ Other _____

Address: _____

_____

Additional Site Information: _____

_____

Type of activity

☐ Trespassing ☐ Vandalism ☐ Breaking and entering

☐ Theft ☐ Tampering ☐ Surveillance

☐ Other _____

Additional description of the activity _____

_____

_____

_____

_____

Description of suspects

Were suspects present at the site? ☐ Yes ☐ No

How many suspects were present? _____

Describe each suspect's appearance:

Suspect #	Sex	Race	Hair color	Clothing	Voice
1					
2					
3					
4					
5					
6					

Where any of the suspects wearing uniforms? ☐ Yes ☐ No

If "Yes," describe the uniform(s): _____

Describe any other unusual characteristics of the suspects: _____

_____

_____

_____

Did any of the suspects notice the witness? ☐ Yes ☐ No

If "Yes," how did they respond: _____

_____

Vehicles at the site

Were vehicles present at the site? ☐ Yes ☐ No

Did the vehicles appear to belong to the suspects? ☐ Yes ☐ No

How many vehicles were present? _____

Describe each vehicle:

Vehicle #	Type	Color	Make	Model	License plate
1					
2					
3					
4					

Where there any logos or distinguishing markings on the vehicles? ☐ Yes ☐ No

If "Yes," describe: _____

_____

Provide any additional detail about the vehicles and how they were used (if at all): _____

_____

_____

_____

Equipment at the site

Was any unusual equipment present at the site? ☐ Yes ☐ No

☐ Explosive or incendiary devices ☐ Firearms

☐ PPE (e.g., gloves, masks) ☐ Containers (e.g., bottles, drums)

☐ Tools (e.g., wrenches, bolt cutters) ☐ Hardware (e.g., valves, pipe, hoses)

☐ Lab equipment (e.g., beakers, tubing) ☐ Pumps and related equipment

☐ Other _____

Describe the equipment and how it was being used by the suspects (if at all):

_____

_____

_____

Unusual conditions at the site

Were there any unusual conditions at the site? ☐ Yes ☐ No

☐ Explosions or fires ☐ Fogs or vapors ☐ Unusual odors

☐ Dead/stressed vegetation ☐ Dead animals ☐ Unusual noises

☐ Other _____

Describe the site conditions: _____

_____

_____

Additional observations

Describe any additional details from the witness account: _____

_____

_____

SIGNOFF

Name of interviewer:

Print name _____

Signature _____ Date/Time: _____

Name of witness:

Print name _____

Signature _____ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.4 – Interim Final December 2003

Damage Assessment Form

INITIAL DAMAGE ASSESSMENT		DATE	PAGE OF
SITE ID	LOCATION *(Use map location, address, etc.)*		
DESCRIPTION OF DAMAGE			
IMPACT			COST ESTIMATE
SITE ID	LOCATION *(Use map location, address, etc.)*		
DESCRIPTION OF DAMAGE			
IMPACT			COST ESTIMATE
SITE ID	LOCATION *(Use map location, address, etc.)*		
DESCRIPTION OF DAMAGE			
IMPACT			COST ESTIMATE
NAME OF INSPECTOR	DEPARTMENT		PHONE

Appendix G
ERP Certification Form

CERTIFICATION OF COMPLETION

OF AN EMERGENCY RESPONSE PLAN

Public Water System ID number: 421-0001

System Name: Carpinteria Valley Water District

City where system is located: Carpinteria, CA

County Santa Barbara

State : California

Printed Name of Person Authorized to Sign this Certification on Behalf of the System: Robert Mc Donald

Title: District Engineer

Address : 1301 Santa Ynez

City: Carpinteria

State and ZIP Code: CA, 93013

Phone: 805-684-2816 Fax: 805-684-3170 Email: Bob@cvwd.net

I certify to the Administrator of the U.S. Environmental Protection Agency that this community water system has completed an Emergency Response Plan that complies with Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188,Title IV — Drinking Water Security and Safety). I further certify that this document was prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information (Safe Drinking Water Act (42 U.S.C.300f *et seq.*)).

> The emergency response plan that this community water system completed incorporates the results of the vulnerability assessment completed for the system and includes "plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack " on this community water system. The emergency response plan also includes "actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals."

This CWS has coordinated, to the extent possible, with existing Local Emergency Planning Committees established under the Emergency Planning and Community Right-to- Know Act (42 U.S.C.11001 et seq) when preparing this emergency response plan.

Signed:_____Date:_____

Primary contact person that EPA can call if there are questions about this Certification:

Name:_____

Address (if different than that of the Authorized Representative):

_____

Phone:_____

Email Address:_____

Alternate Contact Person:

Name:_____

Address (if different than that of the Authorized Representative):

_____

Source: EPA Small-Medium ERP Guidance 2004

Appendix G

Selected District Resolutions

ORDINANCE NO. 15-2
AN ORDINANCE OF THE BOARD OF THE DIRECTORS OF THE CARPINTERIA VALLEY WATER DISTRICT AMENDING AND SUPERSEDING ORDINANCE 15-1 AND DECLARING A STAGE TWO DROUGHT CONDITION AND ESTABLISHING WATER USE REGULATIONS TO BE EFFECTIVE DURING A STAGE TWO DROUGHT CONDITION

WHEREAS, the Board of Directors on January 31, 1990 approved Ordinance 90-1 Pertaining to Drought Regulations and Water Conservation Standards; and

WHEREAS, the Board of Directors on February 12, 2014 approved Resolution No. 972 Declaring a Stage One Drought Emergency; and

WHEREAS, the Board of Directors on August 13, 2014 approved Resolution No. 980 Implementing the State Water Resources Control Board's Drought Emergency Water Conservation Regulation; and

WHEREAS, the Board of Directors on October 8, 2014 adopted Ordinance No. 14-1 Consolidating Mandatory Water Conservation Requirements set forth in Ordinance No. 90-1, Resolutions No. 972 and 980, and Adding New Requirements and Establishing Enforcement Measures to Address a Drought Emergency; and

WHEREAS, the Board of Directors on January 14, 2015 adopted Ordinance No. 15-1 Consolidating Mandatory Water Conservation Requirements set forth in Ordinance 14-1, Ordinance No. 90-1, Resolutions No. 972 and 980, and Deleting the Suspension of District Rule No. 15a (Sections 4 and 5); and

WHEREAS, the State of California Office of Administrative Law on March 27, 2015 approved the emergency regulatory action approved by the State Water Resources Control Board on March 17, 2015 adopting expanded emergency regulations to safeguard the state's remaining water supplies; and

WHEREAS, Governor Edmond G. Brown, on April 1, 2015 issued Executive Order B-29-15 proclaiming a State of Emergency, amending and extending orders and provisions contained in Executive Orders B-26-14 and B-28-14 due to the ongoing drought, California's severely depleted water supplies and the possibility that the current drought will stretch into a fifth straight year in 2016 and beyond; and

WHEREAS, continued drought conditions have reduced local and state-wide water resources over 15% of average annual demand; and

WHEREAS, there currently exists the possibility of shortages within the District's service area over 15% of average annual demand within the next 12 - 18 months; and

WHEREAS, the District is committed to achieving the Governor's April 1, 2015 Executive Order B-29-15 for a statewide 25 % reduction in urban potable water use through February of 2016; and

WHEREAS, the District is committed to achieving the District's assigned conservation standard of 20% as required for Tier 5 urban water suppliers by the State Water Resources Control Board for each month as compared to the amount used in the same month in 2013, to prevent a possible reduction in District water supply such that there would be insufficient water for human consumption, sanitation and fire protection; and

WHEREAS, the District is required to implement the imposition of mandatory restrictions on outdoor irrigation pursuant to emergency regulations, Cal. Code Regs. Title 23 Sections 863, 846 and 865 adopted by the State Water Board on July 15, 2014; and amended on March 17, 2015; and

WHEREAS, California Water Code Section 31026 also authorizes the District to restrict use of water during any emergency caused by drought, and to prohibit the waste of water during such periods; and

WHEREAS, the District's Water Shortage Contingency Plan provides that when the District determines that the water supply for the current or impending water year is anticipated to be approximately 15-30% less than projected normal demand a Stage Two shall be declared and such conditions now exist; and

WHEREAS, it is in the best interests of the customers of the District for the District to have regulations in place for the timely implementation of any future Water Shortage Emergency; and

WHEREAS, as the Board adopts this Ordinance, and finds that the restrictions set forth herein are necessary and proper to protect the water supply for human consumption, sanitation, and fire protection during Water Shortage emergencies, the Board also finds that the uses of water that are prohibited below are nonessential.

NOW THEREFORE BE IT ORDAINED, pursuant to Section 31026 of the Water Code, the Carpinteria Valley Water District prohibits the following:

a) running water from a hose, pipe, or any other device for the purpose of cleaning buildings and driveways or sidewalks except in the event the General Manager or designee determines that such use is the only feasible means of addressing a potential threat to health and safety;

b) washing of driveways and sidewalks except in the event the General Manager or designee determines that such use is the only feasible means of addressing a potential threat to health and safety;

c) irrigation of outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property such as patios, decks or driveways, private and public walkways, roadways, parking lots, or structures;

d) use of a fountain or other decorative water feature except if a recirculating system is in place;

e) manual irrigation by hose or moveable sprinkler at any time from 10:00 a.m. to 4:00 p.m. of any yard, park, recreation area, or other area containing landscape vegetation;

f) outdoor irrigation through fixed irrigation systems, either manually or by timer controller at any time from 8:00 a.m. to 6:00 p.m., of any yard, park, recreation area, or other area containing landscape vegetation, except for testing system or repairing leaks;

g) irrigation of turf or ornamental landscapes during and forty-eight (48) hours following measurable rainfall;

h) irrigation of landscapes outside newly constructed homes and buildings that is not delivered by drip or micro-spray systems;

i) irrigation of ornamental turf on public street medians

j) free-flowing hoses for all uses. Automatic shut-off devices shall be attached on any hose or filling apparatus in use.

BE IT FURTHER ORDAINED that pursuant to Section 31026 of the Water Code, the Carpinteria Valley Water District restricts use of District water as follows:

a) All restaurants located within the Carpinteria Valley Water District that provide table and/or counter service shall post, in a conspicuous place, a Notice of Drought Condition as approved by the General Manager and shall refrain from serving water except upon specific request by a customer;

b) Boats and vehicles shall be washed only at commercial car washing facilities or by use of a bucket and/or hose equipped with a self-closing valve that requires operator pressure to activate the flow of water;

c) Breaks or leaks in any customer's plumbing shall be immediately repaired upon discovery. If repairs cannot be completed within seventy-two (72) hours of detection or within seventy-two (72) hours of notification by the District, water service to the property may be turned off by District staff to prevent water loss until such time the repair has been completed;

d) Operators of hotels, motels and other commercial lodging establishments located within the Carpinteria Valley Water District shall post in each room a notice of

drought conditions containing water conservation information and a separate notice with language similar to the following:

"This area is suffering a Drought emergency. If you wish to have your sheets changed while you are staying, please leave this notice on your pillow. If you would like your towels changed, please leave them on the floor. Housekeeping will be pleased to accommodate you."

e) Operators of pools, exercise facilities and other similar establishments providing showering facilities shall promote limitation of showering time and post a Notice of Drought Condition;

f) Draining and refilling up to one third of the volume of a pool per year is allowed as necessary to maintain suitable pool water quality. Draining and refilling in excess of one third per year is prohibited, except in the event the General Manager or designee determines that such further draining is required to make needed repairs, or to prevent equipment damage or voiding of warranties;

g) Commercial, Industrial, and Public Authority properties, such as campuses, golf courses, driving ranges, and cemeteries, immediately implement water efficiency measures to reduce potable water usage by 25% for each month as compared to the amount used in the same month in 2013.

h) Landscape irrigation by Residential, Commercial, Public Authority and Industrial customers shall be limited to no more than two (2) days a week.

BE IT FURTHER ORDAINED that pursuant to Governor Brown's Executive Order B-29-15, the Carpinteria Valley Water District restricts the following uses of non-District water:

Commercial, Industrial, and Public Authority facilities with an independent non-District source of water supply shall limit outdoor irrigation to no more than two days per week.

BE IT FURTHER ORDAINED that increasingly significant administrative penalties to create a disincentive to commit future violations of the aforementioned District potable water and non-District water use prohibitions and restrictions, shall be:

a) a letter to the District customer of record indicating a violation of one or more of the aforementioned water use prohibitions or restrictions; and

b) a letter to the District customer of record indicating a second violation of one or more of the aforementioned water use prohibitions or restrictions and a fine of twenty-five dollars ($25.00) added to the customer's next bill for the second offense;

c) a letter to the District customer of record indicating a third violation of one or more of the aforementioned water use prohibitions or restrictions and a fine of one hundred dollars ($100.00) added to the customer's next bill for the third; and

d) a letter to the District customer of record indicating additional incidences of violation of one or more of the aforementioned water use prohibitions or restrictions and further fines with a limit up to five hundred dollars ($500.00) for each day a violation occurs at the discretion of the Board of Directors.

BE IT FURTHER ORDAINED that a customer, in accordance with District Rules and Regulations may appeal the imposition of a monetary penalty by submitting a letter to the District within seven (7) days of the District's mailing of a notice of violation; and

BE IT FURTHER ORDAINED that a customer, in accordance with District Rules and Regulations, may appeal the General Manager's or Assistant General Manager's rejection of the appeal by submitting a letter to the Board of Directors within seven (7) days of the General Manager's or Assistant General Manager's rejection of said appeal.

BE IT FURTHER ORDAINED that to the extent that the terms and provisions of this Ordinance are inconsistent or in conflict with the terms and provisions of any prior District ordinance, resolution, rule or regulation, the terms of this Ordinance shall prevail, and inconsistent and conflicting provisions of prior ordinances, resolutions, rules and regulations shall be suspended during the effective period of this Ordinance.

BE IT FURTHER ORDAINED that in the event the State adopts mandatory water conservation measures requiring implementation by the District during a water shortage emergency, and such State mandate measures require additional water conservation actions beyond the District's currently enforceable conservation measures, such State-mandated measures shall automatically be deemed to be fully incorporated and part of this Ordinance and enforceable by the District.

BE IT FURTHER ORDAINED that if any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this ordinance. The Board hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be unconstitutional or invalid.

BE IT FURTHER ORDAINED that this Ordinance is an urgency ordinance. It is necessary that the restrictions set forth in this Ordinance be adopted as set forth herein in order to protect the supply of water for human consumption, sanitation and fire protection.

BE IT FURTHER ORDAINED that this Ordinance shall take effect on May 13, 2015 and terminate on July 1, 2016.

Vote on Ordinance No. 15-2 by roll call resulted as follows:

AYES: Forde, Holcombe, Orozco, Roberts, Van Wingerden
NOES: none
ABSENT: none
ABSTAIN: none

PASSED AND ADOPTED by the Board of Directors of the Carpinteria Valley Water District, this 13th day of May, 2015.

APPROVED:

Alonzo E. Orozco

Alonzo Orozco, President

ATTEST:

Charles B. Hamilton

Charles B. Hamilton, Secretary

Appendix II

RESOLUTION NO. 547

RESOLUTION OF THE BOARD OF DIRECTORS
CARPINTERIA COUNTY WATER DISTRICT
DECLARATION OF WATER SHORTAGE EMERGENCY

WHEREAS, the CARPINTERIA COUNTY WATER DISTRICT is a County Water District organized and existing under the laws of the State of California, situated and serving an area entirely within the County of Santa Barbara, State of California; and

WHEREAS, this District provides water service for agricultural, commercial, industrial, recreational and domestic use within the District; and

WHEREAS, the water supplies currently available to this District for distribution to its customers on an annual basis (including calendar year 1990) is as follows:

(1)	The basic contractual entitlement from the Cachuma Project for the current contract year is:	3,300 acre feet
	Less a 45% reduction because of the drought.	- 1,485 acre feet
	net	1,815
(2)	Well production from the underground (approximate) for three existing District wells.	3,500 acre feet
	Total (approximate)	5,315 acre feet

and;

WHEREAS, the total consumer demand that was delivered during calendar year 1989 was 6,280 acre feet; and

WHEREAS, said demand is estimated and projected to reach approximately 6,500 acre feet at the end of the 1989-90 Cachuma Water Year (May 15, 1989 - May 14, 1990) because of continuing drought conditions; and

WHEREAS, this District will probably be required to transfer approximately 260 acre feet to other Districts during the coming water year; and

WHEREAS, based on available supplies and estimated demand, this District is faced with an estimated and projected water shortage deficit for calendar year 1990 of approximately 1225 acre feet; and

WHEREAS, studies show that the safe yield of the underground basin is approximately 5,000 acre feet and private pumping will be at an estimated rate of approximately 1,200 acre feet per year. And, whereas the District plans to place into production the newly completed High School Franklin Well and plans to drill an additional well, the total yield of these wells is subject to contingencies not under the exclusive control of the District, and for this reason this program might not be able to produce the additional water required by this District to meet future demand; and

WHEREAS, in the best interests of the health and safety of the residents and water consumers of this District, it is necessary to establish water use regulations until such time as the District's available water supplies are augmented to an extent sufficient to meet projected demands; and

WHEREAS, unless the District is able to develop and/or contract for supplemental sources of water, immediate mandatory conservation, and possible future rationing, must be instituted for the District as a continuing procedure; and

WHEREAS, notice of time and place of a public hearing by this Board of Directors was duly given and published, and at said hearing on January 31, 1990, consumers of the District's water supply were given an opportunity to be heard to protest against a declaration that a water shortage emergency condition prevails within the District and given the opportunity to present their respective needs to the Board of Directors of this District, and said protests and presentations have been duly received and considered by the Board of Directors;

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE CARPINTERIA COUNTY WATER DISTRICT HEREBY FINDS, DETERMINES, DECLARES AND RESOLVES AS FOLLOWS:

1. For all of the reasons set forth in the recitals above, a water shortage emergency condition prevails within the area served by this District, which emergency is caused by an existing and a threatened continuing water shortage as defined in Sections 350 and 31026 of the Water Code;

2. The ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of this District to the extent that there would be insufficient water for human consumption, sanitation and fire protection;

3. Because of said emergency it has become necessary to do some or all of the following at the appropriate times: (a) restrict the use of District water, (b) prohibit the wastage of District water, and (c) to prohibit use of District water during the period of the emergency for specific uses which the District may from time to time find to be non-essential;

4. To implement some or all of the actions set forth above it will be necessary for the Board of Directors of the District to adopt regulations, restrictions and ordinances on the delivery and consumption of water as will, in the sound discretion of the Board of Directors, conserve the water supply for the greatest public benefit with particular regard to household and domestic use, sanitation and fire protection. Said regulations and restrictions may contain provisions for mandatory conservation an allocation program and, if deemed appropriate, the prohibition on new water service connections and for the termination of discontinuing service to consumers wilfully violating the regulations and restrictions. Said regulations may, after allocating and setting aside the amount of water which in the opinion of the Board of Directors will be necessary to supply water needed for household domestic uses, sanitation and fire protection, establish priorities in the use of water for other purposes and provide for the allocation, distribution and delivery of water for such other purposes, without discrimination between consumers using water for the same purpose or purposes;

5. It is the Board's present intent, but it shall not be limited hereby, to take the following steps pursuant to the

authority conferred by law and this resolution: (a) to adopt programs to encourage water consumers to conserve water, (b) to prepare and at the proper time institute rationing rules and regulations, and (c) to attempt to resolve the threatened water shortage at the earliest possible date and to take all such other actions as may be allowed under the law;

6. All of the recitals herein above set forth are hereby adopted as findings of the Board of Directors of this District upon all of the matters set forth in Sections 350 through 358 and Sections 31026 through 31029 of the Water Code.

Vote on the Resolution by roll call resulted as follows:

AYES: HICKEY,BAILEY,BRADLEY,FOX,SULLWOLD

NAYES: NONE

ABSENT: NONE

DATED: January 31, 1990

APPROVED:

Harold H. Sullwold

Harold H. Sullwold, President

ATTEST:

Robert R. Lieberknecht

Robert R. Lieberknecht, Secretary

(SEAL)

rmj/6456-45/resol.547

Appendix III

ORDINANCE NO. 90-1

AN ORDINANCE OF THE CARPINTERIA COUNTY WATER DISTRICT PERTAINING TO DROUGHT REGULATIONS AND WATER CONSERVATION STANDARDS

BE IT ORDAINED by the Board of Directors of the Carpinteria County Water District as follows:

Section 1. Declaration of Water Shortage Emergency. The Board has conducted a duly noticed public hearing on January 31, 1990, to determine whether a drought-induced water shortage emergency exists and, if so, what regulations should be adopted in response to the shortage. By Resolution No. 547, dated January 31, 1990, the Board of Directors of the Carpinteria County Water District declared a water shortage emergency to prevail within the boundaries of the Carpinteria County Water District.

Section 2. Purpose and Scope. This Ordinance adopts regulations to deal with the water shortage emergency which the Board has found to exist. These regulations are effective immediately and the use of all water obtained by or through the distribution facilities of the District shall be governed and controlled by the provisions of this Ordinance.

Section 3. Definitions. The following terms are defined for the purposes of this Ordinance.

(a) "Customer" means the person or entity responsible for payment for water service at a particular property, as shown in the District's water billing records.

(b) "District" means the Carpinteria County Water District.

(c) "Board" means the Board of Directors of the District.

(d) "Manager" means the General Manager of the District.

(e) "Consumer" means every person, firm, trust, partnership, association, corporation, city, county, state or local agency, political subdivision, district or entity of any kind who uses water.

(f) "Waste" means any excessive, unnecessary or unwarranted use of water, including but not limited to any use which causes unnecessary runoff beyond the boundaries of any property as served by its meter and any failure to repair as soon as reasonably possible any leak or rupture in any water pipes, faucet, valves, plumbing fixtures or other water service appliances.

(g) "Billing period" means the period regularly used by the District for billing customer accounts, which is monthly for irrigated agriculture and bi-monthly for all other accounts.

Section 4. Prohibition on Waste of Water.

It shall be a violation of this Ordinance for any consumer or customer to waste any water obtained from or through the distribution facilities of the District.

Section 5. Prohibition of Certain Uses.

During the term of the drought shortage emergency declared by Resolution No. 547 and for as long as that condition exists, the following water use regulations, and such other regulations as may be adopted by resolution of the Board, shall apply to any and all use of water obtained from or through the distribution facilities of the District.

(a) The use of running water from a hose, pipe, or any other devise for the purpose of cleaning buildings and

paved, tile, wood, plastic or other surfaces shall be prohibited, except in the event the Manager determines in writing that such use is the only feasible means of correcting or preventing a potential threat to health or safety.

(b) All restaurants that provide table and/or counter service shall post, in a conspicuous place, a Notice of Drought Condition as approved by the Manager and shall refrain from serving water except upon specific request by a customer.

(c) Any use of water that causes runoff to occur beyond the immediate vicinity of use is prohibited.

(d) Boats and vehicles shall be washed only at commercial car washing facilities or by use of a bucket and hose equipped with a self-closing valve that requires operator pressure to activate the flow of water.

(e) (1) Irrigation at any time from 10:00 a.m. to 4:00 p.m. of any yard, park, recreation area, or other area containing vegetation shall be prohibited. Automatically controlled irrigation systems shall not be set to irrigate between the hours of 10:00 a.m. to 4:00 p.m., or to permit runoff beyond the immediate vicinity of use.

(2) Pursuant to Section 7(a) below, the Manager may grant an exception in writing to the provisions of Section 5(e)(1) and allow the use of water received from or through District facilities to be used for irrigation by commercial nurseries or for other commercial agricultural purposes between the hours of 10:00 a.m. and 4:00 p.m.

(3) The setting forth herein of specific examples of prohibited waste shall not constitute a limitation on the definition of waste of water or on prohibition of any such other uses as may constitute waste within said definition.

Section 6. Place of Use of Water.

Except as otherwise provided in this Ordinance or as specifically authorized by the Manager, water received from or

through a District meter may be used only on and for the property at the address to which that meter was assigned by the District.

Section 7. Future Restrictions.

All consumers are hereby notified that further restrictions or prohibitions on water use and service including but not limited to the prohibition of new connections and the rationing of water, may hereafter become necessary, and nothing herein, and no application, permit or approval of any water service or water service facilities granted pursuant to these rules shall vest in the applicant any right to a particular use or quantity of water, but such applicant shall be subject to all further prohibitions, restrictions, rules and regulations in the same manner and extent as any other consumer or class of consumer similarly situated existing at the time such prohibitions or restrictions are imposed.

Section 8. Exemptions and Appeals.

(a) Exemptions to the water use regulations set forth in this Ordinance may be granted by the Manager for specific uses of water, on the basis of hardship, or for reasons of health or safety. Any consumer may appeal any decision concerning application of the provisions of this Ordinance by the Manager to the Board of Directors by filing a written appeal on forms provided by the District with the Manager within ten (10) days from the date of the decision. The Board of Directors shall set the matter for hearing at a regular or special meeting within thirty (30) days from the date the appeal is filed. The District shall provide written notice of said hearing at least five (5) days prior to said hearing.

(b) Action by Board. At said hearing, the Board may, in its discretion, affirm, reverse or modify the

Manager's decision and impose any conditions it deems just and proper if it finds and determines that (1) the restrictions herein would cause an undue hardship or threat to health or safety, or (2) that due to particular facts and circumstances, the provisions of this Ordinance are not applicable to this situation under consideration.

(c) The Board may from time to time fix and charge an appropriate filing fee in an amount found by the Board to be the administrative expenses of handling appeals. The fee schedule shall be posted in the District office and may be changed by the Board without the necessity of amending this Ordinance.

Section 9. Violations.

(a) Any failure to comply with a provision of this Ordinance shall constitute a violation, regardless of whether the failure to comply is caused by a customer, consumer or any other person or entity.

(b) Where the failure to comply is found by the Board to be a continuing and intentional, each successive failure to comply shall be a separate and distinct violation.

Section 10. Penalties and Charges.

(a) It shall be a misdemeanor for any person, firm, association, partnership, corporation or other entity to use or apply water received from this District contrary to or in violation of any restriction or prohibition contained in this Ordinance. [Water Code Section 31029]

(b) Service may be terminated to any consumer or customer who knowingly and willfully violates or allows the knowing and willful violation of any provision of this Ordinance, after having been given reasonable notice and an opportunity to be heard to protest against the finding of such willful violation and the discontinuance of service.

(c) The following additional penalties shall apply to any violation of any provision of this Ordinance:

(1) For the first and second violation within any consecutive twelve (12) calendar months, the District will issue a written notice of the fact of such violation.

(2) For a third violation within any consecutive twelve (12) calendar months, the District shall impose a surcharge against the customer for the property where the violations occurred or is occurring, in an amount equal to 100 percent of the water bill for the billing period in which the violation occurred.

(3) For a fourth violation and any subsequent violation within any consecutive twelve (12) calendar months, the District:

a. Shall impose a surcharge against the customer for the property where the violation occurred, or is occurring, in an amount equal to 100 percent of the water bill for the billing period in which the violation occurred.

b. May install a flow restricter on or shut off water service to the property where the violation occurred or is occurring, for a period to be determined by the Manager.

c. If a flow restricter is installed or water service shut off pursuant to this section, prior to restoration of normal water service the customer whose service is affected shall be required to reimburse the District for whatever cost it has occurred and will incur in installing and removing a flow restricter and in shutting off and turning on water service.

(4) Any surcharge imposed pursuant to this section shall be added to the account of the customer for the property where the violation occurred or is occurring and shall

be due and payable on the same terms and subject to the same conditions as any other charge for regular water service.

(5) Nothing in this Ordinance shall limit or be construed to limit the right of a customer to seek reimbursement of a surcharge from a tenant or other consumer responsible for violation.

Section 11. Notice of Violation/Hearing.

(a) For each violation of this Ordinance the Manager shall give notice as follows:

(1) By sending written notice through the U.S. mail to the customer for the property where the violation occurred or is occurring, at the current billing address shown in the District's water billing records;

(2) In addition, the Manager may provide notice as follows:

a. By sending written notice through the U.S. Mail to the consumer at the property address where the violation occurred or is occurring;

b. By causing the giving of written notice personally to the person who committed the violation or by leaving written notice with some person deemed by the District to be of suitable age and discretion at the property where the violation occurred or is occurring;

c. If neither the person who committed the violation nor a person deemed by the District to be of suitable age and discretion can be found, then by affixing written notice in a conspicuous place on the property where the violation occurred or is occurring.

(b) Any written notice given under this section shall contain a statement of:

(1) The time, place and nature of the violation;

(2) The person(s) committing the violation, if known;

(3) The provision(s) of this Ordinance violated;

(4) The possible penalties for each violation;

(5) The customer or consumer's right to request a hearing on the violation, the time within which and to whom such request must be made; and

(6) The customer or consumer's loss of the right to a hearing in the event the customer or consumer fails to request a hearing within the time required.

(c) Any customer or consumer provided a notice of violation in accordance with the provisions of this Ordinance shall have the right to request a hearing before the Board. The request must be made in writing and must be actually received at the office of the District within ten (10) calendar days of the date of the notice of violation. If a hearing is requested, the Board shall give the customer or consumer requesting such hearing a notice in writing of the date, time and place of the hearing in the manner set forth above at least ten (10) days prior to the date of the hearing. The Board shall conduct the hearing at which both written and oral evidence may be presented, and shall decide whether a violation has occurred and the appropriate penalty. In determining the appropriate penalty, the Board may consider whether the customer or consumer knew of the violation at the time it occurred and whether he or she took reasonable action to correct the violation upon notification of it. The decision of the Board shall be final.

(d) If a customer or consumer fails to request a hearing before the Board in the manner and within the period provided in this section, the action of the District shall be deemed final.

(e) If a hearing is held the District shall prepare a brief and concise summary of the proceedings as a part of the District's records.

Section 12. Suspension and Repeal of Conflicting Ordinances and Rules and Regulations.

To the extent that the terms and provisions of this Ordinance are inconsistent or in conflict with the terms and provisions of any prior District ordinance, resolution, rule or regulation, the terms of this Ordinance shall prevail, and inconsistent and conflicting provisions of prior ordinances, resolutions, rules and regulations shall be suspended during the effective period of this Ordinance.

Section 13. Severability.

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this Ordinance. The Board hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be unconstitutional or invalid.

Section 14. Effective Date, Publication, Posting and Recording.

(a) This Ordinance shall be in full force and effect upon adoption.

(b) This Ordinance shall be published once in full in a newspaper of general circulation, printed and published and circulated in the District within ten days after adoption.

(c) This Ordinance may be recorded in the official records of the County of Santa Barbara and if this Ordinance is so recorded, any change, amendment, modification or repeal shall be recorded in said official records.

PASSED, APPROVED AND ADOPTED by the Board of Directors of the Carpinteria County Water District on this 31st day of January, 1990, by the following vote:

AYES: HICKEY,BAILEY,BRADLEY,FOX,SULLWOLD

NAYES: NONE

ABSENT: NONE

Harold E. Sullwold
President
CARPINTERIA COUNTY WATER DISTRICT
HAROLD E. SULLWOLD

ATTEST

Robert R. Lieberknecht
Secretary,ROBERT R. LIEBERKNECHT

cew/6456-45/ord.90-1

STATE OF CALIFORNIA)
) ss.
COUNTY OF SANTA BARBARA)

I, ROBERT R. LIEBERKNECHT, Secretary of the Carpinteria County Water District, DO HEREBY CERTIFY that the above and foregoing is a full, true and correct copy of Ordinance No. 90-1 of said District, adopted at a special or regular meeting of the Governing Board on the 31 day of JANUARY, 1990, and that the same has not been amended or repealed.

DATED: This 31 day of JANUARY, 1990.

Robert R. Lieberknecht

Secretary
CARPINTERIA COUNTY WATER DISTRICT
ROBERT R. LIEBERKNECHT

4/24/90 (Final)

Appendix IV

ORDINANCE NO. 90-2

AN ORDINANCE OF THE CARPINTERIA COUNTY WATER DISTRICT RESTRICTING AND LIMITING THE AMOUNT OF USE OF WATER SUPPLIED FROM OR THROUGH THE DISTRICT DISTRIBUTION SYSTEM, PROHIBITING CERTAIN USES OF WATER, PROVIDING FOR RELIEF THEREFROM IN EMERGENCY AND CONDITIONS OF UNDUE HARDSHIP AND PROVIDING FOR PENALTIES FOR VIOLATION THEREOF AND IMPLEMENTING AND SUPPLEMENTING ORDINANCE NO. 90-1 DATED JANUARY 1, 1990

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF CARPINTERIA COUNTY WATER DISTRICT AS FOLLOWS:

SECTION 1. USE OF WATER. The use of all water obtained by or through the distribution facilities of this District shall be governed and controlled as in this Ordinance set forth.

SECTION 2. PROHIBITION AGAINST WASTE OF WATER. It shall be unlawful for any water user obtaining any water from and through the distribution facilities of this District to waste any of said water. (See Ordinance No. 90-1)

SECTION 3. DEFINITIONS. As used in this Ordinance, the following words or terms shall have the meanings as in this section set forth.

(a) Meter Account: A District record which identifies each meter through which water is served to a particular premises, the name of the person requesting the service, the location of the premises and the person responsible for the account. Each such meter account (sometimes referred to as "Account") is identified by an account number.

(b) Agriculture or Agricultural Use: Any application of water for the production of crops for commercial or profit purposes.

(c) Commercial Use. The use of water to serve the purposes

of business, commerce, trade or industry other than agriculture and recreation.

(d) Domestic Use: Uses which are common to residences (homes) including reasonable landscaping, the watering of a reasonable number of non-commercial domestic or barnyard stock or animals and all other uses of water in the District not otherwise specifically classified herein.

(e) Industrial Use: The same as commercial use.

(f) Irrigation use: The same as agricultural use.

(g) Recreational Use: The use of water for public camps or picnic grounds, public parks, public athletic playing fields, tennis facilities available to the public, the community swimming pool and public or private golf courses and the surrounding grounds and structure used in connection with the above or incidental thereto.

(h) Schools: All schools, both public and private, and including all surrounding grounds and structures thereon used for usual school purposes.

(i) Unit of Water: The term used to measure a quantity of water. In this Ordinance one (1) unit of water is One Hundred Cubic Feet (HCF). A cubic foot of water is the equivalent of approximately 7.48 gallons. One unit of water (100 HCF) is the equivalent of approximately 748 gallons of water. Water rates are quoted in "units of water."

(j) Billing Cycle or Period:

1) Agricultural Billing Cycle. The billing cycle for agricultural meters and uses is a period of approximately 30 consecutive days. There are twelve (12) consecutive billing cycles in a water year.

2) All Other Billing Cycles. For all meters and uses other than agricultural, the billing cycle is a period of approximately 60 days. There are six (6) consecutive billing cycles in a water year for all uses other than agricultural.

3) Meter Readings. Agricultural meters are read every month and are read during the last week of each month and each agricultural meter will be read on the same day of each month when it is possible to do so. All other meters will be read

every other month (bi-monthly) in the same manner and at approximately the same time of the month as agricultural meters.

(k) Allocation (Ration) Cycle or Period: The allocation or ration cycle or period for each account is a period of time for which a certain amount of water is allocated for use by the account holders during the designated cycle or period. For the method of determining the basic allocation for each account, see Section 4 of this Ordinance. For the duration of each allocation see Section 7 of this Ordinance.

(l) Water Year: Each water year for each account consists of twelve (12) consecutive calendar months. Each water year begins with the meter reading in the month of May each year and ends with the meter reading in the same month in the following calendar year.

SECTION 4. DETERMINATION OF WATER ALLOCATION (RATION).

(a) Historical Use Period: The amount of water allocated to each meter account shall be determined from time to time by the District using the methods set forth in this Ordinance and the allocation will be based on and derived from District records showing the historical amounts used by each account over a selected Historical Use Period (HUP). The selected historical use period for determining the basic allocation in all categories of use are the calendar years of 1985, 1986, 1987, 1988 and 1989.

(b) Agricultural Allocations: Each agricultural account shall be given a total allocation for the water year which allocations will be eighty percent (80%) of the average yearly use by each respective account during the five (5) year historical use period. This total allocation will be shown for each of the 12 billing cycles in the water year and each billing cycle allocation will be 80% of the historical average of the respective billing cycle.

(c) Domestic Use (Single Family): The allocation for all residential domestic uses, other than condominiums, apartments, multi-units and mobile home or recreational vehicle parks, shall be determined by the method shown in this Section 4(c).

The District has identified from its records, the records of the City of Carpinteria and the County of Santa Barbara, certain

residential areas where each of the residential parcels (lots) and the residential structures within each respective area are substantially similar in size.

For each area which the District has determined to contain substantially similar lots and structures, the District has determined from its meter account records the total amount of water used in that area for the five year historical use period and the average amount of use for each year and each month during the historical use period. The historical average has been reduced by twenty percent (20%) to arrive at a total allocation for each respective area. The reduced amount has been divided by the total number of accounts in the area to arrive at an equal allocation for each account in each respective area for the water year. The yearly allocation is divided into six (6) bi-monthly billing cycles, each of which will reflect the historical pattern of use during each of those cycles.

(d) Condominiums, Apartments and Other Types of Multiple Living Structures (Excluding Mobile Homes): All of these types of residential units have been grouped together for allocation purposes. The District has determined the total monthly and yearly historical use of the total group by using the same methods described in (c) above. The District has in a like manner reduced this historical average by twenty percent (20%). The reduced amount has then been divided by the total number of single family units in the group. The resulting allocation for each unit has then been assigned to each meter account based on the total number of units being served by the particular meter.

(e) Mobile Home Parks (Excluding the Carpinteria State Beach Park): All mobile home parks have been grouped together for allocation purposes. The District has determined to the total historical use for the entire group, for each month and year in the historical use period and has determined the average use for each month and year during the historical period. This average amount has been reduced by 20% and the resulting figure has been divided by the total number of mobile home spaces in the entire group. The figure thus determined for each space has been assigned to each mobile home park based on the total number of

units in each park.

(f) Residential Units With a Home Owners' Association Meter: Residential units in this category such as Seacoast and The Meadows each separately have, in like manner, had the historical average determined, applied and reduced by twenty percent (20%) and the resulting figure has been assigned to the respective home owners' associations' meter account.

(g) Other Metered Accounts: Other accounts (including but not limited to, State, County, City and Special Districts), except as described in (h) below, have in a like manner had the respective historical average of each account reduced by twenty percent (20%) and the resulting allocation figure has been assigned to the respective metered account.

(h) Accounts Without Historical Five Year Average: Accounts not having a five (5) year historical history shall be handled on a case-by-case method and each such account shall have its allocation determined by the District by using as a guide the allocation determined for similar uses and size after making any adjustment necessary.

(i) Future Allocation Adjustment: Adjustments in allocations may be made in the future years based on the amount of water available to the District. Future water supply factors may cause the District to determine priorities in the categories of use and the amount of use in each category. The District may, in subsequent adjustments, find it necessary to declare some uses as being non-essential after giving consideration to the amount of water needed to be reserved for health, fire and safety .

(j) The allocation for each water year shall be determined prior to the first day of each water year and if there are changes, account holders will be given written notice of the change.

SECTION 5. USE OF RATIONED WATER. Subject to the prohibition against the waste of the use of water and subject to the penalties provided for the violation of this Ordinance, it shall be the sole responsibility of each water account holder to manage

the holder's water needs in such a manner as not to exceed the amount of water allotted to that account.

SECTION 6. PLACE OF AND CLASS OF USE OF RATIONED WATER. Except as hereinafter provided, water allotted to a water account may be used only on and for the premises described in the District records as being served by account and on no other premises and only for that class of use or uses served by that account and for no other use.

SECTION 7. ALLOCATION CYCLES, NO CARRY-FORWARD CREDIT.

(a) Agricultural Accounts: The water year for agricultural accounts shall be divided into four (4) allocation periods of approximately equal length, and each period shall consist of three (3) billing and allocation cycles of approximately thirty days in each cycle. The allocation for each allocation period shall be the sum of the allocations for the cycles comprising each allocation period determined as set forth in Section 4. Agricultural accounts shall be billed in each billing cycle, but the allotted water may be used at any time during the respective period for which the water was allocated. Allocated water which is not used in any given allocation period may not be carried forward for use in any subsequent allocation period.

(b) All Other Allocations: All accounts, other than agricultural, shall be on bi-monthly billing-ration cycles. Water which is allocated, but unused in a cycle may not be carried forward for use in any subsequent billing-ration cycle.

SECTION 8. PROCEDURE FOR AN EXCEEDED WATER RATION. If a water user uses more water during any ration cycle or period than has been allocated to that account for that cycle or period, the fact of such excess use shall constitute a violation of this Ordinance and the penalty provision of Section 12 of this Ordinance may be invoked by the District in addition to any other enforcement or penalty procedure allowed by law including any surcharges and flow restrictors for excess use as provided by this Ordinance.

SECTION 9. SURCHARGE FOR EXCESS WATER USE.

(a) The surcharge hereby established for water used in excess of the amount allotted to each account shall be in addition to the basic water rates of the District under any applicable rule, regulation, resolution or ordinance in effect at the time of the excess use and shall be in addition to, and not in lieu of, any other penalties imposed by this Ordinance or Ordinance No. 90-1.

(b) If water is used during any ration cycle or period in excess of the amount allotted for that period, a surcharge shall be imposed on said excess use at double the basic water rate in the applicable rate bracket for units (100 cubic feet) of water, for the first five (5) units or fraction thereof in excess of the allotted amount. For each unit, or fraction thereof, in excess of the first five (5) units of overuse, the surcharge will be four times the applicable base rate. Surcharges shall appear on the first billing statement for that account immediately following the period in which the excess use occurred. The surcharge shall be paid to the District at the same time as the payment on the basic rate and the penalty for failure to pay the entire amount due (basic plus surcharge) shall be the same as the penalty imposed by the District for failure to pay the basic rate.

(c) If a surcharge is imposed in three (3) or more allocation cycles during the term of this Ordinance, in addition to the surcharge, or any other charge or penalty, the Board may, in its discretion, either install a device on the meter to restrict the flow of water or discontinue service to the property. The person(s) or entity in whose name the water account stands shall be requested to appear before the Governing Board at a hearing to show cause why the Governing Board should not take action to either install a restrictive flow device or devices on the meter serving said property or, in the alternative, discontinue water service to said property for such a period of time as the Governing Board may find to be appropriate under the circumstances.

(d) Notice of said hearing shall be in writing and mailed

or delivered to the person or persons at the address as shown on the District records for said water account.

There shall be set forth in said notice the amount of water allocated for each period in question, the amount actually used for each period, the amount of excess for each period, and the date, time and place of the hearing on said notice which date shall not be less than ten (1) days after the date (postmark) of the mailing or delivery of said notice.

(e) Excess use shall be determined by the records of the District as taken from meter readings and shall be presumed to be correct and the burden of showing that the meter from which said readings are taken is inaccurate shall be on the person or persons to whom said notice is directed.

(f) All costs of installing or removing any restrictive flow devices, and/or disconnecting or connecting said service shall be the sole cost of the person or persons in whom the account stands and shall be paid promptly upon being billed therefor.

SECTION 10. REQUEST FOR RATION REVIEW.

(a) All Accounts: An account holder may, at anytime and from time to time, file a written application with the District on a form provided by the District, requesting a review of the amount of water to the holder's account. A fee to cover the District's administrative costs of review will be fixed by the District, which fee must be paid at the time of the application.

(b) Application of Review to Violations and Surcharge: If, as a result of said review, the allotment is raised, any penalty for excess use which could have been or actually was imposed shall be either reduced, excused or rescinded depending upon the amount of the raise in relation to the excess use.

In a like manner, any surcharge which could have been (or was actually) imposed because of previous excess use will be reduced or not be imposed, or shall be refunded, up to the extent of the new allotment, but, shall not be excused or refunded for the amount used in excess of the new allotment.

Except as otherwise provided in this Ordinance, any

violations and surcharges excused under this section shall be only for the ration cycle or period immediately preceding the date of the application or request for review of the allotment in question and for no other period.

SECTION 11. APPEALS AND EXCEPTIONS.

(a) Appeals: Any water user may appeal any decision or application of the provisions of this Ordinance by District staff, to the Board of Directors by filing a written appeal with District, and the Board of Directors shall consider the appeal at a regular or special meeting within thirty (30) days from the date the appeal is filed. The District shall give the appellant written notice of the meeting at which the appeal will be considered at least five (5) days prior to said meeting. The District may fix fees for filing appeals in an amount deemed from time to time sufficient to cover District costs for appeals.

(b) Action by Board: At said meeting, the Board of Directors of the District may, in its discretion, affirm, reverse or modify the District staff's decision and make any adjustments and impose any conditions it deemed just and proper, if it finds and determines that (1) the terms of this Ordinance be applied to the appellant, would cause an undue hardship not suffered by others in the same category of use or (2) that due to peculiar facts and circumstances, none of the provisions of this Ordinance are applicable to the particular situation under consideration.

SECTION 12. PENALTIES.

(a) It is a misdemeanor for any person, firm, association, partnership, corporation or any water user to use or apply water received from this District contrary to or in violation of any restriction or prohibition contained in this Ordinance until this Ordinance has been repealed or the emergency which was declared by the District has closed and upon conviction thereof such person, firm, association, partnership or corporation shall be punished by imprisonment in the County Jail for not more than thirty (30) days or by fine of not more than Six Hundred Dollars ($600.00) or by both the fine and imprisonment, for each

violation and for each day of an additional violation.

(b) In addition to any other penalty or surcharge, any person, firm, association, partnership, corporation or water user violating any restriction or prohibition of this Ordinance shall be subject to having water service discontinued to the affected property, after having been given reasonable notice and an opportunity to be heard to protest against the findings of such willful violation and the discontinuance of service.

SECTION 13. SUSPENSION OF CONFLICTING ORDINANCES AND RULES AND REGULATIONS. To the extent that the terms and provisions of this Ordinance are inconsistent, or in conflict with the terms and provisions of any prior District Ordinances, Resolutions and Rules and Regulations, the terms of this Ordinance shall prevail and inconsistent and conflicting provision of prior ordinances, resolutions and rules and regulations shall be suspended during the effective period of this Ordinance. Notwithstanding the foregoing, nothing herein contained shall have any effect on the provisions of Ordinance No. 90-1, provided however, that if there is a conflict, or there is an ambiguity as between Ordinance No. 90-1 and this Ordinance the Governing Board shall have the authority to resolve the conflict or ambiguity. Any such resolution shall be applied to all future like situations until such time as either or both Ordinances are amended to address the situation in question.

SECTION 14. TEMPORARY SUPPLIES. From time to time the District may be able to obtain temporary supplies of water in excess of the normal amounts available to the District, in such event the District may allocate such water for use in the District as the District deems best and such temporary allocation shall not require an amendment or change in this Ordinance but may be done by resolution or minute order of the Governing Board.

SECTION 15. SEVERABILITY. If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional, or invalid, such decision shall not affect the

validity of the remaining portions of this Ordinance. The Board of Directors hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be unconstitutional or invalid.

SECTION 16. EFFECTIVE DATE, PUBLICATION, POSTING AND RECORDING.

(a) This Ordinance is an emergency ordinance and shall be in full force and effect on the date of adoption and shall be operable as to each account as of the meter reading in May, 1990.

(b) This Ordinance shall be published once, in full, in a newspaper of general circulation, printed, published and circulated in this District, within ten (10) days after adoption.

(c) This Ordinance may be recorded in the Official Records of this County of Santa Barbara and if this Ordinance is so recorded any change, amendment, modification or repeal shall be recorded in said Official Records.

PASSED AND ADOPTED by the Governing Board of the Carpinteria County Water District this 24th day of April, 1990 by the following vote, to wit:

AYES: Bradley, Hickey, Bailey, Fox and Sullwold
NAYES: None
ABSENT: None
ABSTAIN: None

Harold N. Sullwold
President of the Governing Board
CARPINTERIA COUNTY WATER DISTRICT

ATTEST:

Robert L. Lieberknecht
Secretary

State of California)
) ss.
County of Santa Barbara)

I, ROBERT R. LIEBERKNECHT, Secretary of the CARPINTERIA COUNTY WATER DISTRICT, do hereby certify that the foregoing is a full, true and correct copy of Ordinance No. 90-2, adopted on APRIL 24, 1990, and that the same has not been amended or repealed.

DATED: This 26 day of APRIL, 1990.

Robert R. Lieberknecht

Secretary
ROBERT R. LIEBERKNECHT

(Seal)

Appendix V

ORDINANCE NO. 90-3

AN ORDINANCE OF THE CARPINTERIA COUNTY WATER DISTRICT ESTABLISHING RULES AND REGULATIONS FOR THE RESTRICTION UPON AND THE PROHIBITION OF THE DISTRIBUTION AND DELIVERY OF WATER WITHIN THE DISTRICT

BE IT ORDAINED BY THE BOARD OF DIRECTORS OF THE CARPINTERIA COUNTY WATER DISTRICT AS FOLLOWS:

Section 1. Declaration of Water Shortage Emergency.

The Board has conducted a duly noticed public hearing on January 31, 1990, to determine whether a drought-induced water shortage emergency exists and, if so, what regulations should be adopted in response to the shortage. By Resolution No. 547, dated January 31, 1990, the Board of Directors of the Carpinteria County Water District declared a water shortage emergency to prevail within the boundaries of the Carpinteria County Water District.

Section 2. Purpose and Scope.

This Ordinance adopts regulations establishing a moratorium on issuance of "Can and Will Serve" letters for new service connections as a necessary measure to deal with the water shortage emergency which the Board has found to exist. These regulations are effective immediately and the use of all water obtained by or through the distribution facilities of the District shall be governed and controlled by the provisions of this Ordinance.

Section 3. Definitions.

The following terms are defined for the purpose of this Ordinance.

(a) "District" means the Carpinteria County Water District.

(b) "Board" means the Board of Directors of the District.

(c) "Manager" means the General Manager of the District.

(d) "Applicant" means every person, firm, trust, partnership, association, corporation, city, county, state or local agency, political subdivision, district or entity of any kind.

(e) "Service connection" means the tapping of or the connection to any District water service facility for the purpose of distributing, delivering and serving water.

(f) "Water Service Facility" refers to and includes service connections, meters, main extensions and all other appurtenances used or useful for the delivery of water. Unless specifically indicated to the contrary, references herein to water service facilities shall mean facilities which are owned (or are to be owned) by Carpinteria County Water District and shall not mean private water service facilities.

(g) "Can and Will Serve Letter" means the District's standard form letter customarily sent to the Community Development Department of the City of Carpinteria or the Resource Management Department of the County of Santa Barbara, indicating that certain projects are within the District and are entitled to water service subject to the rules and regulations of the District.

Section 4. Prohibition of Additional Water Service Facilities.

(a) Except as expressly provided herein, no new, additional, further expanded or increased in size water service connections, meters, main extensions or other water service facilities of any kind, shall be made, allowed, approved or accepted on or after the effective date of this Ordinance. The term "new water service facilities" shall be deemed to refer to and include each and all of the above. The uses restricted and prohibited herein are found by the Board of Directors to be nonessential.

(b) Any applicant who possesses a valid Can and Will Serve letter issued for water service by the District shall be exempt from the provisions of this Ordinance for the specific water service facility covered by said Can and Will Serve letter. Except as herein provided, no application for Can and Will Serve letter shall be accepted by the District, and no Can and Will Serve letter shall be issued by the District on or after the effective date of this Ordinance.

Section 5. Relocation, Replacement and Repair of Existing Facilities.

Notwithstanding any other provisions of this Ordinance, this Ordinance does not apply to repair, relocation or replacement of existing District, or private water service facilities of the same type, size and capacity in order to continue existing water service, nor does this Ordinance apply to the construction and installation of new additional District facilities, whether constructed and installed by the District or by a private individual, for dedication to the District on completion.

Section 6. Requirements for Information.

Applicants for water service facilities shall be responsible for providing all information and proof requested by the Board of Directors or the District staff for use in processing, verifying or enforcing any matter provided for herein, and the applicants shall do so at their sole cost and expense. Any failure to provide the requested information or proof shall be grounds for denial of any application or relief.

Section 7. Future Restrictions.

All applicants for water service facilities, including all applicants who have received Can and Will Serve letters as of the effective date of this Ordinance, are hereby notified that further restrictions or prohibitions on water use and service may hereafter become necessary, and nothing herein, and no application, permit or approval of any water service or water service facilities granted pursuant to these rules shall vest in the applicant any right to a particular use or quantity of water, but such applicant shall be subject to all further prohibitions, restrictions, rules and regulations in the same manner and extent as any other consumer or class of consumer similarly situated existing at the time such prohibitions or restrictions are imposed.

Section 8. Appeals and Exceptions.

(a) Exemptions to the water service restrictions set forth in this Ordinance may be granted by the Manager for specific uses of water, and specific installation of water service facilities, on the basis of hardship, or for reasons of health and safety. Any applicant may appeal any decision concerning provisions of this Ordinance by the

Manager to the Board of Directors by filing a written appeal on forms provided by the District with the Manager within ten (10) days from the date of the decision. The Board of Directors shall set the matter for hearing at a regular or special meeting within thirty (30) days from the date the appeal is filed. The District shall provide written notice of said hearing at least five (5) days prior to said hearing.

(b) At said hearing, the Board may, in its discretion, affirm, reverse or modify the Manager's decision and impose any conditions it deems just and proper if it finds and determines that (1) the restrictions herein would cause an undue hardship or threat to health or safety or (2) that due to the particular facts and circumstances, the provisions of this Ordinance are not applicable to this situation under consideration.

(c) The Board may from time-to-time fix and charge an appropriate filing fee in an amount found by the Board to be the administrative expenses of handling appeals. The fee schedule shall be posted in the District office and may be changed by the Board without the necessity of amending this Ordinance.

Section 9. Penalties.

(a) It is a misdemeanor for any person, firm, trust, partnership, association, corporation or entity of any kind, to use, obtain or apply water received from this District contrary to or in violation of any restriction or prohibition contained in this Ordinance. Upon conviction thereof such person, firm, trust, association, partnership, corporation or other entity shall be punished by imprisonment in the County Jail for not more than thirty (30) days or by fine of not more than Six Hundred Dollars ($600.00) or by both

the fine and imprisonment, for each violation and for each day of an additional violation.

(b) Any person, firm, trust, partnership, association, corporation or entity of any kind willfully violating any restriction or prohibition of this Ordinance shall be subject to having water service discontinued to the affected property, after having been given reasonable notice and an opportunity to be heard to protest against the finding of such willful violation and the discontinuance of service.

Section 10. Conflicting Ordinances and Rules and Regulations.

To the extent that the terms and provisions of this Ordinance are inconsistent or in conflict with the terms and provisions of any prior District Ordinances, Resolutions and Rules and Regulations, the terms of this Ordinance shall prevail and inconsistent and conflicting provision of prior ordinances, resolutions and rules and regulations shall be suspended during the effective period of this Ordinance. Notwithstanding the foregoing, nothing herein contained shall have any effect on the provisions of Ordinance No. 90-1 or 90-2, provided, however, that if there is a conflict, or there is an ambiguity as between Ordinance 90-1 or 90-2 and this Ordinance, the Board shall have the authority to resolve the conflict or ambiguity. Any such resolution shall be applied to all future like situations until such time as any or all such ordinances are amended to address the situation in question.

Section 11. Severability.

If any section, subsection, sentence, clause or phrase of this Ordinance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portions of this Ordinance. The Board hereby declares that it would have passed this Ordinance and each section, subsection, sentence, clause or phrase thereof irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be unconstitutional or invalid.

Section 12. Effective Date, Publication, Posting and Recording.

(a) This Ordinance is an emergency ordinance and shall be in full force and effect upon adoption.

(b) This Ordinance shall be published once in full in a newspaper of general circulation, printed and published and circulated in the District within ten (10) days after adoption.

(c) This Ordinance may be recorded in the official records in the County of Santa Barbara and if this Ordinance is so recorded, any change, amendment, modification or repeal shall be recorded in said official records.

PASSED, APPROVED AND ADOPTED by the Governing Board of the Carpinteria County Water District on this 24th day of April, 1990, by the following vote, to wit:

AYES: Bradley, Hickey, Sullwold, Fox, Bailey
NAYES: None
ABSENT: None
ABSTAIN: None

President of the Governing Board
CARPINTERIA COUNTY WATER DISTRICT

ATTEST

Secretary

STATE OF CALIFORNIA)
) ss.
COUNTY OF SANTA BARBARA)

I, _____, Secretary of the CARPINTERIA COUNTY WATER DISTRICT, do hereby certify that the foregoing is a full, true and correct copy of Ordinance No. 90-3, adopted on April 24, 1990, and that the same has not been amended or repealed.

DATED: This 24th day of April, 1990.

Robert R. Lieberknecht
Secretary

(Seal)

Appendix H

Groundwater Management Plan

Groundwater Management Plan

Carpinteria Valley Water District

August 14, 1996

Adopted and approved by the Board of Directors of the Carpinteria Valley Water District at a regular Board meeting held on August 14, 1996, by Resolution No. 670

Charles B. Hamilton, Secretary

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Introduction

Assembly Bill 3030 (AB3030), passed by the California Legislature in 1992, provides for management of groundwater basins in order to maintain and protect water quality, maximize water supply, and to eliminate protracted legal battles over groundwater. The bill encourages local agencies to create and adopt groundwater management plans for their groundwater basins.

Based upon current information about the volume and quality of groundwater available in the Carpinteria Valley basin, there appears to be no compelling reason for an aggressive groundwater management effort by the Carpinteria Valley Water District (CVWD). There is, however, a clear need for the systematic monitoring and analysis of groundwater levels as well as water quality in the Carpinteria Valley. There is a ***growing use*** of the basin by private landowners as a source of irrigation water and the ***continuing need*** to maintain the basin as a major sustainable drinking water resource for all. Systematic monitoring, analysis and reporting will provide an early warning/detection system, should the growing use of the basin begin to adversely affect the basin. As a management tool, the use of such a system allows for informed decision-making relative to other possible management actions relative to other possible elements of a groundwater management plan identified in the legislation.

Responding to the AB3030 initiative, and the desire to accept the groundwater management challenge, Carpinteria Valley Water District's Board of Directors adopted a Resolution of Intention to draft a Groundwater Management Plan on September 14, 1994.

Description of the Groundwater Basin

The Carpinteria Groundwater Basin extends from a small area located in Ventura County, east of the Santa Barbara County line, across the Carpinteria Valley, to and including the small Toro Canyon area on the west. The areal extent of the basin is about 12 square miles (Figure 1).

Estimated Storage

Geotechnical Consultants, Inc. (GCI) estimated in 1986 that of the total basin storage, 700,000 acre feet, about 27%, or 170,000 acre feet is located in Storage Unit No. 1, in four major aquifers within the area of confined groundwater. Safe yield of the basin is estimated to be about 5,000 acre feet (GCI, 1986).

Historical Monitoring and Reports

Collection of data and evaluation of the groundwater resources in the Carpinteria Valley area have historically been performed by the United States Geological Survey (USGS) in conjunction with the Santa Barbara County Water Agency and the Carpinteria Valley Water District (District). Data collection was begun by USGS in 1941. In 1972 the USGS monitored 19 wells. Data from the monitoring of wells were supplemented with a survey conducted in 1973 in conjunction with a test hole drilling program conducted by the District and Geotechnical Consultants, Inc. Reports on the hydrogeology and surface water hydrology of the basin were published by the USGS in 1949, 1951 and 1962. Detailed hydrogeologic investigation reports were prepared by Geotech Consultants, Inc. in 1972, 1976 and 1986. A detailed description of the basin with an emphasis on aquifer characteristics and well yields was also prepared by Richard Slade in 1975. Limited water quality data was available for about 25% of the wells in the basin in 1976, as is the case in 1996.

Rain gauges within the Carpinteria Valley have been maintained since 1941 at the Middle School and at the Carpinteria Reservoir since 1957. The USGS has collected data on streamflow measurements on Carpinteria Creek since 1941.

Since 1976 the District and the USGS have had a cooperative agreement providing for groundwater level measurements and other water quality data from 41 wells in the Valley. The agreement also provides for continued operation and maintenance of the stream gauging station for Carpinteria Creek.

Historical Variations in Groundwater Levels

At the time of the District's formation in 1941, groundwater levels were declining. Hydrographs for the basin indicate that from 1947 to 1951, prior to the importation of surface water from Lake Cachuma, groundwater levels fell below sea level. Hydrographs since 1951 show rising water levels leading up to artesian conditions in 1979. Since the 1986-91 drought, when levels declined as well production increased, water levels have nearly returned to the historic high level brought about the very wet winter of 1983.

Historical Variations in Groundwater Pumpage

Groundwater pumpage has varied greatly over the last 60 years depending upon the availability of surface water, precipitation and land use. Both irrigation acreage and total pumpage doubled after World War II. Following the introduction of Cachuma Project water in the early 50's, pumpage declined. Toward the end of the most recent 1987-91 drought, as many as 60 additional private wells were drilled, bringing the total number of private wells to about 100. Estimated private pumpage that once averaged about 1,600 acre feet/year, reached a new high in 1994 of 2,780 acre feet. District pumping historically averaged about 2,200 acre feet/year, but in 1994 totaled 1,305 acre feet. Total 1994 pumpage (District and private) was 4085 acre feet, or about 82 % of the conservatively estimated 5,000 acre feet safe yield of the basin.

Water Quality

There are no known contamination problems in the Carpinteria Valley groundwater basin. Chloride, a common sea water constituent, is generally low in samples taken from the basin. Total Dissolved Solids (TDS) concentrations range from a low 450 to moderate 980 PPM. It is believed that the Rincon Thrust fault acts as a barrier to sea water intrusion.

Action Elements

1. Inventory of Wells

The profile of each drilled well in the Plan area shall include the following:

a. Location
b. Size of well casing (diameter)
c. Size of pump (horsepower)
d. Depth
e. Sanitary seal: yes / no depth
f. Meter: yes / no
g. Active / inactive/ abandoned / destroyed
h. Secured: yes / no
i. Other data if available: drillers log, electric log, chemical analysis, etc.

Note: This information will be treated as confidential information in the same way that customer account information is treated and released only with written permission of the well owners.

2. Monitoring of Groundwater Levels and Quality.

Groundwater levels shall be measured (frequency to be determined), and aquifer characteristics calculated annually, in conjunction with the USGS. The scope of this effort will be expanded as needed to encompass the whole basin.

Annually, wells (number to be determined) shall be sampled for nitrate, chloride, total dissolved solids (TDS), and boron. A second sample (number to be determined) of wells shall be tested for general mineral and inorganic characteristics. A third sample (number to be determined) of wells shall be tested on an "as needed" basis for trace contaminants such as VOCs (volatile organic chemicals). Frequency of sampling for water quality may increase if a problem is identified. It is anticipated that water quality information produced by the private pumpers will also be shared with the District.

Note: Participation in this effort by well owners, whether solely by providing the District with well information (Element 1), or by allowing sampling and water level measurements (Element 2), or both, is entirely voluntary. Results of District water quality testing and water level measurements will be shared with well owners. Water quality testing by the District may result in benefits to all well owners through pooled purchasing power, and this opportunity will be explored.

3. Creation of a Database and Reporting System.

All water level and water quality information shall be obtained and correlated by the District. The District will prepare an annual summary report of the data and findings, entitled Carpinteria Valley Groundwater Basin Report.

4. Identification and Monitoring of Recharge Areas

In monitoring recharge areas, the Manager will include in the annual Basin Report, a status report on recharge areas in the watershed. The status report will identify the major recharge areas of the watershed and identify significant potential and/or actual threats caused by pollution or reduction of recharge area.

5. Implementation of a Sanitary Seal Retrofit Program

Wells identified as being contaminated or polluted, or subject to a material or substantial contamination or pollution risk (in accordance with the definitions of contamination and pollution provided in State Water Code Section 13050, attached as Exhibit A) and identified as not having a sanitary seal, shall be fitted with sanitary seals or remedied by other actions as determined by the District, at the owners expense, in accordance with State and County standards, incorporated in this Plan as Exhibit B, County Ordinance No. 3458, Exhibit C, Water Well Standards: State of California Bulletin 74-81, and Exhibit D, California Well Standards Bulletin 74-90.

Examples of a "material or substantial risk" would include but not be limited to the following:

1) a septic tank in close proximity to a well
2) storage of hazardous materials in close proximity to a well
3) a well located within a drainage channel or in a floodplain
4) a leach field in close proximity to a well
5) a horse or other livestock corral in close proximity to a well.

6. Implementation of a Well Abandonment and Destruction Program

All abandoned and/or improperly secured wells shall be identified and at the owner's expense, abandoned and secured in accordance with current State and County requirements, attached as Exhibits B, C and D.

All wells that need to be destroyed shall be identified and at the owner's expense, destroyed in accordance with current State and County requirements attached as Exhibits B, C and D.

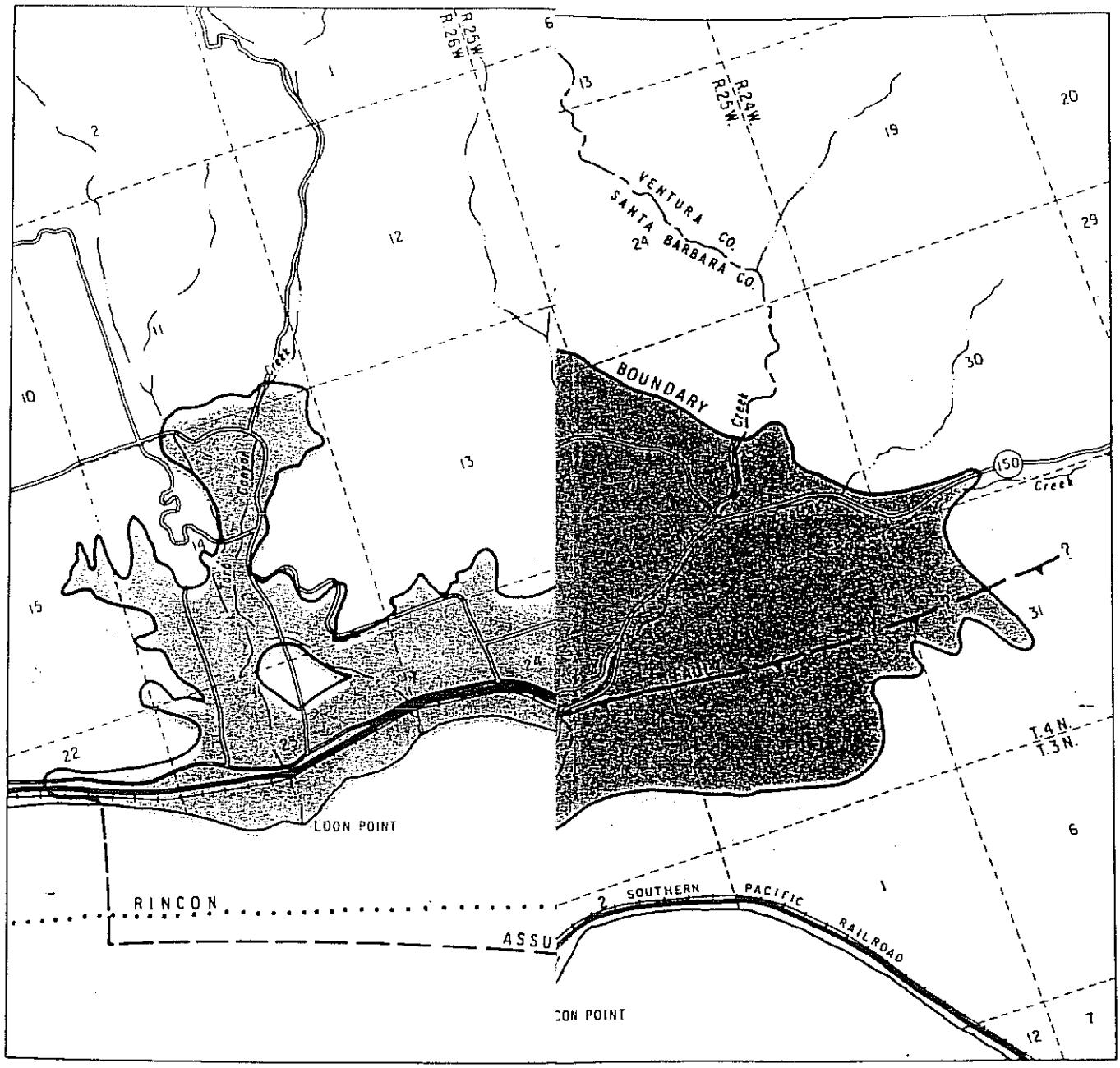
7. Dissemination of Public Information Relative to the Plan

The District shall prepare a well owners handbook, including information and regulations about well drilling, the dangers of open and/or improperly secured wells, and well abandonment and destruction procedures.

8. Procedure for Changes in Plan

Material or substantial changes to the Board approved Plan will necessitate a complete review and public participation process as set forth in AB3030.

FIGURE 1



GEOTECH CONSULTANTS, INC.

CARPINTERIA
GROUND WATER BASIN BOUND.

BOUNDARY BETWEEN AREA OF
AND CONFINED GROUND WATE

PLATE 1 AREA OF RECHARGE

V85037 JULY,1986

Chapter 1

POLICY

Law Review Commentaries

From elephants to mice: The development of EBMUD's program to control small source wastewater discharges. Raoul Stewardson, 20 Ecology L.Q. 441 (1993).

§ 13000. Conservation, control, and utilization of water resources; quality; statewide program; regional administration

Cross References

Hazardous substance release sites, revision of investigation and cleanup policies, see Health and Safety Code § 25355.7.

Law Review Commentaries

Nuisance law and petroleum underground storage tank contamination: Plugging the hole in the statutes. James B. Brown and Glen C. Hansen, 21 Ecology L.Q. 643 (1994).

Notes of Decisions

Construction with other law 9

9. Construction with other law

Existence of substantial statutory law applicable to predecessors' contamination of property through unlawful hazardous discharges did not bar subsequent owner from advancing common-law claims of nuisance, trespass, and negligence. Newhall Land and Farming Co. v. Superior Court (Mobil Oil Corp.) (App. 5 Dist. 1993) 23 Cal.Rptr.2d 377, 19 Cal.App.4th 334, review denied.

§ 13001. Legislative intent

Notes of Decisions

Water erosion 2

2. Water erosion

Although initial study found that housing development project, as proposed, would increase water erosion, city, as lead agency under California Environmental Quality Act (CEQA), was not required to send proposed negative declaration to regional water quality control board; although state Water Quality Control Board and various regional boards had statutory jurisdiction over water quality, they had no particular authority over water erosion. Gentry v. City of Murrieta (McMillin Communities) (App. 4 Dist. 1995) 43 Cal.Rptr.2d 170, 36 Cal.App.4th 1359, modified on denial of rehearing.

Chapter 1.5

SHORT TITLE

§ 13020. Title of division

Law Review Commentaries

Nuisance law and petroleum underground storage tank contamination: Plugging the hole in the statutes. James B. Brown and Glen C. Hansen, 21 Ecology L.Q. 643 (1994).

Chapter 2

DEFINITIONS

Section
13050. Definitions.

§ 13050. Definitions

As used in this division:

(a) "State board" means the State Water Resources Control Board.

(b) "Regional board" means any California regional water quality control board for a region as specified in Section 13200.

(c) "Person" includes any city, county, district, the state, and the United States, to the extent authorized by federal law.

(d) "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.

(e) "Waters of the state" means any surface water or groundwater, including saline waters, within the boundaries of the state.

(f) "Beneficial uses" of the waters of the state that may be protected against quality degradation include, but are not limited to, domestic, municipal, agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

(g) "Quality of the water" refers to chemical, physical, biological, bacteriological, radiological, and other properties and characteristics of water which affect its use.

(h) "Water quality objectives" means the limits or levels of water quality constituents or characteristics which are established for the reasonable protection of beneficial uses of water or the prevention of nuisance within a specific area.

(i) "Water quality control" means the regulation of any activity or factor which may affect the quality of the waters of the state and includes the prevention and correction of water pollution and nuisance.

(j) "Water quality control plan" consists of a designation or establishment for the waters within a specified area of all of the following:

(1) Beneficial uses to be protected.

(2) Water quality objectives.

(3) A program of implementation needed for achieving water quality objectives.

(k) "Contamination" means an impairment of the quality of the waters of the state by waste to a degree which creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the state are affected.

(*l*)(1) "Pollution" means an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following:

(A) The waters for beneficial uses.

(B) Facilities which serve these beneficial uses.

(2) "Pollution" may include "contamination."

(m) "Nuisance" means anything which meets all of the following requirements:

(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.

(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

(n) "* * * Recycled water" means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefor considered a valuable resource.

(o) "Citizen or domiciliary" of the state includes a foreign corporation having substantial business contacts in the state or which is subject to service of process in this state.

(p)(1) "Hazardous substance" means either of the following:

(A) For discharge to surface waters, any substance determined to be a hazardous substance pursuant to Section 311(b)(2) of the Federal Water Pollution Control Act (33 U.S.C. Sec. 1251 et seq.).

(B) For discharge to groundwater, any substance listed as a hazardous waste or hazardous material pursuant to Section 25140 of the Health and Safety Code, without regard to whether the substance is intended to be used, reused, or discarded, except that "hazardous substance" does not include any substance excluded from Section 311(b)(2) of the Federal Water Pollution Control Act because it is within the scope of Section 311(a)(1) of that act.

(2) "Hazardous substance" does not include any of the following:

(A) Nontoxic, nonflammable, and noncorrosive stormwater runoff drained from underground vaults, chambers, or manholes into gutters or storm sewers.

(B) Any pesticide which is applied for agricultural purposes or is applied in accordance with a cooperative agreement authorized by Section 2426 of the Health and Safety Code, and is not discharged accidentally or for purposes of disposal, the application of which is in compliance with all applicable state and federal laws and regulations.

(C) Any discharge to surface water of a quantity less than a reportable quantity as determined by regulations issued pursuant to Section 311(b)(4) of the Federal Water Pollution Control Act.

(D) Any discharge to land which results, or probably will result, in a discharge to groundwater if the amount of the discharge to land is less than a reportable quantity, as determined by regulations adopted pursuant to Section 13271, for substances listed as hazardous pursuant to Section 25140 of the Health and Safety Code. No discharge shall be deemed a discharge of a reportable quantity until regulations set a reportable quantity for the substance discharged.

(q)(1) "Mining waste" means all solid, semisolid, and liquid waste materials from the extraction, beneficiation, and processing of ores and minerals. Mining waste includes, but is not limited to, soil, waste rock, and overburden, as defined in Section 2732 of the Public Resources Code, and tailings, slag, and other processed waste materials, including cementitious materials that are managed at the cement manufacturing facility where the materials were generated.

(2) For the purposes of this subdivision, "cementitious material" means cement, cement kiln dust, clinker, and clinker dust.

(r) "Master recycling permit" means a permit issued to a supplier or a distributor, or both, of recycled water, that includes waste discharge requirements prescribed pursuant to Section 13263, and water recycling requirements prescribed pursuant to Section 13523.1.

(Amended by Stats.1992, c. 211 (A.B.3012), § 1; Stats.1995, c. 28 (A.B.1247), § 17; Stats.1995, c. 847 (S.B.206), § 2.)

Historical and Statutory Notes

1995 Legislation

Section affected by two or more acts at the same session of the legislature, see Government Code § 9605.

Cross References

Pipes carrying reclaimed water, special markings, reclaimed water defined, see Health and Safety Code § 116815.

Law Review Commentaries

Nuisance law and petroleum underground storage tank contamination: Plugging the hole in the statutes. James B. Brown and Glen C. Hansen, 21 Ecology L.Q. 643 (1994).

Notes of Decisions

Nuisance 8

4. Mining waste

People v. New Penn Mines, Inc. (App. 3 Dist. 1963) 28 Cal.Rptr. 337, [main volume] 212 Cal.App.2d 667.

5. Silt or sediment

Lake Madrone Water Dist. v. State Water Resources Control Bd. (App. 3 Dist. 1989) 256 Cal.Rptr. 894, 209 Cal.App.3d 163, modified, [main volume] review denied.

8. Nuisance

Pollution of water constitutes public nuisance, and water pollution occurring as result of unlawful treatment or discharge of wastes is public nuisance per se. Newhall

Land and Farming Co. v. Superior Court (Mohil Oil Corp.) (App. 5 Dist. 1993) 23 Cal.Rptr.2d 377, 19 Cal. App.4th 334, review denied.

Property owner's allegations that predecessors in title discharged hazardous substances in violation of California law that leached through soil and polluted groundwater supported existence of public nuisance, and owner's additional allegations that he used water from property for farming, that he was unable to sell property because of contamination, and that he spent money investigating pollution stated claim for private nuisance. Newhall Land and Farming Co. v. Superior Court (Mobil Oil Corp.) (App. 5 Dist. 1993) 23 Cal.Rptr.2d 377, 19 Cal.App.4th 334, review denied.

Chapter 3

STATE WATER QUALITY CONTROL

Article 1

STATE WATER RESOURCES CONTROL BOARD

§ 13100. Creation of state and regional boards; duties of state board

Federal Environmental Laws

National environmental policy, 42 U.S.C.A. §§ 4321 to 4370a.

Safety of public water systems, 42 U.S.C.A. §§ 300f to 300j-11.

Water pollution prevention and control, 33 U.S.C.A. §§ 1251 to 1376.

Water resources research, 42 U.S.C.A. §§ 10301 to 10309.

Article 3

STATE POLICY FOR WATER QUALITY CONTROL

Section
13142. Principles and guidelines.
13142.5. Coastal marine environment.

§ 13140. Adoption of statewide policy for water quality control

Law Review Commentaries

Assessing point source discharge permit trading: Case study in controlling selenium discharges to the San Francisco Bay Estuary. Alexandra Teitz, 21 Ecology L.Q. 79 (1994).

§ 13142. Principles and guidelines

State policy for water quality control shall consist of all or any of the following:

(a) Water quality principles and guidelines for long-range resource planning, including ground water and surface water management programs and control and use of recycled water.

(b) Water quality objectives at key locations for planning and operation of water resource development projects and for water quality control activities.

(c) Other principles and guidelines deemed essential by the state board for water quality control.

The principles, guidelines, and objectives shall be consistent with the state goal of providing a decent home and suitable living environment for every Californian.

(Amended by Stats.1995, c. 28 (A.B.1247), § 18.)

§ 13142.5. Coastal marine environment

In addition to any other policies established pursuant to this division, the policies of the state with respect to water quality as it relates to the coastal marine environment are that:

(a) Wastewater discharges shall be treated to protect present and future beneficial uses, and, where feasible, to restore past beneficial uses of the receiving waters. Highest priority shall be given to improving or eliminating discharges that adversely affect any of the following:

(1) Wetlands, estuaries, and other biologically sensitive sites.

(2) Areas important for water contact sports.

EXHIBIT B

ORDINANCE NO. 3458

26 1996

AN ORDINANCE REGULATING THE CONSTRUCTION, MODIFICATION OR REPAIR, DESTRUCTION AND INACTIVATION OF WELLS WITHIN THE UNINCORPORATED AREA OF THE COUNTY OF SANTA BARBARA BY MODIFYING CERTAIN PROVISIONS OF CHAPTER 34A OF THE COUNTY CODE AND ADOPTING BY REFERENCE THE STANDARDS CONTAINED IN BULLETIN 74-81 WATER WELL STANDARDS: STATE OF CALIFORNIA OF THE CALIFORNIA DEPARTMENT OF WATER RESOURCES.

The Board of Supervisors of the County of Santa Barbara do ordain as follows:

SECTION 1

Chapter 34A of the Santa Barbara County Code is hereby repealed and a new Chapter 34A is hereby added as follows:

SEC. 34A-1. PURPOSE

It is the purpose of this ordinance to regulate the (1) construction, (2) modification or repair, (3) destruction, (4) inactivation of wells in such a manner that the groundwater of the County will not be contaminated or polluted, and that water obtained from wells will be suitable for beneficial use and will not jeopardize the health, safety or welfare of the people of this County.

SEC. 34A-2. ACTS PROHIBITED, PERMIT REQUIRED

(a) It shall be unlawful for any person to construct, modify or repair, destroy or inactivate any well unless such person has (1) obtained a permit issued from the County for the specific work to be performed, or (2) in the case of an emergency, fully complied with the provisions of this ordinance relating to emergencies.

(b) It shall be unlawful for any person to construct, modify or repair, destroy or inactivate any well unless such construction modification or repair, destruction or inactivation is in accordance with the standards set forth in this ordinance.

SEC. 34A-3. DEFINITIONS

(a) Applicant. Applicant shall mean (1) the legal owner(s) of the property on which the well is to be constructed, modified or repaired or destroyed, or (2) that owner's agent authorized in writing to make this application, or (3) a licensed well drilling contractor who shall perform the work on the well.

(b) Contamination and Pollution. Contamination and pollution shall have the meanings ascribed to them by California Water Code, Section 13050.

(c) County. County shall mean the County of Santa Barbara, acting through its Board of Supervisors or the Santa Barbara County Health Officer, as the duly authorized representative of the Board of Supervisors.

(d) Destruction. Destruction of wells shall consist of the complete filling of the well in accordance with the procedures outlined in Bulletin 74-81, "Water Well Standards: State of California: of the California Department of Water Resources.

(e) Emergency. Emergency shall mean a circumstance which is either (1) and imminent threat of or is actually contaminating or polluting the groundwater of this County, or (2) jeopardizes the health or safety of the people of the County, or (3) will cause a substantial or immediate loss of property, crops, or livestock.

(f) Inactivate Well of Inactivation. An inactive well is one not routinely operating but capable of being made operable with a minimum of effort. It shall be considered abandoned and proper destruction required when it has not been used for a period of one year, unless the owner demonstrates his intention to use the well again. Inactivation of a well shall be accomplished by filing a permit stating the intention to reuse the well and properly maintain the well as inactive per the requirements of Bulletin 74-81.

(g) Modification or Repair. Modification or repair shall only mean the deepening of a well, reperforation, sealing or replacement of a well casing.

(h) Nuisance. Nuisance shall mean a well which threatens to or which contaminates or pollutes the groundwater of this County in such a way that it jeopardizes the health and safety of the public. A nuisance also means anything which creates and unsanitary or unsafe condition resulting from water well drilling activity.

(i) Person. Person shall mean any individual, firm, partnership, general corporation, association or governmental entity. Governmental entity, as used herein, shall not include any local agency exempt form the application of this ordinance pursuant to State Law.

(j) Well or Water Well. The term "well" or "water well" means any artificial excavation constructed by any method for the purpose of extracting water from, or injecting water into the ground. It shall also include "cathodic protection wells", as defined in California Water Code, Section 13711. This definition shall not include:

(1) Oil and gas wells, or geothermal wells constructed under the jurisdiction of the California State Department of Conservation, except those wells converted to use as water wells: or

(2) Wells used for the purpose of:

a) Dewatering excavation during construction, or

b) Stabilizing hillsides or earth embankments.

(k) Words not otherwise defined in this ordinance shall have the meaning ascribed to them in Chapter II of the California Department of Water Resources Bulletin No. 74-81 (Water Well Standards) and Chapter II of 74-1 (Cathodic Protection Well Standards), as each may be amended.

SEC. 34-A. PERMITS

Application for the permit required by this ordinance shall be (1) made in writing to the County on such forms as may be prescribed by the County, (2) signed by the applicant, and, (3) accompanied by a fee established by this Ordinance (no part of said fee shall be refundable) and, (4) shall include but no be limited to the following:

(a) Applicant's name and address; a statement that the person drilling the well is licensed under the provisions of Chapter 9 of Division 3 of the Business and Professions Code as a well drilling contractor and such license is in full force and effect; the number of such license; or, in lieu of the two latter enumerated matters, a statement that the applicant is exempt from the provisions of Chapter 9 of Division 3 of the Business and Professions Code and the basis for the alleged exemption.

(b) Estimated or proposed depth of the well, casing material, sealing material, sealing method, use of the well, and drilling method to be used.

(c) Location of the property and well site including street address and/or Assessor's Parcel Number; and the legal owner of the property.

(d) A plot plan indicating the location of the well with respect to the following items:

(1) Property lines.

(2) Sewage disposal systems or works carrying or containing sewage or industrial wastes within a 200-foot radius of the proposed well.

(3) All perennial, seasonal, natural, or artificial water bodies or watercourses, including location of 100-year floodplain, if applicable.

(4) Drainage pattern of the property.

(5) Existing wells within a 100 ft. radius of the proposed well.

(6) Access roads and easements (water, sewer, utility, roadway).

(7) Existing and/or proposed structures.

(8) Animal or fowl enclosures, pens, paddocks, stockyards within a 100 foot radius of proposed well site.

(e) Permits shall be issued subject to the terms, conditions and standards of this ordinance and may be denied only if the specific work to be performed of construction, modification or repair, destruction or inactivation as proposed would violate the terms, conditions or standards of this Ordinance.

(f) The issuance of a permit hereunder shall be deemed to be an administrative ministerial, non-discretionary act, and if an applicant complies with the terms, conditions, and standards of this Ordinance, said permit shall be issued within five (5) working days.

(g) A permit issued for construction of a well covers the construction of one (1) completed well. I the well driller proposes to change the site of the well from that shown on the site plan of a permit, the change in site must be approved by the County prior to drilling. The County shall give approval or disapproval of the change in site within 24 hours of notification by the well driller.

(h) Every permit issued pursuant to this ordinance shall expire upon completion of the task authorized thereby; however, in any even such permit shall expire one (1) year from date of issuance.

(i) Guarantee of Performance. Prior to the issuance of a permit, the person drilling the well shall post with the County a cash deposit or bond to guarantee compliance with the terms of this Ordinance and the applicable permit. such cash or bond to be in any amount deemed necessary by the Health Officer to include but not be limited to the remedy of improper work, but not in excess of the total estimated cost of such work. Licensed Well Drilling contractors shall not be required to post a bond or deposit guaranteeing performance. 85 percent of the deposit or bond shall be returned to the permittee when the work has been completed to the satisfaction of the Health Officer; the remaining 15 percent of the bond shall be returned after one (1) year of satisfactory well operation as determined by the Health Officer. These percentages may vary to cover special conditions and circumstances in order to guarantee performance and compliance with the Ordinance.

SEC. 34A-5. STANDARDS

Standards for construction, repair or modification, destruction or inactivation are set forth in Chapter II of the California Department of Water Resources Bulletin No. 74-81, Water Well Standards, and Bulletin 74-1, Cathodic Protection Well Standards, and are hereby adopted as a part of this Ordinance, with the following additional clarification and requirements for well construction.

(a) Annular Space. Gravity installation of the sealant in an annular space of a well is acceptable if the interval to be sealed is dry and the interval depth is 50 feet or less. Sealant shall be pumped into the space using a tremie or grout pipe when there is water in the annulus, or the annulus exceeds 50 feet.

(b) Disinfection Tube. Every well shall be equipped with an adequately sized opening by which disinfecting agents may be conveniently introducted directly into the well casing. This opening shall be protected against entrance of contaminants by installation of a watertight cap or plug.

(c) Drilling Waste. Drilling waste must be controlled and may not be discharged so as to create conditions which violate Water Quality Control Board Regulations, other State Laws, Federal Regulations or Local Ordinances.

(d) Mud Pits. Mud pits created to confine drilling mud shall be maintained during the well drilling operation so as not to be a safety hazard. It shall be the well driller's responsibility to properly earth fill the mud pit(s) upon completion of the job.

(e) Set-up Time. The minimum time that must be allowed for annular seals containing Type II and III (6-sack) cement to se shall be 16 hours before construction operations on the well may be resumed. When additives to shorten setting time are used with the cement, this set-up time may be reduced to a minimum of 12 hours before air jetting, bailing, swabbing, test pumping or further construction on the well may be resumed.

(f) Log of Well. Any person who has drilled, dug, excavated or bored a well subject to this Ordinance, shall within thirty (30) days after completing of the work, furnish the County with a copy of the State driller's report. The well driller shall notify the County if submission of the log is to be delayed.

(g) Horizontal Wells. The location and design of horizontal or lateral wells shall be approved by the County on a case-by-case basis prior to approval to construct or reconstruct such wells.

(h) Administrative Variance. The Health Officer may grant an administrative variance to the provisions of this Ordinance where written evidence is submitted that a modification of the standards will not endanger the health or safety of the public and strict compliance would be unreasonable in view of all the circumstances.

SEC. 34A-7. EMERGENCY

In the event of an emergency, a person may construct, modify or repair, destroy or inactivate a well without the permit required by this Ordinance providing that (1) such work is performed in conformance with the standards set forth herein, (2) the County is notified of such emergency work by the following County working day, and (3) an application for the required permit is made within three (3) County working days after initiation of such emergency work.

SEC. 34A-7. ENFORCEMENT

(a) The County may suspend or revoke a well permit issued under the Ordinance whenever the County determines that a condition resulting from any work performed under such a permit constitutes a nuisance as defined herein, or when the applicant, his agents, employees or the licensed well drilling contractor performing the work (1) violates any provision of this ordinance or any terms and conditions of the permit or (2) misrepresents any material facts in the application for a permit.

(b) Except in emergency situations, before the County suspends or revokes a well permit, the County shall make reasonable effort to notify the applicant and the licensed well driller performing work under the permit if he is not the applicant and to provide an opportunity for each to show cause why the permit should not be suspended or revoked.

(c) Upon notification by the County that the permit is suspended or revoked, or finding that no valid permit has been issued, no further work shall be performed until such violation has been abated.

(d) Rules and Regulations. The Health Officer may adopt rules and regulations to implement and administer this Ordinance.

SEC. 34A-8. NUISANCE

Upon finding by the County that well or well drilling activity constitutes a nuisance, as defined herein, the County may take the necessary action to abate such nuisance. The property owner where the well is located and/or the person causing the nuisance thereof shall be jointly liable for the reasonable costs incurred by or at the request of the County for abatement of the nuisance.

SEC. 34A-9. APPEAL

Any person whose application for a permit has been suspended, revoked or denied or whose request for an administrative variance has been denied may appeal to the Board of Supervisors of the County of Santa Barbara in writing within ten (10) days after the notice of such suspension, revocation or denial. Said appeal shall specify the reasons therefore and shall be accompanied by a filing fee, if any, as established by the Board of Supervisors of the County of Santa Barbara, The Clerk of the Board of Supervisors shall set the appeal for the hearing and shall give notice to the appellent and the appropriate County personnel of the time and place of the hearing.

SEC. 34A-10. INSPECTION

The County shall be notified at least twenty-four (24) hours in advance to make an inspection of, 1) the sealing of the annular space on a well, 2) the destruction of wells, and 3) any other operation which may be stipulated on the permit by the County to cope with special or unusual conditions. The County shall have the right to enter upon any property at any reasonable time to make inspections and examinations for the purpose of enforcement of this Ordinance, subject to the provisions of Code of Civil Procedure Section 1822.50 et seq.

SEC. 34A-11. APPLICATION FEES

(a) Each application for a well construction or modification permit shall be accompanied by a permit fee of $155.00.

(b) Each application for a well destruction or inactivation permit shall be accompanied by a permit fee of $95.00.

(c) An additional fee of $30 per hour shall be charged to the permittee for any inspection service by the Health Officer which exceeds five (5) hours on-site for witnessing annular seals, and the abatement of nuisances or hazards resulting from the well drilling operation. These application fees may be modified by Resolution of the Board of Supervisors.

SEC. 34A-12. PENALTIES

Any person who violates any provision of this Article is guilty of a misdemeanor. Each offense shall be punishable by a fine of not less than twenty-five dollars ($25.00) or more than one thousand dollars ($1,000.00) or by imprisonment in the County jail for a term not exceeding six months, or by both such fine and imprisonment. Each day such offense continues shall constitute a separate offense.

SECTION 2

This Ordinance shall take effect and be in force at the expiration of thirty days from the date of it passage; and before the expiration of fifteen days after its passage it, or a summary of it, shall be published once, with the names and the members of the Board of Supervisors voting for and against in the Santa Barbara News Press, a newspaper of general circulation published in the County of Santa Barbara, State of California.

Department of
Water Resources

Bulletin 74-81

Water Well Standards: State of California

December 1981

Huey D. Johnson
Secretary for Resources
The Resources
Agency

Edmund G. Brown Jr.
Governor
State of
California

Ronald B. Robie
Director
Department of
Water Resources

Section 5. Special Standards.

A. In locations where existing geologic or ground water conditions require standards more restrictive than those described herein, such special additional standards may be prescribed by the enforcing agency.

B. Special standards are necessary for the construction of recharge or injection wells,1/ horizontal wells and other unusual types of wells. Design of these wells is subject to the approval of the enforcing agency.

Section 6. Well Drillers.

The construction, alteration, or destruction of wells shall be performed by contractors licensed in accordance with the provisions of the Contractors License Law (Chapter 9, Division 3, of the Business and Professions Code) unless exempted by that act.

Section 7. Reports.

Reports concerning the construction, alteration, or destruction of water wells shall be filed with the California Department of Water Resources in accordance with the provisions of Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code.2/

Part II. Well Construction

Section 8. Well Location with Respect to Contaminants and Pollutants.

A. All wells shall be located an adequate horizontal distance from potential sources of contamination and pollution.3/

1/ A program to protect underground drinking water sources from endangerment by the subsurface emplacement of fluids through well injection is required under the Federal Safe Drinking Water Act. (Public Law 93-523) signed into law December 16, 1974. On June 24, 1980, the U. S. Environmental Protection Agency issued rules and regulations establishing technical criteria and standards governing the construction of injection wells. Revisions were made August 27, 1981, and October 1, 1981. These regulations are Part 146 of Title 40, Protection of Environment, of the Code of Federal Regulations (40CFR146).

2/ Information about the report is contained in "Guide to the Preparation of the Water Well Drillers Report", Department of Water Resources, October 1977.

3/ Such potential sources of contamination and pollution include: sewers, both sanitary and storm sewers, leaching fields (from septic tanks), sewage and industrial waste ponds, barnyard and stable areas, feedlots, solid waste disposal sites, tanks and pipelines (both above ground and buried) for storage and conveyance of petroleum products or chemicals, etc.

Most of the factors involved in determining safe distances in a particular area are usually not known. Based on past experience and general knowledge, the following horizontal distances are considered safe where dry upper unconsolidated formations, less permeable than sand, are encountered:1/2/

Sewer, watertight septic tank, or pit privy	50 feet (15 metres)
Subsurface sewage leaching field	100 feet (30 metres)
Cesspool or seepage pit	150 feet (45 metres)
Animal or fowl enclosure	100 feet (30 metres)

Where in the opinion of the enforcing agency adverse conditions exist, the above distances shall be increased or special means of protection, particularly in the construction of the well, shall be provided.

B. In addition, if possible, the well shall be located up the ground water gradient (upstream) from the specified sources of contamination. By doing so this provides assurance that potential contamination would be moving naturally away from the area of production. However, in an unconfined aquifer consideration shall also be given to the possibility of reversal of gradient near the well due to pumping (see Figure 3), the pumping of nearby wells, or general decline of the water table.3/

C. The top of the casing shall terminate above grade or above any known conditions of flooding by drainage or runoff from the surrounding land. For community water supply wells this level is defined as above the

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1/ Because of the many variables involved in the determination of the safe horizontal distance of a well from potential sources of contamination and pollution, no one set of distances will be adequate and reasonable for all conditions. In areas where adverse conditions exist, the distances listed should be increased. Conversely, where especially favorable conditions exist or where special means of protection, particularly in construction of the well are provided, lesser distances may be acceptable if approved by the enforcing agency.

2/ If the well is a radial collector well, these distances apply to the furthest extended points of the well.

3/ When water is pumped from a well a drawdown "cone of depression" is formed in the water surface surrounding the well and ground water in the area of the cone flows toward the well. Similar cones formed by nearby wells can influence the shape of the cone or enlarge the area being drawn upon resulting in a change in direction of flow.

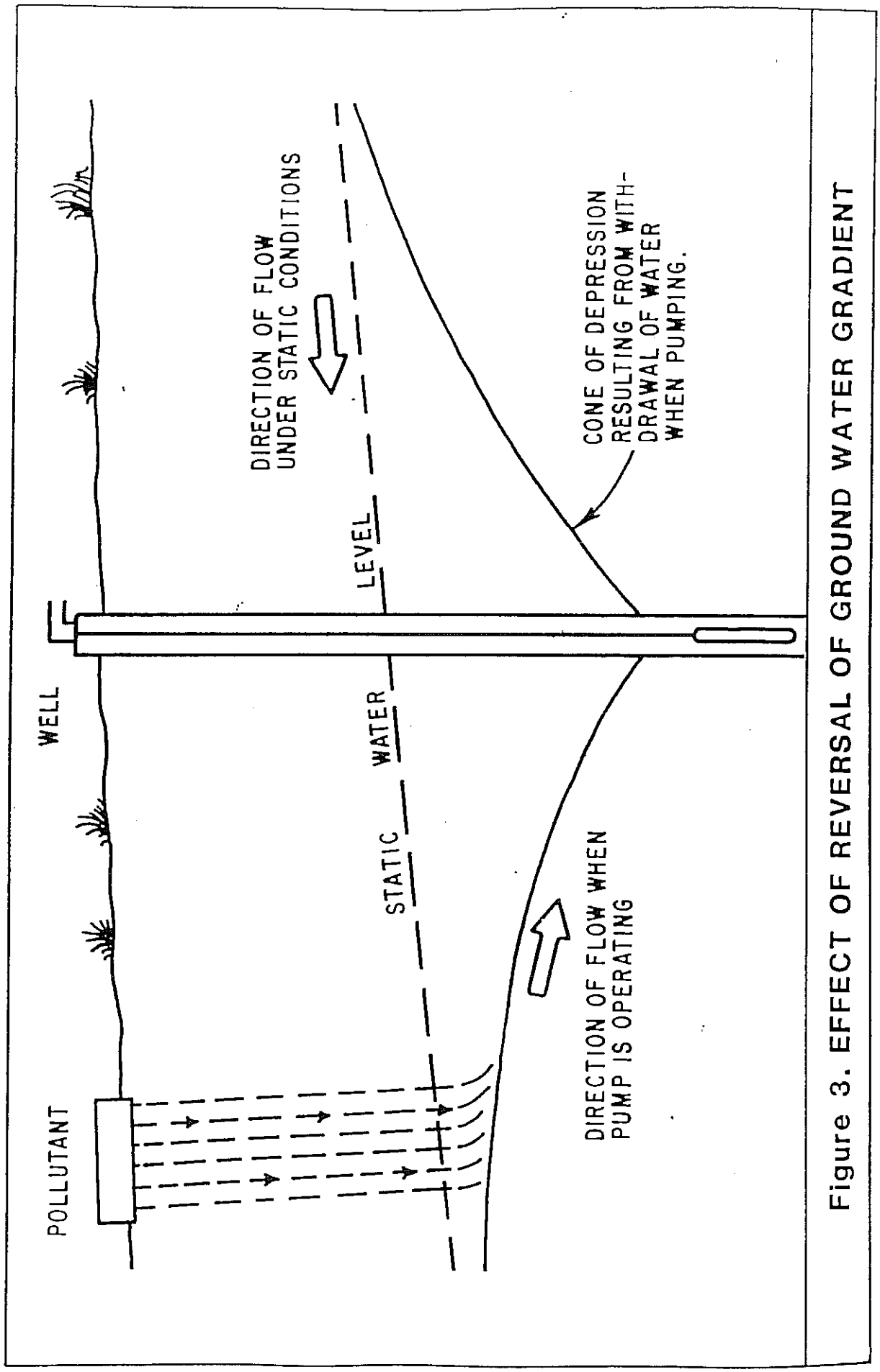

Figure 3. EFFECT OF REVERSAL OF GROUND WATER GRADIENT

"...floodplain of a 100 year flood..." or above "...any recorded high tide, ...", (Section 64417, "Siting Requirements", Title 22 of the California Administrative Code).1/

In addition, the area around the well shall slope away from the well and surface drainage shall be directed away from the well.

D. Where a well is to be near a building, the well shall be far enough from the building so that the well will be accessible for repair, maintenance, etc.

Section 9. Sealing the Upper Annular Space.

The space between the well casing and the wall of the drilled hole (the annular space) shall be effectively sealed to protect it against contamination or pollution by entrance of surface and/or shallow, subsurface waters.2/

A. Minimum depth of seal below ground surface for various uses of wells:

Types	Minimum Depth3/ of Seal (below ground surface)
Community Water Supply Wells	50 feet (15 metres)
Individual Domestic Wells	20 feet4/ (6.1 metres)
Industrial Wells	50 feet4/ (15 metres)
Agricultural Wells	20 feet4/5/ (6.1 metres)
Air-Conditioning Wells	20 feet4/ (6.1 metres)
Observation and Monitoring Wells	20 feet6/ (6.1 metres)

1/ If compliance with this requirement for community water supply wells is not possible, the enforcing agency should be contacted regarding alternative means for protection.

2/ Annular seals are also installed to provide protection for the casing against corrosion, to assure structural integrity of the casing, and to stabilize the upper formation.

3/ In those cases where it is not possible to meet or, when necessary, increase, the lateral distances from pollution sources described in Section 8 of these standards, an alternative (or special) means of protection for the well is to increase the depth of the seal.

4/ Exceptions are shallow wells where the water to be developed is at a depth less than 20 feet (6 metres). In this instance, the depth of seal may be reduced but in no case less than 10 feet (3 metres) and special precautions taken in locating the well with respect to sources of pollution.

5/ The annular space shall be sealed to a depth of 50 feet (15 metres) from the surface when the well is close to sources of pollution listed in Section 8.

6/ Because they are constructed to measure specific conditions, the annular space in such wells is usually sealed to make the intake section "depth-discrete". Depending on the circumstances, this depth may be very shallow.

In areas[1/] where freezing is a potential problem, the top of the seal may be below ground surface but in no case more than 4 feet (1.2 metres) below ground surface.

B. Sealing Conditions.[2/] Following are requirements to be observed in sealing the annular space:

1. Wells situated in unconsolidated, caving material. An oversized hole, at least 4 inches (100 millimetres) greater in diameter than the production casing, shall be drilled and a conductor casing installed to the depth of seal specified in Part A of this section. The space between the conductor casing and the production casing shall be filled with sealing material. The conductor may be withdrawn as the sealing material is placed (see Figure 4A).

2. Wells situated in unconsolidated material stratified with significant clay layers. If a clay formation is encountered within 5 feet (1.5 metres) of the bottom of the seal described in Part A of this section, the seal should be extended 5 feet (1.5 metres) into the clay formation (thus the depth of seal could be as much as another 10 feet or 3 metres). An oversized hole at least 4 inches (100 millimetres) greater in diameter than the production casing, shall be drilled and the annular space filled with sealing material (see Figure 4B).

If caving material is present, a conductor casing shall be installed and the annular space sealed as described in 1, above.

3. Wells situated in soft consolidated formations (extensive clays, sandstones, etc.). An oversized hole, at least 4 inches (100 millimetres) greater in diameter than the production casing, shall be drilled to the depth of seal specified in Part A of this section and the space between the production casing and the drilled hole shall be filled with sealing material (see Figure 4C).

If a conductor casing is to be installed (to establish a foundation for the construction of the remainder of the well) the oversized hole shall be at least 4 inches (100 millimetres) greater in diameter than the conductor

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1/ Defined here as those areas in which the mean length of freeze-free period as described by the National Weather Service is less than 100 days, i.e., temperatures at or below 32°F (0°C) are likely to occur on any day during a period of 265 or more days each year. In general geographic terms, these areas are the northeastern part of the State (parts of Modoc, Lassen, and Siskiyou Counties), the north Lahontan area (essentially the eastern slopes of the Sierra Nevada and subsidiary valleys north of Mount Whitney and Mono Lake) and at Lake Arrowhead in the San Bernardino Mountains.

2/ Methods of sealing are described in Appendix B.

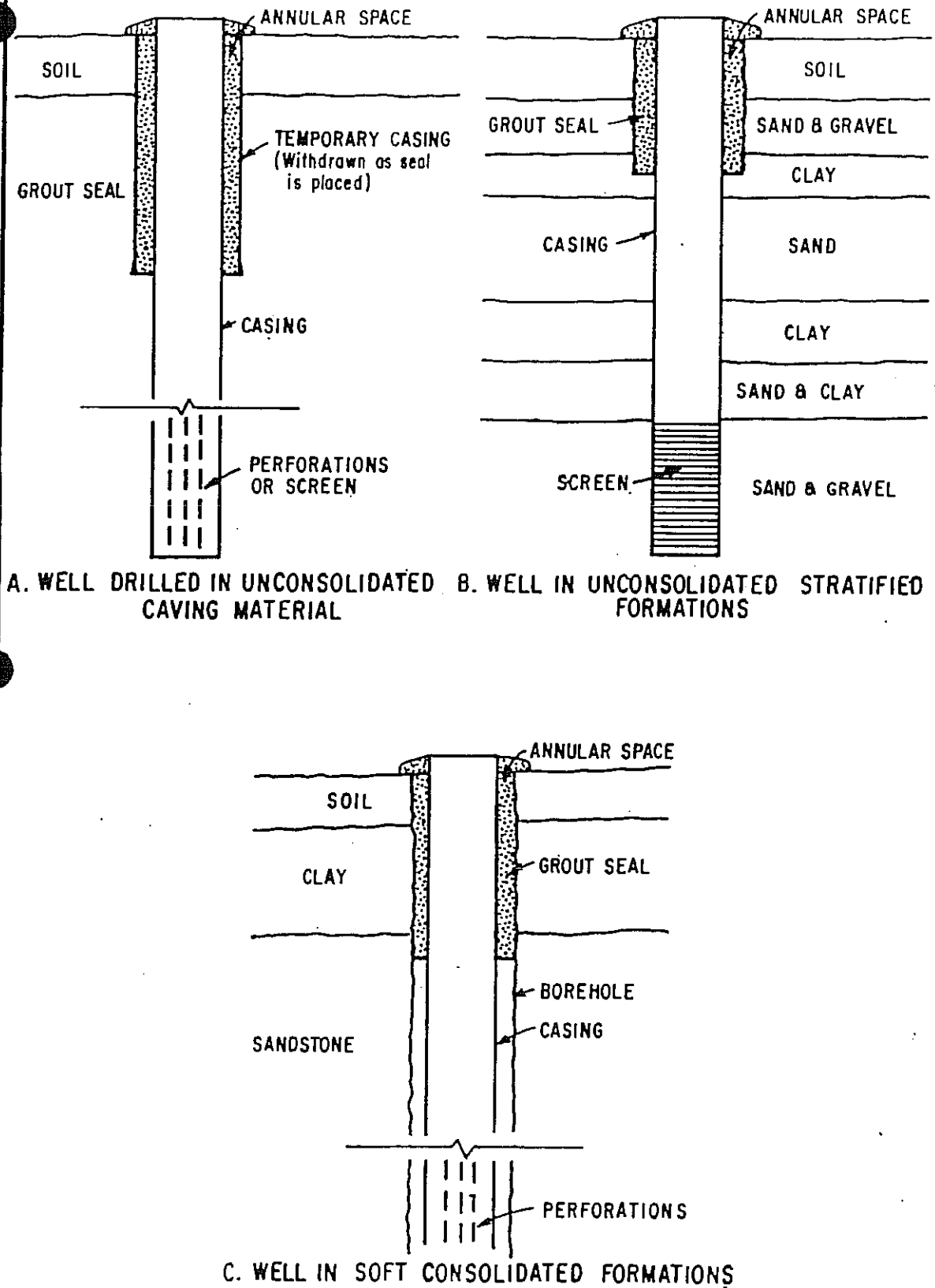


Figure 4. SEALING CONDITIONS FOR UPPER ANNULAR SPACE-UNCONSOLIDATED AND SOFT, CONSOLIDATED FORMATIONS

casing and the annular space between the conductor casing and the drilled hole filled with sealing material to the depth specified in Part A of this section.

4. Wells situated in "hard" consolidated formations (crystaline or metamorphic rock). An oversized hole shall be drilled to the depth specified in Part A of this section and the annular space filled with sealing material. If there is significant overburden, a conductor casing may be installed to retain it. If the material is heavily fractured, the seal should extend into solid material. If the well is to be open-bottomed (lower section uncased), the casing shall be seated in the sealing material (see Figure 5A).

5. Gravel packed wells.

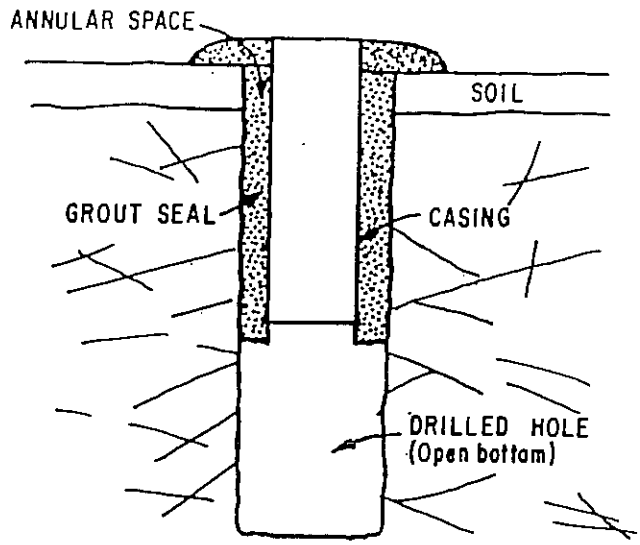
a. With conductor casing. An oversized hole, at least 4 inches (100 millimetres) greater than the diameter of the conductor casing, shall be drilled to the depth specified in Part A of this section and the annular space between the conductor casing and drilled hole filled with sealing material. (In this case the gravel pack may extend to the top of the well but to prevent contamination by surface drainage, a welded cover shall be installed over the top in the space between the conductor casing and the production casing, see Figure 5B).

b. Without conductor casing. An oversized hole at least 4 inches (100 millimetres) greater in diameter than the production casing, shall be drilled to the depth specified in Part A of this section and the annular space between the casing and drilled hole filled with sealing material. If gravel fill pipes are installed through the seal, the annular seal shall be of sufficient thickness to assure that there is a minimum of 2 inches (50 millimetres) between the gravel fill pipe and the wall of the drilled hole. The gravel pack shall terminate at the base of the seal (see Figure 5C). If a temporary conductor casing is used, it shall be removed as the sealing material is placed.

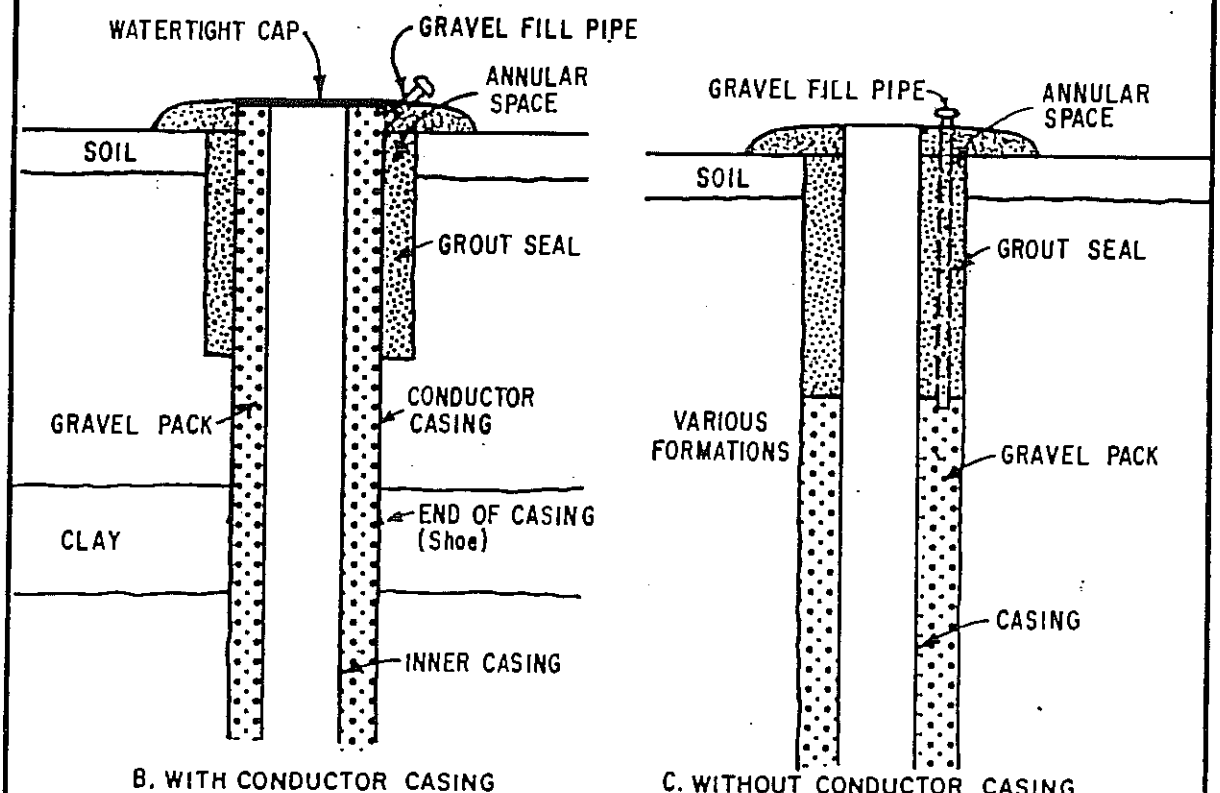
6. For wells situated in circumstances differing from those described above, the sealing conditions shall be as prescribed by the enforcing agency.

7. Converted wells. Wells converted from one use to another, particularly those constructed in prior years without annular seals, shall have annular seals installed to the depth required in Part A of this section and at the thickness described in Part E. Where it is anticipated that a well will be converted to another use, the enforcing agency may require the installation of a seal to the depth specified for community water supply wells.1/

1/ This statement presumes that land use planning has taken place and that zoning requirements are in effect.



A. WELL DRILLED IN ROCK FORMATION



B. WITH CONDUCTOR CASING

C. WITHOUT CONDUCTOR CASING

GRAVEL PACKED WELLS

Figure 5. SEALING CONDITIONS FOR UPPER ANNULAR SPACE-HARD ROCK FORMATIONS AND GRAVEL PACKED WELLS

C. Conductor Casing. For community water supply wells, the minimum thickness of steel conductor casing shall be 1/4 inch (6 millimetres) for single casing or a minimum of No. 10 U. S. Standard Gage for double casing. Steel used for conductor casing shall conform to the specifications for steel casing described in Section 12.

D. Sealing Material. The sealing material shall consist of neat cement grout, sand-cement grout, bentonite clay, or concrete. Cement used for sealing mixtures shall meet the requirements, including the latest revision thereof, of ASTM1/ C150 "Standard Specification for Portland Cement" types I (common construction cement) III (high early strength) and V (for high sulfate resistance, i.e., corrosive waters).2/ Water used for sealing mixtures shall be clean and of a potable quality. Materials used as additives for Portland cement mixtures in the field shall meet the requirements, and latest revision thereof, of ASTM C494 "Standard Specification for Chemical Admixtures for Concrete".

1. Neat cement grout shall be composed of one sack of Portland cement (94 pounds or 43 kilograms) to 4-1/2 to 6-1/2 (depending on cement type and additives used) gallons (17 to 25 litres) of clean water.

2. Sand-cement grout shall be composed of not more than two parts by weight of sand and one part of Portland cement to 4-1/2 to 6-1/2 (depending on cement type and additives used) gallons (17 to 25 litres) of clean water per sack of cement.

3. Concrete3/ used shall be "Class A" (6 sacks of Portland cement per cubic yard or 0.76 cubic metre) or "Class B" (5 sacks per cubic yard or 0.76 cubic metre).4/ Aggregates shall meet the requirements, including the latest revision thereof, of ASTM C33 "Standard Specification for Concrete Aggregates".

4. Special quick-setting cement, retardents to setting, and other additives, including hydrated lime to make the mix more fluid (up to 10 percent of the volume of cement), and bentonite (up to 5 percent) to make the mix more fluid and to reduce shrinkage, may be used.

1/ American Society for Testing and Materials.

2/ Corresponding API (American Petroleum Institute) cement classes are: Type I - API Class A, Type III - API Class C.

3/ Concrete is useful in sealing large-diameter wells where the volume of annular seals required is likely to be substantial. However, unless care is exercised during placement, the coarse aggregate may become separated from the cement.

4/ A popular concrete mix among drillers consists of 8 sacks of Portland cement per cubic yard (0.76 cubic metre) and uniform aggregate of 3/8 inch (9.5 millimetres) diameter.

5. Bentonite clay[1/] mixtures shall be composed of bentonite clay and clean water thoroughly mixed before placement so that there are no balls, clods, etc.

6. Used drillers' mud or cuttings or chips from drilling the borehole shall not be used as sealing material.

7. The minimum time that must be allowed for materials containing cement to "set" before construction operations on the well may be resumed shall be:

a. Type I cement - 72 hours
b. Type III cement - 48 hours
c. Type V cement - 6 hours

When necessary these times may be reduced by the use of "accelerators", i.e., additives designed specifically to shorten setting time.

8. Where thermoplastic casing is used, caution should be exercised to control the heat generated during the curing of the cement (called "heat of hydration"). This is of special concern where casing of thinner wall thicknesses are to be installed. The addition of bentonite to the cement mixture (up to 8 percent) or circulating water inside the casing will lower the temperature of the cement. Additives which accelerate the curing process also tend to increase the heat generated and should not be used where thermoplastic casing is installed.

E. Thickness of Seal. The thickness of the seal shall be at least a nominal 2 inches,[2/] and not less than three times the size of the largest coarse aggregate used in the sealing material.

F. Placement of Seal.

1. Before placing the seal all loose cuttings, drilling mud, or other obstructions shall be removed from the annular space by flushing.

1/ Clay in the form of a mud-laden fluid is similar to and has the advantages of neat cement and sand-cement grout. There is a disadvantage in that clay may separate from the fluid. Clay should not be used where structural strength or stability of the seal is required, where flowing or moving water might break it down, or where it might dry out. Although there are other types of clay available, none have the sealing properties (particularly the ability to expand dramatically) comparable to bentonite. Therefore, only bentonite clays are recommended.

2/ In other words, the borehole shall be nominally 4 inches (100 millimetres) larger in diameter than the nominal casing diameter (thus creating a 2-inch, or-50 millimetre annular space).

2. Before sealing commences a packer or similar retaining device or a small quantity of sealant may be placed and permitted to set at the bottom of the interval to be sealed to form a foundation for the seal.

3. The sealing material shall be applied, when possible, in one continuous operation from the bottom of the interval to be sealed to the top. Where the seal is to be very deep (i.e., greater than 100 feet or 30 metres) a short segment at least 10 feet (3 metres) in length may be installed first, allowed to "set" or partially "set" and then the remainder of the seal placed in one continuous operation.

4. Gravity installation of sealant without the aid of a tremie or grout pipe shall not be used unless the interval to be sealed is dry and in no case where the interval is over 30 feet (9 metres) in depth.

Section 10. Surface Construction Features.

A. Openings. Openings into the top of the well which are designed to provide access to the well, i.e., for measuring, chlorinating, adding gravel, etc., shall be protected against entrance of surface waters or foreign matter by installation of watertight caps or plugs. Access openings designed to permit the entrance or egress of air or gas (air or casing vents) shall terminate above the ground and above known flood levels and shall be protected against the entrance of foreign material by installation of down-turned and screened "U" bends (see Figures 6 and 7).

All other openings (holes, crevices, cracks, etc.) shall be sealed.

A "sounding tube",[1/] taphole with plug, or similar access (see Figure 6) for the introduction of water level measuring devices shall be affixed to the casing of all wells. For wells fitted with a "well cap" the cap shall have a removable plug for this purpose.

1. Where the pump is installed directly over the casing, a watertight seal (gasket) shall be placed between the pump head and the pump base (slab), or a water-tight seal (gasket) shall be placed between the pump base and the rim of the casing, or a "well cap" shall be installed to close the annular opening between the casing and the pump column pipe (see Figures 6 and 7).

1/ A "sounding tube" or similar access is necessary so that the water level in the well can be periodically determined. Knowledge of the water level, both static and pumping levels, is vital to the maintenance of the well and pump and for determining the efficiency of pump. Such information will lead to few and less costly repairs and reduce operating costs.

During prolonged interruptions (i.e., one week or more), a semipermanent cover shall be installed. For wells cased with steel, a steel cover, tack-welded to the top of the casing, is adequate.

Part III. Destruction of Wells

Section 20. Purpose of Destruction.

A well that is no longer useful[1/] (including exploration and test holes) must be destroyed in order to:

1. Assure that the ground water supply is protected and preserved for further use.

2. Eliminate the potential physical hazard.

Section 21. Definition of "Abandoned" Well.

A well is considered "abandoned" when it has not been used for a period of one year, unless the owner demonstrates his intention to use the well again for supplying water or other associated purpose[2/] (such as an observation well or injection well). The well shall then be considered "inactive". As evidence of his intentions for continued use, the owner shall properly maintain the well in such a way that:

1. The well has no defects which will allow the impairment of quality of water in the well or in the water-bearing formations penetrated.

2. The well is covered such that the cover is watertight and cannot be removed except with the aid of equipment or the use of tools.

3. The well is marked so that it can be clearly seen.

4. The area surrounding the well is kept clear of brush or debris.

1/ Very often wells are prematurely abandoned and destroyed. However, proper maintenance will ensure that they will continue to produce for many years. The maintenance program should include regular measurement of the water level (depth to water from ground surface), determination of water quality, pump tests (for determination of pump and well efficiency) and cleaning.

2/ Although it should be obvious, the reader is reminded that an "abandoned" well should never be used for the disposal of trash, garbage, sewage (except where sewage is reclaimed for recharging the ground water basin, and then only in accordance with the provisions of Section 4458 of the California Health and Safety Code and Section 13540 of the Water Code).

If the pump has been removed for repair or replacement, the well shall not be considered "abandoned". During the repair period, the well shall be adequately covered to prevent injury to people and to prevent the entrance of undesirable water or foreign matter.

Observation or test wells used in the investigation or management of ground water basins by governmental agencies or engineering or research organizations are not considered "abandoned" so long as they are maintained for this purpose. However, such wells shall be covered with an appropriate cap, bearing the label, "Observation Well", and the name of the agency or organization, and preferably shall be locked when measurements are not being made. When these wells are no longer used for this purpose or for supplying water, they shall be considered "abandoned".

Section 22. General Requirement.

All "abandoned" wells and exploration or test holes shall be destroyed. The objective of destruction is to restore as nearly as possible those subsurface conditions which existed before the well was constructed taking into account also changes, if any, which have occurred since the time of construction. (For example, an aquifer which may have produced good quality water at one time but which now produces water of inferior quality, such as a coastal aquifer that has been invaded by seawater.)

Destruction of a well shall consist of the complete filling of the well in accordance with the procedures described in Section 23 (following).

Section 23. Requirements for Destroying Wells.

A. Preliminary Work. Before the well is destroyed, it shall be investigated to determine its condition, details of construction, and whether there are obstructions that will interfere with the process of filling and sealing. This may include the use of downhole television and photography for visual inspection of the well.

1. If there are any obstructions, they shall be removed, if possible, by cleaning out the hole.

2. Where necessary, to ensure that sealing material fills not only the well casing but also any annular space or nearby voids within the zone(s) to be sealed, the casing should be perforated or otherwise punctured.

3. In some wells, it may be necessary or desirable to remove a part of the casing. However, in many instances this can be done only as the well is filled. For dug wells, as much of the lining as possible (or safe) should be removed prior to filling.

B. Filling and Sealing Conditions. Following are requirements to be observed when certain conditions are encountered:

1. Well wholly situated in unconsolidated material in an unconfined ground water zone (Figure 9A). If the ground water supplies are within 50 feet (15 metres) of the surface, the upper 20 feet (6 metres) shall be sealed with impervious material and the remainder of the well shall be filled with clay, sand, or other suitable inorganic material (see item D, this section).

2. Well penetrating several aquifers or formations. In all cases the upper 20 feet (6 metres) of the well shall be sealed with impervious material.

In areas where the interchange of water between aquifers will result in a significant1/ deterioration of the quality of water in one or more aquifers, or will result in a loss of artesian pressure, the well shall be filled and sealed so as to prevent such interchange. Sand or other suitable inorganic material may be placed opposite the producing aquifers and other formations where impervious sealing material is not required. To prevent the vertical movement of water from the producing formation, impervious material must be placed opposite confining formations above and below the producing formations for a distance of 10 feet (3 metres) or more. The formation producing the deleterious water shall be sealed by placing impervious material opposite the formation, and opposite the confining formations for a sufficient vertical distance (but no less than 10 feet or 3 metres) in both directions, or in the case of "bottom" waters, in the upward direction. (See Figure 9B.)

In locations where interchange is in no way detrimental, suitable inorganic material may be placed opposite the formations penetrated. When the boundaries of the various formations are unknown, alternate layers of impervious and pervious material shall be placed in the well.

1/ Determining the significance of interchange of waters whose qualities vary and of the loss of artesian pressures, requires extensive knowledge of the ground water basin in question. The Department of Water Resources has over the years, and frequently in cooperation with agencies such as the U. S. Geological Survey, undertaken a number of ground water studies and amassed considerable information and data about the subject. Although much is known about the State's ground water supplies, detailed studies sufficiently accurate to define interchange problems have been made only in certain areas. In still other areas, there is only partial definition of the problem. Examples of areas where definition has been made are the coastal plain of Los Angeles County and the eastern part of the Santa Clara Valley in Alameda County. An excellent example of a "bottom" water is the saline connate water underlying the Central Valley at varying depths.

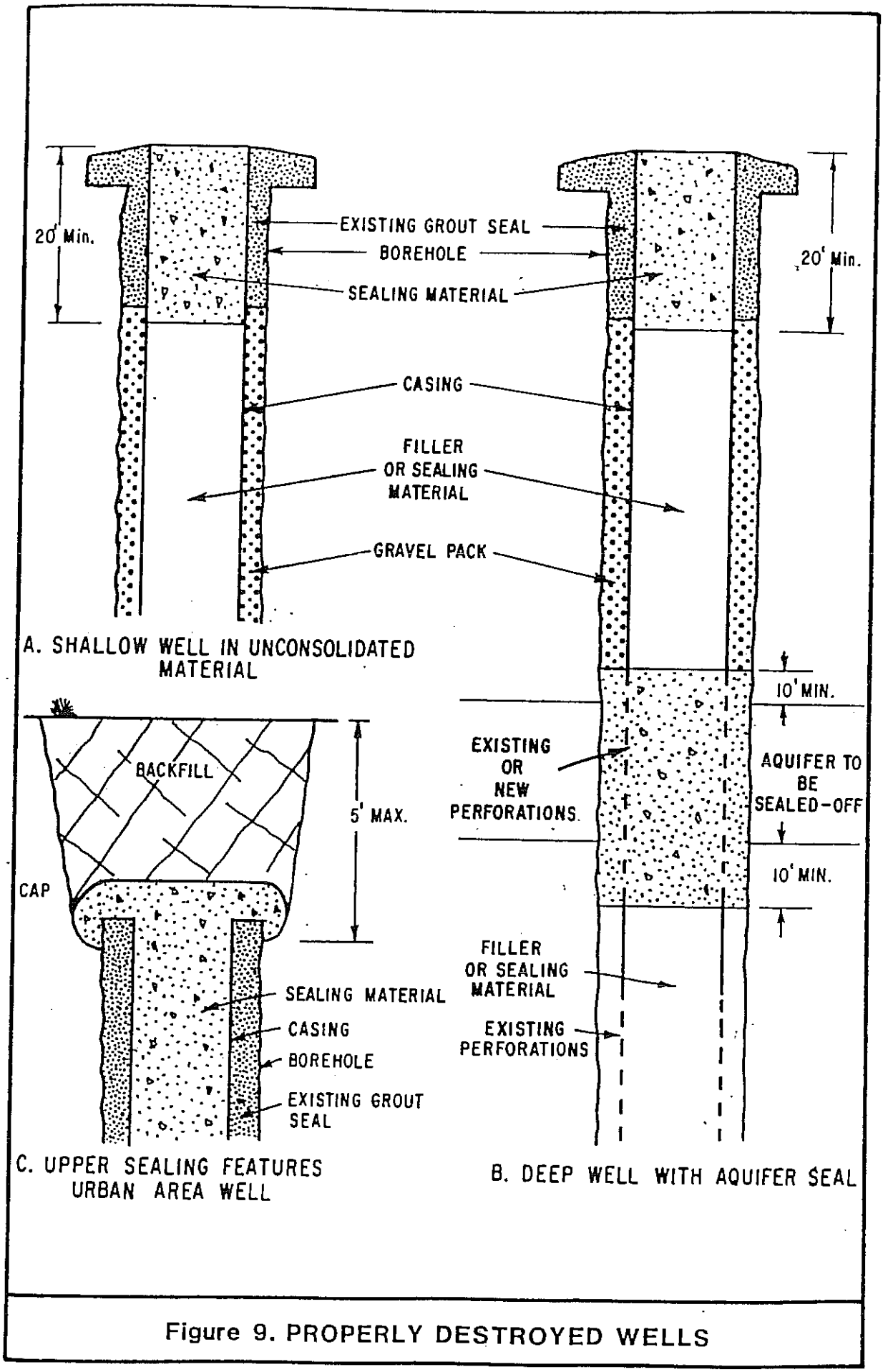


Figure 9. PROPERLY DESTROYED WELLS

3. Well penetrating creviced or fractured rock. If creviced or fractured rock formations are encountered just below the surface, the portions of the well oposite this formation shall be sealed with neat cement, sand-cement grout, or concrete. If these formations extend to considerable depth, alternate layers of coarse stone1/ and cement grout or concrete may be used to fill the well. Fine grained material shall not be used as fill material for creviced or fractured rock formations.

4. Well in noncreviced, consolidated formation. The upper 20 feet (6.1 metres) of a well in a noncreviced, consolidated formation shall be filled with impervious material. The remainder of the well may be filled with clay or other suitable inorganic material.

5. Well penetrating specific aquifers, local conditions. Under certain local conditions, the enforcing agency may require that specific aquifers or formations be sealed off during destruction of the well.

C. Placement of Material. The following requirements shall be observed in placing fill or sealing material in wells to be destroyed:

1. The well shall be filled with the appropriate material (as described in item D of this section) from the bottom of the well up.

2. Where neat cement grout, sand-cement grout, or concrete is used, it shall be poured in one continuous operation.

3. Sealing material shall be placed in the interval or intervals to be sealed by methods that prevent free fall, dilution, and/or separation of aggregates from cementing materials.

4. Where the head (pressure) producing flow is great, special care and methods must be used to restrict the flow while placing the sealing material. In such cases, the casing must be perforated opposite the area to be sealed and the sealing material forced out under pressure into the surrounding formation.

5. In destroying gravel-packed wells, the casing shall be perforated or otherwise punctured opposite the area to be sealed. The sealing material shall then be placed within the casing, completely filling the portion adjacent to the area to be sealed and then forced out under pressure into the gravel envelope.

6. When pressure is applied to force sealing material into the annular space, the pressure shall be maintained for a length of time sufficient for the cementing mixture to set.

1/ The limiting dimensions of coarse stone are usually considered to range between 1/4 and 4 inches (6.3 to 100 millimetres).

7. To assure that the well is filled and there has been no jamming or "bridging" of the material, verification shall be made that the volume of material placed in the well installation at least equals the volume of the empty hole.

D. Materials. Requirements for sealing and fill materials are as follows:

1. Impervious Sealing Materials. No material is completely impervious. However, sealing materials shall have such a low permeability that the volume of water passing through them is of small consequence.

Suitable impervious materials include neat cement, sand-cement grout, concrete, and bentonite clay, all of which are described in Section 9, paragraph D, "Sealing Material" of these standards; and well-proportioned mixes of silts, sands, and clays (or cement), and native soils that have a coefficient of permeability of less than 10 feet (3 metres) per year.1/ Used drilling muds are not acceptable.

2. Filler Material. Many materials are suitable for use as a filler in destroying wells. These include clay, silt, sand, gravel, crushed stone, native soils, mixtures of the aforementioned types, and those described in the preceding paragraph. Material containing organic matter shall not be used.

E. Additional Requirements for Wells in Urban Areas.

In incorporated areas or unincorporated areas developed for multiple habitation, to make further use of the well site, the following additional requirements must be met (see Figure 9C):

1. A hole shall be excavated around the well casing to a depth of 5 feet (1.5 metres) below the ground surface and the well casing removed to the bottom of the excavation.

2. The sealing material used for the upper portion of the well shall be allowed to spill over into the excavation to form a cap.

3. After the well has been properly filled, including sufficient time for sealing material in the excavation to set, the excavation shall be filled with native soil.

F. Temporary Cover. During periods when no work is being done on the well, such as overnight or while waiting for sealing material to set, the well and surrounding excavation, if any, shall be covered. The cover shall be sufficiently strong and well enough anchored to prevent the introduction of foreign material into the well and to protect the public from a potentially hazardous situation.

1/ Examples of materials of this type are: very fine sand with a large percentage of silt or clay, inorganic silts, mixtures of silt and clay, and clay. Native materials should not be used when the sealing operation involves the use of pressure.

APPENDIX B

SUGGESTED METHODS FOR SEALING THE ANNULAR SPACE AND FOR SEALING-OFF STRATA

Sealing the Annular Space

The annular space is the space between the well casing and wall of the drilled hole created during construction. This space must be adequately sealed to prevent the entrance of surface drainage or poor quality subsurface water, which may contaminate or pollute the well. This seal will also protect the casing against corrosion and possible structural failure.

A number of acceptable sealing methods are presented in this appendix. Other methods may be suggested by individual well drillers on the basis of their experience and availability of equipment. An acceptable method should provide for the complete filling of the sealing interval with the appropriate sealing material to the specified depth.

General

Prior to sealing, the annular space should be flushed to remove any loose formation material or drilling mud that might obstruct the operation. The use of centralizers -- devices which are affixed to the casing at regular intervals to prevent it from touching the walls of the hole, thereby keeping the casing centered in the borehole -- are recommended.. This assures that the seal is not less than the desired minimum thickness. It is particularly significant for large diameter wells where the casing exceeds 10 inches (250 millimetres) in diameter.

The use of a tremie or grout pipe for the introduction of the sealing material into the annular space is preferred. Where a tremie or grout pipe is used, the minimum annular space should be 2 inches (50 millimetres) and the minimum tremie size should be a nominal 1-1/2 inches (38 millimetres) in diameter.

Gravity installation without a grout pipe or tremie should not be attempted when the sealing interval contains water or cannot be visually inspected (with the aid of a mirror or light). Where sealing material is to be introduced under water or the interval cannot be observed from the surface, methods involving "positive" placement (by a tremie or grout pipe, pumping or other application of pressure) must be used.

The sealing material must always be introduced at the bottom of the interval to be sealed. This prevents "bridging" (jamming) or segregation (separation of large aggregate from the mixture in sand-cement or concrete grouts) of the sealing material and eliminates gaps.

Sealing should be accomplished in one continuous operation. Where the sealing interval will exceed 100 feet (30.5 metres) in length, consideration must be given to the collapse strength of the casing. Further, because of the weight of such extensive seals, consideration must also be given to the installation of stronger retaining devices and to staging the placement of the seal (as, for example, the installation of a short segment of rapid-setting sealant in advance of the main body of sealing material; the former becomes a foundation to support the extensive seal).

Sealing Methods

The following methods can be used to seal the upper portion of the annular space. Except for the first, these methods are illustrated on Figure 10. The first method is frequently used where short seals, under 20 feet (6 metres) deep, are placed in dry material.

Gravity Installation (Without Tremie). In this method sealing material is poured into the annular space without the use of a tremie or grout pipe. It cannot be used where the annular space contains water and is limited to intervals less than 30 feet (9 metres) deep. When used, visual observation (with the aid of a mirror or light) should be made during placement of the seal.

Grout Pipe Method. In this method, the seal is placed in the annular space by gravity through a grout pipe (or tremie) suspended in the annular space (see Figure 10).

1. Drill the hole large enough to accommodate the grout pipe (at least 4 inches or 100 millimetres, greater in diameter than the diameter of the casing).

2. In caving formations, install a conductor casing.

3. Provide a packer or grout retainer in the annular space below the interval to be sealed.

4. Extend the grout pipe down the annular space between the casing and the wall or conductor to near the bottom of the interval to be sealed just above the retainer.

5. Add grout in one continuous operation, beginning at the bottom of the interval to be sealed. The bottom end of the grout pipe should remain submerged in the sealing material during the entire time it is being placed. The grout pipe is gradually withdrawn as the sealing material is placed. Where a conductor casing is used to hold back caving material, it may be withdrawn as the sealing material is placed.

Pumping-Exterior Placement. For this method the same procedure as described for the Grout Pipe Method (above) is followed except that the material is placed by pumping instead of by gravity flow. The grout pipe must always be full of sealing material and its bottom end must remain submerged in the sealing material until the interval has been filled.

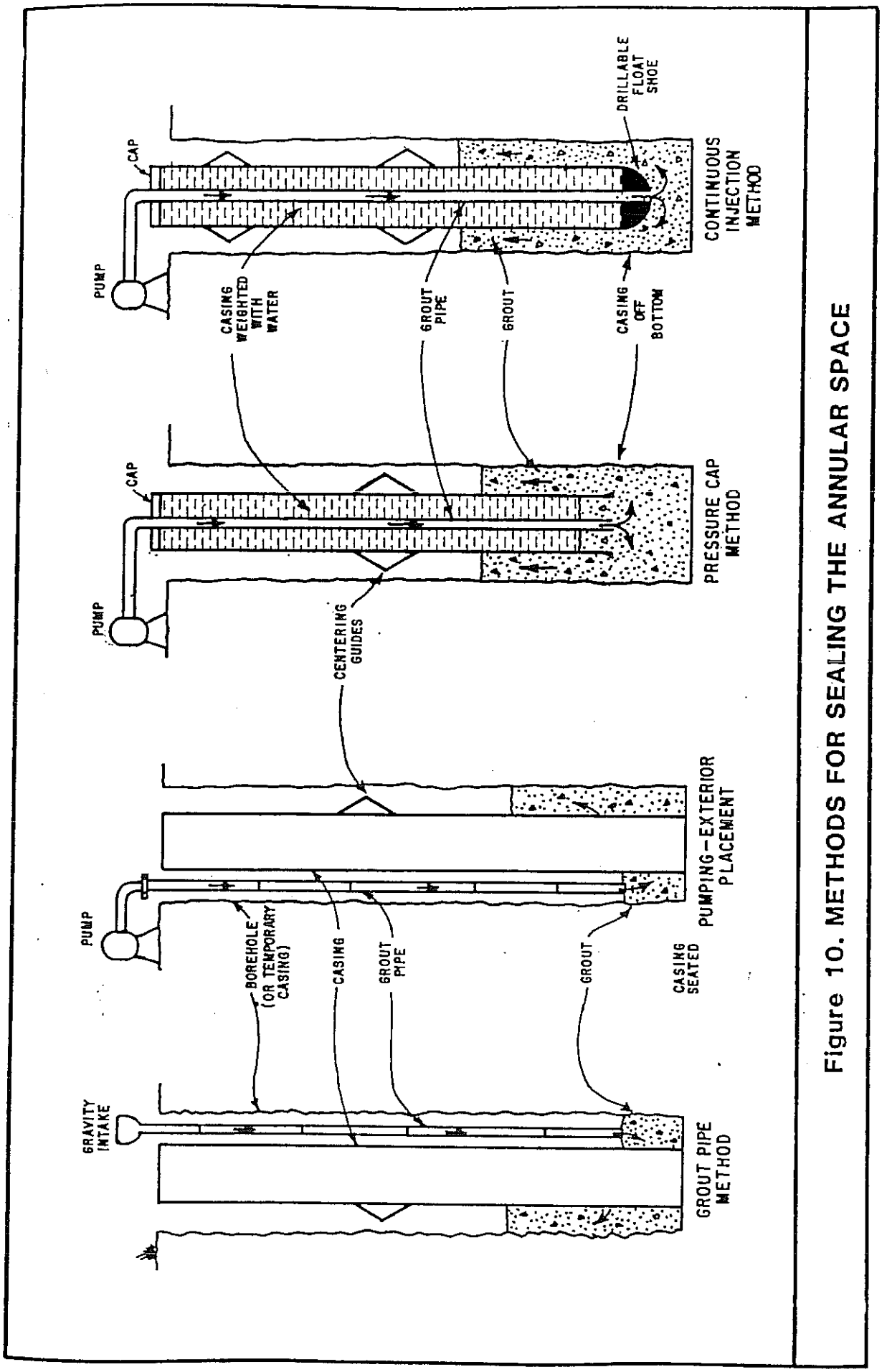


Figure 10. METHODS FOR SEALING THE ANNULAR SPACE

Pressure Cap Method. In the pressure cap method, the grouting is done with the hole drilled about 2 feet (0.6 metre) below the bottom of the conductor casing and the remainder of the well drilled after the grout is in place and set. The grout is placed through a grout pipe set inside the conductor casing.

1. The casing is suspended about 2 feet (0.6 metre) above the bottom of the drilled hole and filled with water.

2. A pressure cap is placed over the conductor casing and grout pipe extended through the cap and casing to the bottom of the hole.

3. The grout is forced through the pipe, up into the annular space around the outside of the conductor casing, to the ground surface.

4. When the grout has set, the pressure cap and the plug formed during grouting are removed and drilling of the rest of the well is continued.

Because there is the possibility that coarse aggregate will "jam" the grout pipe, concrete cannot be used as a sealant when this method is used.

Continuous Injection. This method, called the Normal Displacement Method in the oil industry (which developed it), involves pumping grout through a tube or pipe centered in the casing via a "float shoe" fitted at the bottom of the casing. The grout is forced up into the annular space to the ground surface as is the case with the pressure cap method (above). The tube is detached and flushed. The float shoe, which has a back pressure valve, is drilled out. Because there is the possibility that coarse aggregate will "jam" the grout pipe, concrete cannot be used with this method.

Sealing-off Strata

When the hole for a well is drilled, a strata may be found that produces water of undesirable quality. To prevent the movement of this water into other strata and to maintain the quality of the water to be produced by the well, such strata must be sealed-off. Also, where a highly porous non-water producing strata is encountered, it too must be sealed-off to prevent the loss of water or hydraulic pressure from the well.

The following methods can be used in sealing-off strata or zones (see Figure 11). In addition, several of the methods described for sealing the upper annular space can also be used.

Pressure-Grouting Method. This method can be employed where a substantial annular space exists between the well casing and the wall of the drilled hole.

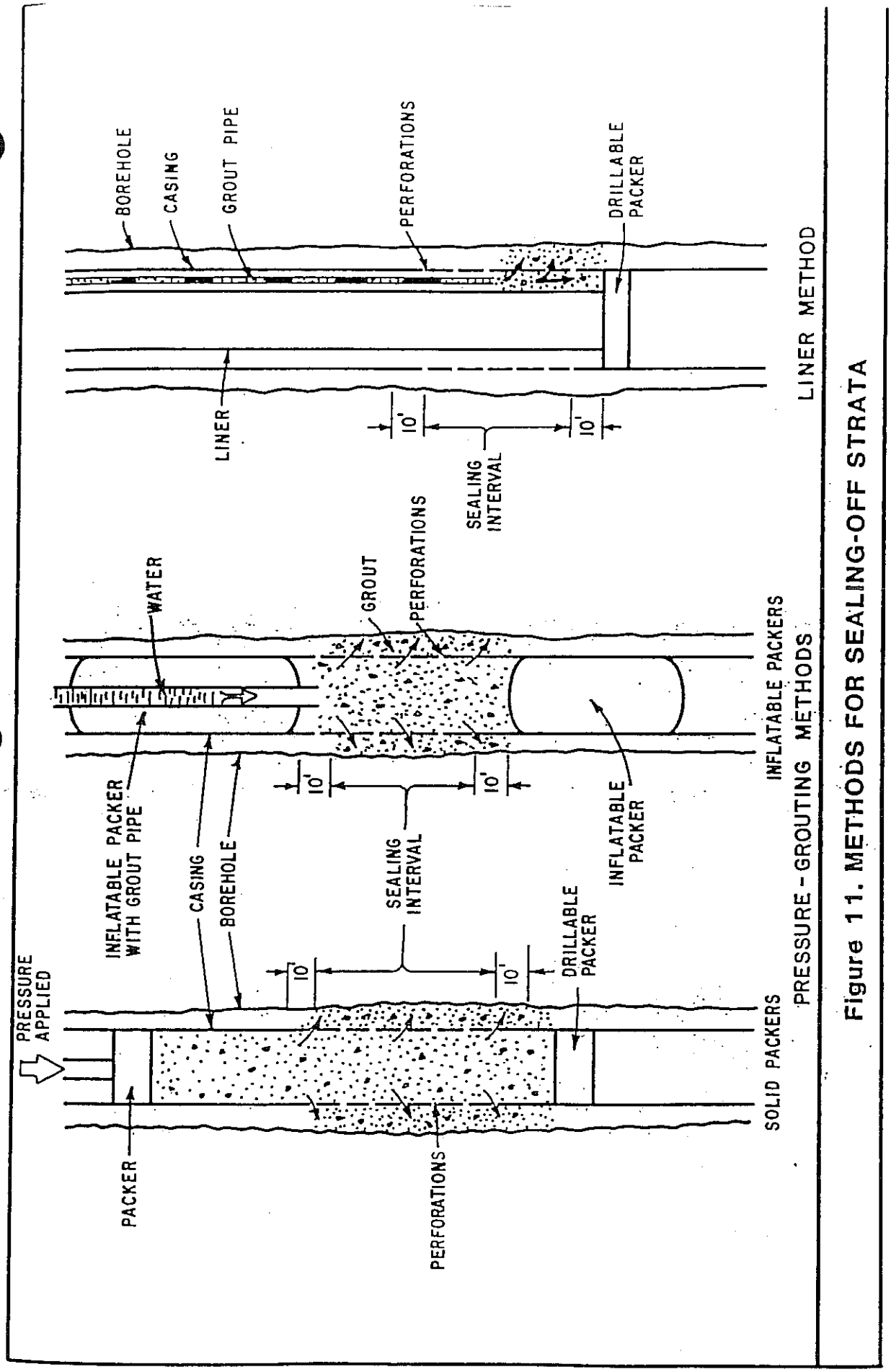


Figure 11. METHODS FOR SEALING-OFF STRATA

1. Perforate the casing opposite the interval to be sealed.

2. Place a packer or other sealing device in the casing below the bottom of the perforated interval.

3. Use a dump bailer or grout pipe to place grout in the casing opposite the interval to be sealed. Sufficient grout shall be placed to fill the annular space and extend out into the strata to be sealed-off.

4. Place a packer or other sealing device in the casing above the perforations.

5. Apply pressure to the top packer to force the grout through the perforations into the interval to be sealed.

6. Maintain pressure until the material has set.

7. Drill out the packers and other material remaining in the well.

Frequently, an assembly consisting of inflatable (balloon) packers and grout pipe is used. The packers are placed to enclose the interval to be sealed, they are inflated and the grout pumped down the hose (which passes through the upper packer) into the interval to be sealed. Water is then pumped into the interval, squeezing the grout through the perforations. When the grout is sufficiently hardened, the packers are deflated and removed.

Liner Method. Where the annular space between the casing and the wall of the drilled hole is minimal, the liner method can be employed.

1. Perforate the casing opposite the interval to be sealed.

2. Place a smaller diameter metal liner, about 2 inches (50 millimetres) less in diameter, inside the casing opposite the perforated interval to be sealed, and extend it at least 10 feet (3 metres) above and below the perforated interval.

3. Provide a grout retaining seal at the bottom of the annular space between the liner and the well casing.

4. Extend the grout pipe into the opening between the liner and casing, and fill the annular space with grout in one continuous operation.

5. The botton end of the grout pipe should remain submerged in the sealing material during the entire time it is being placed. The grout pipe is gradually withdrawn as the sealing material is placed.

EXHIBIT D

California Well Standards

Water wells • Monitoring wells • Cathodic protection wells

Bulletin 74-90

(Supplement to Bulletin 74-81)

David N. Kennedy
Director
Department of Water Resources

Douglas P. Wheeler
Secretary for Resources
The Resources Agency

Pete Wilson
Governor
State of California

California
Department
of Water Resources
June 1991

Part II. Well Construction

Section 8. Well Location With Respect to Pollutants and Contaminants, and Structures.

Note: The title of Section 8 has been revised.

Section 8 (page 26 of Bulletin 74-81) has been revised to read as follows:

"A. Separation. All water wells shall be located an adequate horizontal distance from known or potential sources of pollution and contamination. Such sources include, but are not limited to:

- sanitary, industrial, and storm sewers;
- septic tanks and leachfields;
- sewage and industrial waste ponds;
- barnyard and stable areas;
- feedlots;
- solid waste disposal sites;
- above and below ground tanks and pipelines for storage and conveyance of petroleum products or other chemicals; and,
- storage and preparation areas for pesticides, fertilizers, and other chemicals.

Consideration should also be given to adequate separation from sites or areas with known or suspected soil or water pollution or contamination.

The following horizontal separation distances are generally considered adequate where a significant layer of unsaturated, unconsolidated sediment less permeable than sand is encountered between ground surface and ground water. These distances are based on present knowledge and past experience. Local conditions may require greater separation distances to ensure ground water quality protection.

Potential Pollution or Contamination Source	Minimum Horizontal Separation Distance Between Well and Known or Potential Source
Any sewer line (sanitary, industrial, or storm; main or lateral)	50 feet
Watertight septic tank or subsurface sewage leaching field	100 feet
Cesspool or seepage pit	150 feet
Animal or fowl enclosure	100 feet

If the well is a radial collector well, minimum separation distances shall apply to the furthest extended point of the well.

Many variables are involved in determining the "safe" separation distance between a well and a potential source of pollution or contamination. No set separation distance is adequate and reasonable for all conditions. Determination of the safe separation distance for individual wells requires detailed evaluation of existing and future site conditions.

Where, in the opinion of the enforcing agency adverse conditions exist, the above separation distances shall be increased, or special means of protection, particularly in the construction of the well, shall be provided, such as increasing the length of the annular seal.

Lesser distances than those listed above may be acceptable where physical conditions preclude compliance with the specified minimum separation distances and where special means of protection are provided. Lesser separation distances must be approved by the enforcing agency on a case-by-case basis.

B. Gradients. Where possible, a well shall be located up the ground water gradient from potential sources of pollution or contamination. Locating wells up gradient from pollutant and contaminant sources can provide an extra measure of protection for a well. However, consideration should be given that the gradient near a well can be reversed by pumping, as shown in Figure 3 (page 28 of Bulletin 74-81), or by other influences.

C. Flooding and Drainage. If possible, a well should be located outside areas of flooding. The top of the well casing shall terminate above grade and above known levels of flooding caused by drainage or runoff from surrounding land. For community water supply wells, this level is defined as the:

> "...floodplain of a 100 year flood..." or above "...any recorded high tide...", (Section 64417, *Siting Requirements*, Title 22 of the California Code of Regulations.)

If compliance with the casing height requirement for community water supply wells and other water wells is not practical, the enforcing agency shall require alternate means of protection.

Surface drainage from areas near the well shall be directed away from the well. If necessary, the area around the well shall be built up so that drainage moves away from the well.

D. Accessibility. All wells shall be located an adequate distance from buildings and other structures to allow access for well modification, maintenance, repair, and destruction, unless otherwise approved by the enforcing agency."

Section 9. Sealing the Upper Annular Space.

Note: Sealing requirements are also described in Appendix B, page 67 of Bulletin 74-81.

Section 9 (page 29 of Bulletin 74-81) has been revised to read as follows:

"The space between the well casing and the wall of the drilled hole, often referred to as the annular space, shall be effectively sealed to prevent it from being a preferential pathway for movement of poor-quality water, pollutants, or contaminants. In some cases, secondary purposes of an annular seal are to protect casing against corrosion or degradation, ensure the structural integrity of the casing, and stabilize the borehole wall.

A. Minimum Depth of Annular Surface Seal. The annular surface seal for various types of water wells shall extend from ground surface to the following minimum depths:

Well Type	Minimum Depth Seal Must Extend Below Ground Surface
Community Water Supply	50 feet
Industrial	50 feet
Individual Domestic	20 feet
Agricultural	20 feet
Air-Conditioning	20 feet
All Other Types	20 feet

1. Shallow ground water. Exceptions to minimum seal depths can be made for shallow wells at the approval of the enforcing agency, where the water to be produced is at a depth less than 20 feet. In no case shall an annular seal extend to a total depth less than 10 feet below land surface. The annular seal shall be no less than 10 feet in length.

   Caution shall be given to locating a well with a 'reduced' annular seal with respect to sources of pollution or contamination. Such precautions include horizontal separation distances greater than those listed in Section 8, page 12, above.

2. Encroachment on known or potential sources of pollution or contamination. When, at the approval of the enforcing agency, a water well is to be located closer to a source of pollution or contamination than allowed by Section 8, page 12, above, the annular space shall be sealed from ground surface to the first impervious stratum, if possible. The annular seal for all such wells shall extend to a minimum depth of 50 feet.

3. Areas of freezing. The top of an annular surface seal may be below ground surface in areas where freezing is likely, but in no case more than 4 feet below ground surface. 'Freezing' areas are those where the mean length of the freeze-free period described by the National Weather Service is less than 100 days. In other words, 'freezing' areas are where temperatures at or below 32 degrees Fahrenheit are likely to occur on any day during a period of 265 or more days each year. In general, these areas include:

   - portions of Modoc, Lassen, and Siskiyou Counties;
   - portions of the North Lahontan area including the eastern slope of the Sierra Nevada and related valleys north of Mount Whitney and Mono Lake; and,
   - the area of Lake Arrowhead in the San Bernardino Mountains.

4. Vaults. At the approval of the enforcing agency, the top of an annular surface seal and well casing can be below ground surface where traffic or other conditions require, if the seal and casing extend to a watertight and structurally sound subsurface vault, or equivalent feature. In no case shall the top of the annular surface seal be more

than 4 feet below ground surface. The vault shall extend from the top of the annular seal to at least ground surface.

The use of subsurface vaults to house the top of water wells below ground surface is rare and is discouraged due to susceptibility to the entrance of surface water, pollutants, and contaminants. Where appropriate, pitless adapters should be used in place of vaults.

B. Sealing Conditions. The following requirements are to be observed for sealing the annular space.

1. Wells drilled in unconsolidated, caving material. An 'oversized' hole, at least 4 inches greater in diameter than the outside diameter of the well casing, shall be drilled and a conductor casing temporarily installed to at least the minimum depth of annular seal specified in Subsection A, page 14, above. Permanent conductor casing may be used if it is installed in accordance with Item 3, page 16, below, and Item 5 (page 32 of Bulletin 74-81) and if it extends at least to the depth specified in Subsection A, above. One purpose of conductor casing is to hold the annular space open during well drilling and during the placement of the well casing and annular seal.

Temporary conductor casing shall be withdrawn as sealing material is placed between the well casing and borehole wall, as shown in Figure 4A (page 31 of Bulletin 74-81). Sealing material shall be placed at least within the interval specified in Subsection A, above. The sealing material shall be kept at a sufficient height above the bottom of the temporary conductor casing as it is withdrawn to prevent caving of the borehole wall.

Temporary conductor casing may be left in place in the borehole after the placement of the annular seal only if it is impossible to remove because of unforeseen conditions and not because of inadequate drilling equipment, or if its removal will seriously jeopardize the integrity of the well and the integrity of subsurface barriers to pollutant or contaminant movement. Temporary conductor casing may be left in place only at the approval of the enforcing agency on a case-by-case basis.

Every effort shall be made to place sealing material between the outside of temporary conductor casing that cannot be removed and the borehole wall to fill any possible gaps or voids between the conductor casing and the borehole wall. At least two inches of sealing material shall be maintained between the conductor casing and well casing. At a minimum, sealing material shall extend through intervals specified in Subsection A, above.

Sealing material can often be placed between temporary conductor casing that cannot be removed and the borehole wall by means of pressure grouting techniques, as described below and in Appendix B (page 67 of Bulletin 74-81). Other means of placing sealing material between the conductor casing and the borehole wall can be used, at the approval of the enforcing agency.

Pressure grouting shall be accomplished by perforating temporary conductor casing that cannot be removed, in place. The perforations are to provide passages for sealing material to pass through the conductor casing to fill any spaces and voids between the casing and borehole wall. Casing perforations shall be a suitable size and density to allow the passage of sealing materials through the casing and the proper distribution

of sealing material in spaces between the casing and borehole wall. At a minimum, the perforations shall extend through the intervals specified in Subsection A, above, unless otherwise approved by the enforcing agency.

Temporary conductor casing that must be left in place shall be perforated immediately before sealing operations begin to prevent drilling or well construction operations from clogging casing perforations. Once the casing has been adequately perforated, sealing material shall be placed inside the conductor casing and subjected to sufficient pressure to cause the sealing material to pass through the conductor casing perforations and completely fill any spaces or voids between the casing and borehole wall, at least within the intervals specified in Subsection A, above. Sealing material shall consist of neat cement, or bentonite prepared from powdered bentonite and water, unless otherwise approved by the enforcing agency.

Sealing material must also fill the annular space between the conductor casing and the well casing within required sealing intervals.

2. Wells drilled in unconsolidated material with significant clay layers. An 'oversized' hole, at least 4 inches greater in diameter than the outside diameter of the well casing, shall be drilled to at least the depth specified in Subsection A, page 14, above, and the annular space between the borehole wall and the well casing filled with sealing material in accordance with Subsection A, above (see Figure 4B, page 31 of Bulletin 74-81). If a significant layer of clay or clay-rich deposits of low permeability is encountered within 5 feet of the minimum seal depth prescribed in Subsection A, above, the annular seal shall be extended at least 5 feet into the clay layer. Thus, the depth of seal could be required to be extended as much as another 10 feet. If the clay layer is less than 5 feet in total thickness, the seal shall extend through its entire thickness.

If caving material is present within the interval specified in Subsection A, a temporary conductor casing shall be installed to hold the borehole open during well drilling and placement of the casing and annular seal, in accordance with the requirements of Item 1, page 15, above. Permanent conductor casing may be used if it is installed in accordance with Item 3, below and Item 5 (page 32 of Bulletin 74-81) and it extends to at least the depth specified in Subsection A, above.

3. Wells drilled in soft consolidated formations (extensive clays, sandstones, etc.). An 'oversized' hole, at least 4 inches greater in diameter than the outside diameter of the well casing, shall be drilled to at least the depth specified in Subsection A, page 14, above. The space between the well casing and the borehole shall be filled with sealing material to at least the depth specified in Subsection A, above, as shown by Figure 4C (page 31 of Bulletin 74-81).

If a permanent conductor casing is to be installed to facilitate the construction of the well, an oversized hole, at least 4 inches greater in diameter than the outside surface of the permanent conductor casing, shall be drilled to the bottom of the conductor casing or to at least the depth specified in Subsection A, above, and the annular space between the conductor casing and the borehole wall filled with sealing material. In some cases, such as in cable tool drilling, it may be necessary to extend permanent conductor casing beyond the depth of the required depth of the annular surface seal in order to maintain the borehole. Sealing material is not required between conductor

casing and the borehole wall other than the depths specified in Subsection A, above, and Section 13, below (page 46 of Bulletin 74-81)."

Items 4 through 7 (page 32 of Bulletin 74-81) are unchanged. Item 8 has been added, as follows:

"8. Wells that penetrate zones containing poor-quality water, pollutants, or contaminants. If geologic units or fill known or suspected to contain poor-quality water, pollutants, or contaminants are penetrated during drilling, and, the possibility exists that poor-quality water, pollutants, or contaminants could move through the borehole during drilling and well construction operations and significantly degrade ground water quality in other units before sealing material can be installed, then precautions shall be taken to seal off or 'isolate' zones containing poor-quality water, pollutants, and contaminants during drilling and well construction operations. Special precautions could include the use of temporary or permanent conductor casing, borehole liners, and specialized drilling equipment. The use of conductor casing is described in Item 1, page 15, above."

Subsection C (page 34 of Bulletin 74-81) is unchanged. Subsections D, E, and F (page 34 of Bulletin 74-81) have been changed to read as follows:

"D. Sealing Material. Sealing material shall consist of neat cement, sand cement, concrete, or bentonite. Cuttings from drilling, or drilling mud, shall not be used for any part of the sealing material.

1. Water. Water used to prepare sealing mixtures should generally be of drinking water quality, shall be compatible with the type of sealing material used, be free of petroleum and petroleum products, and be free of suspended matter. In some cases water considered nonpotable, with a maximum of 2,000 milligrams per liter chloride and 1,500 mg/l sulfate, can be used for cement-based sealing mixtures. The quality of water to be used for sealing mixtures shall be determined where unknown.

2. Cement. Cement used in sealing mixtures shall meet the requirements of American Society for Testing and Materials C150, *Standard Specification for Portland Cement*, including the latest revisions thereof.

Types of Portland cement available under ASTM C150 for general construction are:

Type I - General purpose. Similar to American Petroleum Institute Class A.

Type II - Moderate resistance to sulfate. Lower heat of hydration than Type I. Similar to API Class B.

Type III - High early strength. Reduced curing time but higher heat of hydration than Type I. Similar to API Class C.

Type IV - Extended setting time. Lower heat of hydration than Types I and III.

Type V - High sulfate resistance.

Special cement setting accelerators and retardants and other additives may be used in some cases. Special field additives for Portland cement mixtures shall meet the requirements of ASTM C494, *Standard Specification for Chemical Admixtures for Concrete*, and latest revision thereof.

Hydrated lime may be added up to 10 percent of the volume of cement used to make the seal mix more fluid. Bentonite may be added to cement-based mixes, up to 6 percent by weight of cement used, to improve fluid characteristics of the sealing mix and reduce the rate of heat generation during setting.

Dry additives should be mixed with dry cement before adding water to the mixture to ensure proper mixing, uniformity of hydration, and an effective and homogeneous seal. The water demand of additives shall be taken into account when water is added to the mix.

Minimum times required for sealing materials containing Portland cement to set and begin curing before construction operations on a well can be resumed are:

- Types I and II cement - 24 hours
- Type III cement - 12 hours
- Type V cement - 6 hours

Type IV cement is seldom used for annular seals because of its extended setting time.

Allowable setting times may be reduced or lengthened by use of accelerators or retardants specifically designed to modify setting time, at the approval of the enforcing agency.

More time shall be required for cement-based seals to cure to allow greater strength when construction or development operations following the placement of the seal may subject casing and sealing materials to significant stress. Subjecting a well to significant stress before a cement-based sealing material has adequately cured can damage the seal and prevent proper bonding of cement-based sealants to casing(s).

If plastic well casing is used, care shall be exercised to control the heat of hydration generated during the setting and curing of cement in an annular seal. Heat can cause plastic casing to weaken and collapse. Heat generation is a special concern if thin-wall plastic well casing is used, if the well casing will be subject to significant net external pressure before the setting of the seal, and/or if the radial thickness of the annular seal is large. Additives that accelerate cement setting also tend to increase the rate of heat generation during setting and, thus, should be used with caution where plastic casing is employed.

The temperature of a setting cement seal can be lowered by circulating water inside the well casing and/or by adding bentonite to the cement mixture, up to 6 percent by weight of cement used.

Cement-based sealing material shall be constituted as follows:

a. Neat Cement. For Types I or II Portland cement, neat cement shall be mixed at a ratio of one 94-pound sack of Portland cement to 5 to 6 gallons of 'clean' water. Additional water may be required where special additives, such as bentonite, or 'accelerators' or 'retardants' are used.

b. Sand Cement. Sand-cement shall be mixed at a ratio of not more than 188 pounds of sand to one 94-pound sack of Portland cement (2 parts sand to 1 part cement, by weight) and about 7 gallons of clean water, where Type I or Type II Portland cement is used. This is equivalent to a '10.3 sack mix.' Less

water shall be used if less sand than 2 parts sand per one part cement by weight is used. Additional water may be required when special additives, such as bentonite, or 'accelerators' or 'retardants' are used.

c. Concrete. Concrete is often useful for large volume annular seals, such as in large-diameter wells. The proper use of aggregate can decrease the permeability of the annular seal, reduce shrinkage, and reduce the heat of hydration generated by the seal.

Concrete shall consist of Portland cement and aggregate mixed at a ratio of at least six-94 pound sacks of Portland cement per cubic yard of aggregate. A popular concrete mix consists of eight-94 pound sacks of Type I or Type II Portland cement per cubic yard of uniform 3/8-inch aggregate.

In no case shall the size of the aggregate be more than 1/5 the radial thickness of the annular seal. Water shall be added to concrete mixes to attain proper consistency for placement, setting, and curing.

d. Mixing. Cement-based sealing materials shall be mixed thoroughly to provide uniformity and ensure that no 'lumps' exist.

Ratios of the components of cement-based sealing materials can be varied depending on the type of cement and additives used. Variations must be approved by the enforcing agency.

3. Bentonite. Bentonite clay in 'gel' form has some of the advantages of cement-based sealing material. A disadvantage is that the clay can sometimes separate from the clay-water mixture.

Although many types of clay mixtures are available, none has sealing properties comparable to bentonite clay. Bentonite expands significantly in volume when hydrated. Only bentonite clay is an acceptable clay for annular seals.

Unamended bentonite clay seals should not be used where structural strength of the seal is required, or where it will dry. Bentonite seals may have a tendency to dry, shrink and crack in arid and semi-arid areas of California where subsurface moisture levels can be low. Bentonite clay seals can be adversely affected by subsurface chemical conditions, as can cement-based materials.

Bentonite clay shall not be used as a sealing material if roots from trees and other deep rooted plants might invade and disrupt the seal, and/or damage the well casing. Roots may grow in an interval containing a bentonite seal depending on surrounding soil conditions and vegetation.

Bentonite-based sealing material shall not be used for sealing intervals of fractured rock or sealing intervals of highly unstable, unconsolidated material that could collapse and displace the sealing material, unless otherwise approved by the enforcing agency. Bentonite clay shall not be used as a sealing material where flowing water might erode it.

Bentonite clay products used for sealing material must be specifically prepared for such use. Used drilling mud and/or cuttings from drilling shall not be used in sealing material.

Bentonite used for annular seals shall be commercially prepared, powdered, granulated, pelletized, or chipped/crushed sodium montmorillonite clay. The largest dimension of pellets or chips shall be less than 1/5 the radial thickness of the annular space into which they are placed.

Bentonite clay mixtures shall be thoroughly mixed with clean water *prior to placement.* A sufficient amount of water shall be added to bentonite to allow proper hydration. Depending on the bentonite sealing mixture used, 1 gallon of water should be added to about every 2 pounds of bentonite. Water added to bentonite for hydration shall be of suitable quality and free of pollutants and contaminants.

Bentonite preparations normally require 1/2 to 1 hour to adequately hydrate. Actual hydration time is a function of site conditions and the form of bentonite used. Finely divided forms of bentonite generally require less time for hydration, if properly mixed.

Dry bentonite pellets or chips may be placed directly into the annular space below water, where a short section of annular space, up to 10 feet in length, is to be sealed. Care shall be taken to prevent bridging during the placement of bentonite seal material.

E. Radial Thickness of Seal. A minimum of two inches of sealing material shall be maintained between all casings and the borehole wall, within the interval to be sealed, except where temporary conductor casing cannot be removed, as noted in Subsection B, page 15, above. A minimum of two inches of sealing material shall also be maintained between each casing, such as permanent conductor casing, well casing, gravel fill pipes, etc., in a borehole within the interval to be sealed, unless otherwise approved by the enforcing agency. Additional space shall be provided, where needed, for casings to be properly centralized and spaced and allow the use of a tremie pipe during well construction (if required), especially for deeper wells.

F. Placement of Seal.

1. Obstructions. All loose cuttings, or other obstructions to sealing shall be removed from the annular space before placement of the annular seal.

2. Centralizers. Well casing shall be equipped with centering guides or 'centralizers' to ensure the 2-inch minimum radial thickness of the annular seal is at least maintained. Centralizers need not be used in cases where the well casing is centered in the borehole during well construction by use of removable tools, such as hollow-stem augers.

   The spacing of centralizers is normally dictated by the casing materials used, the orientation and straightness of the borehole, and the method used to install the casing.

   Centralizers shall be metal, plastic, or other non-degradable material. Wood shall not be used as a centralizer material. Centralizers must be positioned to allow the proper placement of sealing material around casing within the interval to be sealed.

   Any metallic component of a centralizer used with metallic casing shall consist of the same material as the casing. Metallic centralizer components shall meet the same metallurgical specifications and standards as the metallic casing to reduce the potential for galvanic corrosion of the casing.

3. Foundation and Transition Seals. A packer or similar retaining device, or a small quantity of sealant that is allowed to set, can be placed at the bottom of the interval to be sealed before final sealing operations begin to form a foundation for the seal.

A transition seal, up to 5 feet in length, consisting of bentonite, is sometimes placed in the annular space to separate filter pack and cement-based sealing materials. The transition seal can prevent cement-based sealing materials from infiltrating the filter pack. A short interval of fine-grained sand, usually less than 2 feet in length, is sometimes placed between the filter pack and the bentonite transition seal to prevent bentonite from entering the filter pack. Also, fine sand is sometimes used in place of bentonite as the transition seal material.

Fine-sized forms of bentonite, such as granules and powder, are usually employed for transition seals if a transition seal is to be placed above the water level in a well boring. Coarse forms of bentonite, such as pellets and chips, are often used where a bentonite transition seal is to be placed below the water level.

Transition seals should be installed by use of a tremie pipe, or equivalent. However, some forms of bentonite may tend to bridge or clog in a tremie pipe.

Bentonite can be placed in dry form or as slurry for use in transition seals. Water should be added to the bentonite transition seal prior to the placement of cement-based sealing materials where bentonite is dry in the borehole. Care should be exercised during the addition of water to the borehole to prevent displacing the bentonite.

Water should be added to bentonite at a ratio of about 1 gallon for every 2 pounds of bentonite to allow for proper hydration. Water added to bentonite for hydration shall be of suitable quality and free of pollutants and contaminants.

Sufficient time should be allowed for bentonite transition seals to properly hydrate before cement-based sealing materials are placed. Normally, 1/2 to 1 hour is required for proper hydration to occur. Actual time of hydration is a function of site conditions.

The top of the transition seal shall be sounded to ensure that no bridging has occurred during placement.

4. Timing and Method of Placement. The annular space shall be sealed as soon as practical after completion of drilling or a stage of drilling. In no case shall the annular space be left unsealed longer than 14 days following the installation of casing.

Sealing material shall be placed in one continuous operation from the bottom of the interval to be sealed, to the top of the interval. Where the seal is more than 100 feet in length, the deepest portion of the seal may be installed first and allowed to set or partially set. The deep initial seal shall be no longer than 10 feet in length. The remainder of the seal shall be placed above the initial segment in one continuous operation.

Sealing material shall be placed by methods (such as the use of a tremie pipe or equivalent) that prevent freefall, bridging, or dilution of the sealing material, or separation of sand or aggregate from the sealing material. Annular sealing materials

shall not be installed by freefall unless the interval to be sealed is dry and no deeper than 30 feet below ground surface.

5. Ground Water Flow. Special care shall be used to restrict the flow of ground water into a well boring while placing material, where subsurface pressure causing the flow of water is significant.

6. Verification. It shall be verified that the volume of sealing material placed at least equals or exceeds the volume to be sealed.

7. Pressure. Pressure required for placement of sealing materials shall be maintained long enough for cement-based sealing materials to properly set."

Section 10. Surface Construction Features.

Subsection A, Item 5; Subsection B; and Subsection F (page 39 of Bulletin 74-81) have been changed. The remainder of Section 10 (page 36 of Bulletin 74-81) is unchanged.

"A. Openings.

5. Bases. A concrete base or pad, sometimes called a pump block or pump pedestal, shall be constructed at ground surface around the top of the well casing and contact the annular seal, unless the top of the casing is below ground surface, as provided by Subsection B, page 23, below.

The base shall be free of cracks, voids, or other significant defects likely to prevent water tightness. Contacts between the base and the annular seal, and the base and the well casing, must be water tight and must not cause the failure of the annular seal or well casing. Where cement-based annular sealing material is used, the concrete base shall be poured before the annular seal has set, unless otherwise approved by the enforcing agency.

The upper surface of the base shall slope away from the well casing. The base shall extend at least two feet laterally in all directions from the outside of the well boring, unless otherwise approved by the enforcing agency. The base shall be a minimum of 4 inches thick.

A minimum base thickness of 4 inches is normally acceptable for small diameter, single-user domestic wells. The base thickness should be increased for larger wells. Shape and design requirements for well pump bases vary with the size, weight, and type of pumping equipment to be installed, engineering properties of the soil on which the base is to be placed, and local environmental conditions. A large variety of base designs have been used. The Vertical Turbine Pump Association has developed a standard base design for large lineshaft turbine pumps. This design consists of a square, concrete pump base whose design is dependent on bearing weight and site soil characteristics.

Where freezing conditions require the use of a pitless adapter, and the well casing and annular seal do not extend above ground surface or into a pit or vault, a concrete base or pad shall be constructed as a permanent location monument for the covered well. The base shall be 3 feet in length on each side and 4 inches in thickness, unless

Part III. Destruction of Wells

Section 21. Definition of "Abandoned" Well.

Section 21 (page 52 of Bulletin 74-81) has been revised as follows:

"A well is considered 'abandoned' or permanently inactive if it has not been used for one year, unless the owner demonstrates intention to use the well again. In accordance with Section 24400 of the California Health and Safety Code, the well owner shall properly maintain an inactive well as evidence of intention for future use in such a way that the following requirements are met:

"(1) The well shall not allow impairment of the quality of water within the well and ground water encountered by the well.

(2) The top of the well or well casing shall be provided with a cover, that is secured by a lock or by other means to prevent its removal without the use of equipment or tools, to prevent unauthorized access, to prevent a safety hazard to humans and animals, and to prevent illegal disposal of wastes in the well. The cover shall be watertight where the top of the well casing or other surface openings to the well are below ground level, such as in a vault or below known levels of flooding. The cover shall be watertight if the well is inactive for more than five consecutive years. A pump motor, angle drive, or other surface feature of a well, when in compliance with the above provisions, shall suffice as a cover.

(3) The well shall be marked so as to be easily visible and located, and labeled so as to be easily identified as a well.

(4) The area surrounding the well shall be kept clear of brush, debris, and waste materials."

If a pump has been temporarily removed for repair or replacement, the well shall not be considered 'abandoned' if the above conditions are met. The well shall be adequately covered to prevent injury to people and animals and to prevent the entrance of foreign material, surface water, pollutants, or contaminants into the well during the pump repair period."

Section 23. Requirements for Destroying Wells.

Subsection A, Item 1 (page 53 of Bulletin 74-81) and Subsection B, Item 1, (page 54, of Bulletin 74-81) have been changed. The remainder of Section 23 is unchanged.

Subsection A, Item 1 has been revised as follows:

"1. Obstructions. The well shall be cleaned, as needed, so that all undesirable materials, including obstructions to filling and sealing, debris, oil from oil-lubricated pumps, or pollutants and contaminants that could interfere with well destruction are removed for disposal.

The enforcing agency shall be notified as soon as possible if pollutants and contaminants are known or suspected to be in a well to be destroyed. Well destruction operations may then proceed only at the approval of the enforcing agency.

The enforcing agency should be contacted to determine requirements for proper disposal of materials removed from a well to be destroyed."

Subsection B, Item 1 has been revised as follows:

"1. Wells situated in unconsolidated material in an unconfined ground water zone. In all cases the upper 20 feet of the well shall be sealed with suitable sealing material and the remainder of the well shall be filled with suitable fill, or sealing material. (See Figure 9A, page 55 of Bulletin 74-81.)"

Appendix I

Consumer Confidence Report

CARPINTERIA VALLEY WATER DISTRICT

2014 CONSUMER CONFIDENCE REPORT

Vital Information on Water Quality for Residents of the Carpinteria Valley

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable con alguien que lo entienda bien.

June 2014

Dear Carpinteria Valley Residents,

Carpinteria Valley Water District is pleased to present you with this Annual Drinking Water Consumer Confidence Report for the 2014 calendar year.

Benefiting from the Gobernador aeration system, the new ozone facility at the Cater Treatment Plant, and increased production by the District of high quality drinking water from its wells, the District in 2014 met and currently meets or exceeds all state and federal drinking water standards.

Normally, more than half of the District's water delivered to about 16,000 people at their homes and businesses in the Carpinteria Valley would come from Lake Cachuma, including water delivered to Lake Cachuma through the State Water Project Facilities. And the recently completed advanced treatment facility, utilizing ozone, at the Cater Treatment Plant in Santa Barbara continues to add a critical measure of treatment before Cachuma water flows through the South Coast Conduit system to Carpinteria Valley.

Due to the Drought, however, the District's El Carro and Headquarters wells are providing the greater share of water going out to Carpinteria Valley customers. And the wells now are key in the District's on-going efforts to comply with drinking water standards mandated by the U.S Environmental Protection Agency (EPA) and enforced by the California Department of Public Health (DPH).

DPH reviews the District's drinking water quality data on a regular basis and issues the water supply permit under which the District may deliver drinking water.

If you have any questions or concerns about this report please call me or Operations & Maintenance Manager Greg Stanford at the District office at (805) 684-2816.

Sincerely,

Charles B. Hamilton
General Manager

PRIMARY STANDARDS		GROUNDWATER CVWD WELLS				SURFACE WATER CITY OF SANTA BARBARA CATER TREATMENT PLANT		MAJOR SOURCES OF CONTAMINATION IN DRINKING WATER
CONSTITUENTS	**PHG (MCLG)**	**MCL (MRDL)**	**REPORTING VALUE$_1$**	**RANGE**	**CVWD LAST DATE SAMPLED**	**REPORTING VALUE$_1$**	**RANGE**	**FOOTNOTES**
MONITORED AT WATER SOURCE								
Turbidity (NTU)	None	TT = 1 NTU (Max.)	NA	NA	—	Highest Single Measurement 0.09	0.00-0.09	4
		TT=95% sample ≤ 0.3 NTU	NA	NA		100%	NA	
INORGANIC CONTAMINANTS								
Aluminum (mg/L)	0.06	1	ND	ND	2013	0.05	0 - 0.15	5
Arsenic (µg/L)	0.004	10	ND	ND	2013	1.3	ND - 2.9	5
Barium (mg/L)	2	1	.069	.037 - .114	2013	NA	NA	5
Chromium (Total Cr) (mg/L)	(100)	50	2	2	2013	3.9	ND - 17	5, 6
Fluoride (mg/L)	1	2.0	0.20	0.10 - 0.30	2013	0.43	0.40 - 0.46	5
Nitrate as NO_3 (mg/L)	45	45	8.75	7.70 - 9.80	2014	ND	NA	7
MONITORED IN THE DISTRIBUTION SYSTEM OR AT DESIGNATED POINTS OF USE								
MICROBIOLOGICAL CONTAMINANT SAMPLES								
Total Coliform Bacteria	(0)	No more than 1 Mo. sample	ND	ND	2014	NA	NA	10
DISINFECTION BYPRODUCTS, DISINFECTION RESIDUALS, AND DISINFECTION BYPRODUCT PRECURSORS				System Wide Average				
Total Trihalomethanes -TTHM (µg/L)$_2$	None	80	61.0	15.20 - 80.60	2014	NA	NA	11
Haloacetic acids - HAA 5 (µg/L)$_2$	None	60	22.8	4.0 -28.0	2014	NA	NA	11
Bromate (µg/L)$_2$	0.1	10	NA	NA		3.1	1.0 - 8.0	11
Chlorine Residual (Free chlorine) (mg/L)	MRDLG as CL_2 4	MRDL as CL_2 4.0	1.28	0.40 - 1.90	2014	0.66	<0.10-1.63	12
Control of Disinfection By-Products Precursers (DBP) - Total Organic Carbon (TOC) (mg/L)	None	TT	NA	NA	NONE	3.3	3.0 - 4.2	8, 9
LEAD AND COPPER RULE Monitored at the Customer's Tap				30 sites sampled in 2013 0 samples exceeded the action levels for copper and lead. Reporting level is equal to 90th percentile of all 30 samples.				
Lead (µg/L)	0.20	15 (AL)	0.002	0.000 - 0.027	2013	NA	NA	13
Copper (mg/L)	0.30	1.3 (AL)	0.12	0.02 - 0.65	2013	NA	NA	

STATE WATER RESOURCES CONTROL BOARD, LEAD INFORMATION PUBLIC EDUCATION

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. Carpinteria Valley Water District is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the **Safe Drinking Water Hotline at 1-800-426-4791. It is also available on the EPA's website at: http://www.epa.gov/safewater/lead.**

The data noted in the tables all the drinking water contaminants that were detected during the 2014 calendar year. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table are from testing done January 1 through December 31, 2014. The State allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

FOOTNOTES

Listed in the tables are substances detected in the District's drinking water or of special interest to certain consumers. Not listed are approximately 135 constituents which were below the laboratory detection levels.

1. Reporting values are determined by methods set by the State depending on the constituent. Most constituent reporting values are determined by simple averaging.
2. Disinfection by-products including Haloacetic acids (HAA5) and Total Trihalomethanes (TTHM) form when naturally occurring organic materials found in potable water react with disinfectants such as Chlorine. In particular, elevated HAA5 or TTHM levels in drinking water pose the following health risk: Some people who drink water containing Bromate, HAA5 or TTHM in excess of the MCL over many years may develop an increased risk of getting cancer.
3. The State requires that we monitor for certain contaminants less frequently than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. As a result, some of the data, though representative of water quality, is more than one year old.
4. Natural Sediment; soil runoff.
5. Erosion of natural deposits.
6. Discharge from steel and pulp mills and chrome plating.
7. Natural deposit; fertilizer.
8. TOC has no known adverse health effects and provides a medium for the formation of disinfection by-products. Sources include plant decay and other natural processes.
9. Sample taken at City of Santa Barbara Cater Treatment Plant.
10. Naturally present in the environment.
11. By-product of water chlorination.
12. Used to disinfect potable water.
13. Internal corrosion of household water, plumbing, and erosion of natural deposits.

LEGEND

Symbol "<"	denotes 'less than'
µg/L	Micrograms per liter (parts per billion)
mg/L	Milligrams per liter (parts per million)
µmho/cm	Micro Ohms per centimeter
pCi/L	Picocuries per liter (a measure of radiation)
NA	Not Applicable
ND	Not detected at testing limit
NTU	Nephelometric Turbidity Units
None	None Required

DEFINITIONS

Groundwater: All subsurface water found underground in cracks and spaces in soil, sand and rock. The area where water fills these spaces is the saturated zone, the top of this zone is called the water table.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs (SMCL) are set to protect the odor, taste, and appearance of drinking water.

Maximum Residual Disinfectant Level (MRDL): The level of a disinfectant (chlorine) added for water treatment that may not be exceeded at the customer's tap.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a disinfectant (chlorine) added for water treatment at which there is no known or expected risk to health. MRDLGs are set by the USEPA.

Notification Level (NL): Notification levels are health-based levels established by CDPH for chemicals in drinking water that lack MCLs.

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Primary Drinking Water Standards (PDWS): MCLs for contaminants that affect health along with their monitoring and reporting requirements and water treatment requirements.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers a treatment or other requirement which a water system must follow.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of drinking water. Secondary Contaminants are not based on health effects at MCL levels.

Surface Water: All water open to the atmosphere and subject to surface runoff such as lakes, reservoirs and rivers. Water from Lake Cachuma and Gibraltar Reservoir is treated at the William B. Cater Water Treatment Plant.

Treatment Technique (TT): A required process intended to reduce the level of contaminant in drinking water.

SECONDARY STANDARDS			GROUNDWATER CVWD WELLS			SURFACE WATER CITY OF SANTA BARBARA CATER TREATMENT PLANT	
CONSTITUENTS	PHG (MCLG)	MCL (MRDL)	REPORTING VALUE[1]	RANGE	CVWD LAST DATE SAMPLED	REPORTING VALUE[1]	RANGE
MONITORED AT WATER SOURCE							
Chloride (mg/L)	None	500	33	30 - 35	2013	31.6	19.10 - 38.90
Color (units)	None	15	ND	ND	2013	ND	NA
Copper (mg/L)	None	1.0	.010	0 - .020	2013	0.02	ND - 0.04
Iron (µg/L)	None	300	ND	ND	2013	71	ND - 355
Specific Conductance (µmhos/cm)	None	1600	866	847 - 876	2013	915	870- 961
Sulfate (mg/L)	None	500	127	117 - 136	2013	262	237 - 277
Threshold Odor Number at 60°C (units)	None	3	ND	ND	2013	4	1 - 6
Total Dissolved Solids (mg/L)	None	1000	563	550 - 590	2013	616	570 - 646
Turbidity, Laboratory (NTU)	None	5	0.30	0.20 - 0.30	2013	NA	NA
OTHER INORGANIC CONSTITUENTS MONITORED							
MONITORED AT WATER SOURCE							
pH (units)	None	None	7.70	7.60 - 7.80	2013	7.70	7.57 - 7.90
Calcium (mg/L)	None	None	97	89 - 108	2013	77.70	72.0 - 86.50
Magnesium (mg/L)	None	None	27	27 - 28	2013	43.80	41.90 - 46.00
Potassium (mg/L)	None	None	2	2	2013	4.20	3.91 - 4.50
Sodium (mg/L)	None	None	49	38 - 58	2013	55.70	47.4 - 64.0
Total Hardness as $CaCO_3$ (mg/L)	None	None	354	333 - 385	2013	361	354 - 374
Total Alkalinity as $CaCO_3$ (mg/L)	None	None	260	230 - 290	2013	185	170 - 218
Boron (mg/L)	None	1 (NL)	0.050	0 - .100	2013	0.35	ND
UNREGULATED CONTAMINANTS MONITORING (UCMR3)							
Hexavalent chromium, Cr VI (µg/L)	None	None	NA	NA	—	0.34	ND - 1.8
Vanadium (µg/L)	None	50 (NL)	3	3	2013	2.2	ND - 4.4
Molybdenum (µg/L)	None	None	NA	NA	—	7.1	ND - 1.7
Strontium (µg/L)	None	None	NA	NA	—	996	670 - 1900
Chlorate (µg/L)	None	None	NA	NA	—	154	72 - 410
1,4-Dioxane (µg/L)	None	None	NA	NA	—	0.016	ND - 0.11
1,1-Dichloroethane (ng/L)	None	None	NA	NA	—	21	ND - 130
Chloromethane (ng/L)	None	None	NA	NA	—	21	ND - 250

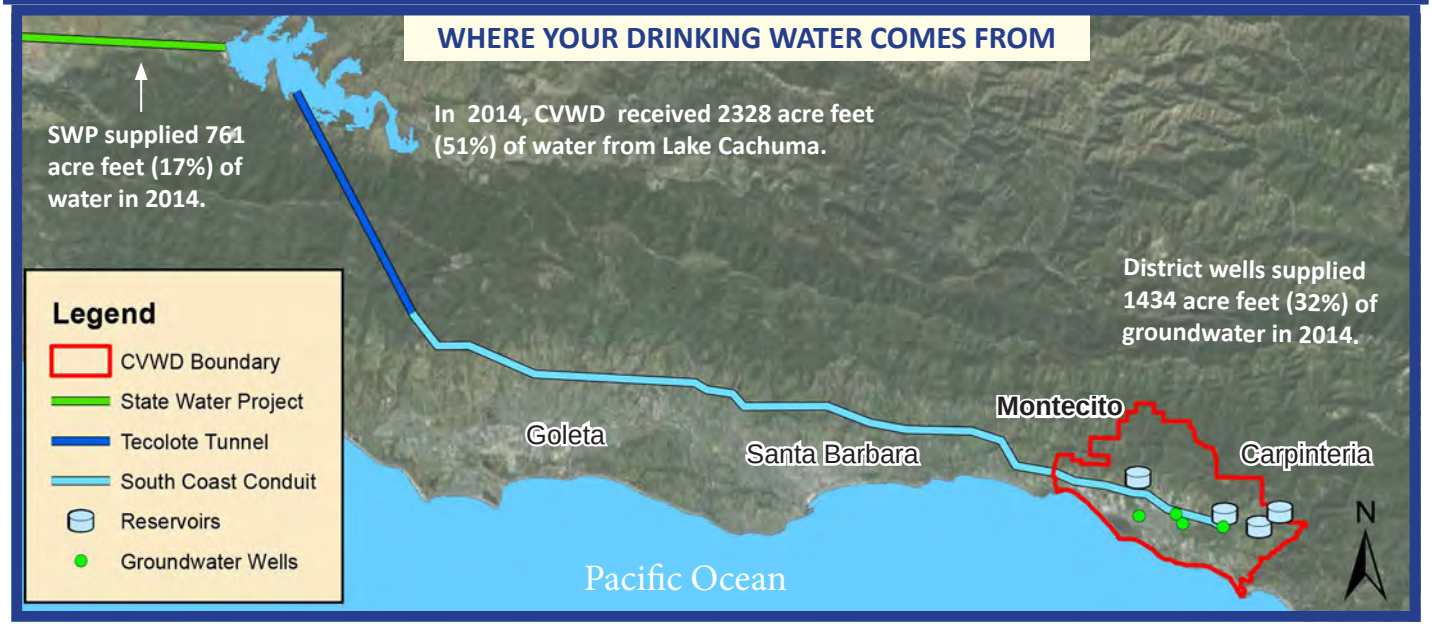


Image courtesy of ESRI

FREQUENTLY ASKED QUESTIONS

Is my drinking water pure?
Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1-800-426-4791.

How can I know that my drinking water is safe?
In order to ensure that tap water is safe to drink, USEPA and the California Department of Health Services (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that must provide the same protection for public health.

Is there a risk to Immuno-compromised persons?
Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

What types of contaminants can be found in drinking water, including bottled water?
The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water (prior to treatment) include:

Microbial contaminants, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

Pesticides and herbicides, that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, animal waste, fertilizer and farming operations.

Organic chemical contaminants, including synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities.

I have a water softener, what is the District's water hardness range?
The District's water has a hardness range of 19 to 25 grains per gallon. One grain per gallon equals 17 milligrams per liter.

Succulents planted a year ago in the District's leaking water fountain have flourished with minimal watering.

SOURCE WATER ASSESSMENT

The Source Water Assessment for Carpinteria Valley Water District was completed in 2012. A copy of the complete assessment is available at the Carpinteria Valley Water District Office, 1301 Santa Ynez Ave., Carpinteria, CA 93013.

BOARD MEETINGS

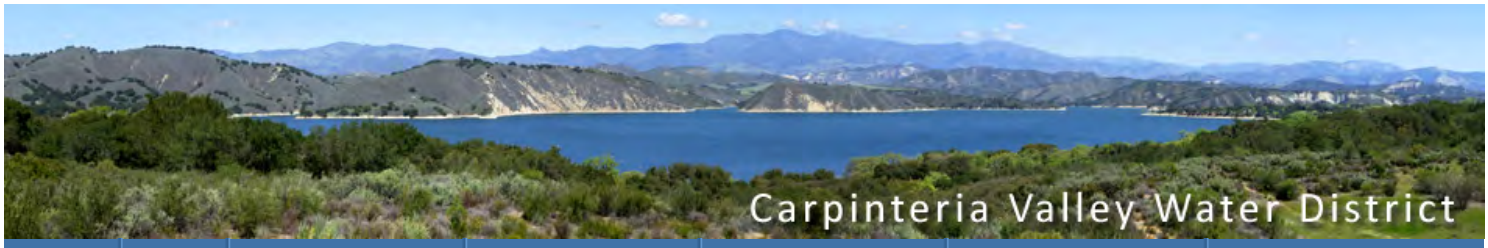
Carpinteria Valley Water District is governed by a five member Board of Directors elected by you, the customers. The Board meetings may be held on the second and fourth Wednesday of every month at 5:30 p.m. at Carpinteria City Hall, 5775 Carpinteria Avenue.

The Board may also hold regular meetings other Wednesdays of the month at 5:30 p.m. at the District Offices, 1301 Santa Ynez Avenue.

The Board agenda is posted by the front door of the office three days prior to the meeting and on the District website, **cvwd.net.**

Appendix J

Examples of District Public Education Materials



PAY YOUR BILL ONLINE

SIGN UP FOR E-BILLING

In case of emergency, please call 805-684-2816. If you do not reach a live person, please call 805-564-2577.

DROUGHT INFORMATION

REBATES

REPORT WATER WASTE

Follow us on Facebook

AGRICULTURE

Residental | Commercial | Agriculture

Water availability and costs are an important consideration in the Carpinteria Valley. Efficient irrigation methods and scheduling are instrumental to maximizing water use efficiency. The following programs and services are available to CVWD Agricultural customers to help them attain maximum water use efficiency and eliminate water waste.

CVWD Soil Map

Free Agriculture Irrigation Evaluations
For a limited time, the Cachuma Resource Conservation District Mobile Irrigation Lab Program is offering free onsite assessments of agricultural operation irrigation systems. An irrigation specialist will review the system and provide recommendations to improve performance. View or download flyer here.

Free Technical Assistance for Avocado & Citrus Growers
The Cachuma Resource Conservation District is offering free technical assistance and funding is available for qualified improvement projects. View or download flyer here.

State Water Efficiency and Enhancement Program (SWEEP) Grants
This grant helps to implement on-farm irrigation savings that reduce energy use resulting in greenhouse gas (GHGs) emission reductions and water savings. Grant applications are due by Friday, January 8, 2016. Attend the free workshops and webinar. View or download flyer here for more information. Download application and view Frequently Asked Questions here..

For Ag Irrigation Evaluation or Technical Assistance Programs, contact Jamie Whiteford at (805) 764-5132 or Anne Coates at (805) 455-2820.

California Irrigation Management Information System (CIMIS)
This service provides current reference evapotranspiration (ET) data to help you maintain the most efficient irrigation scheduling.

You may access current Eto data by calling the toll-free CIMIS Hotline for Santa Barbara County. The Hotline is updated each weekday by 9:00 am with Eto data for the previous seven days for each CIMIS weather station in Santa Barbara County.

Toll-free CIMIS Hotline for Santa Barbara County: 1-888-246-4728

You may become a CIMIS user by acquiring a password to access the centralized CIMIS computer in Sacramento, using a computer modem. You can have a password assigned to you by calling 1-800-922-4647. Access to the CIMIS computer database is free of charge.

You can access Eto data for the last seven days, or monthly averages for the last eleven months here.

Free Hydraulic Pump Tests
Southern California Edison offers free hydraulic pump tests. For information on pumps and SCE's Pump Test Program, click here.

Rquest a Pump Test.

For more information about water conservation, email info@cvwd.net or call (805) 684-2816 ext. 116.

USDA Natural Resources Conservation Service - California
NRCS works with landowners through conservation planning and assistance designed to benefit the soil, water, air, plants, and animals that result in productive lands and healthy ecosystems. For more information, click here.

Hillside Orchard Drainage Video
Solutions to manage stormwater, irrigation and erosion issues throughout hillside farm.

Cachuma Resource Conservation District (CRCD)
Your Local Partner in Conservation

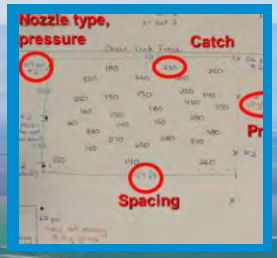
Mobile Irrigation Lab (MIL)

What is the Mobile Irrigation Lab Program?

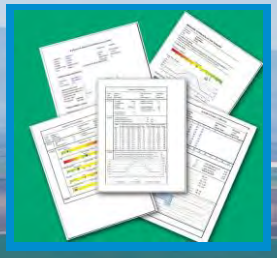
The CRCD MIL Program is staffed by irrigation specialists who will conduct an onsite assessment of your operation's irrigation system.

Review System

Collect Field Data



Analyze System Data



Provide Report

Why Should You Schedule an Irrigation Evaluation?

- Evaluations are Recommended every 3-5 years to...
- ...Improve Crop Production
- ...Stay Ahead of Regulations
- ...Limit Environmental Impacts
- ...Conserve Water and Energy
- ...Demonstrate Sustainability
- ...Save You Time and Money!

"The Cachuma Resource Conservation District is an equal opportunity provider and employer."
Cachuma Resource Conservation District | 920 E. Stowell Rd. Santa Maria, CA 93454
jamie.k.whiteford@gmail.com | 805-764-5132 | acoates@rcdsantabarbara.org | 805-455-2820

FREE TECHNICAL ASSISTANCE FOR

AVOCADO & CITRUS GROWERS

offered by the Cachuma Resource Conservation District

Irrigation Assessments

Nutrient Budgeting

Conservation Practices

$ Funding is available $
for qualified improvement projects

For program details contact the Cachuma Resource Conservation District (CRCD)

Jamie Whiteford 805.764.5132 jamie.k.whiteford@gmail.com

Anne Coates 805.455.2820 acoates@rcdsantabarbara.org

Funding is limited. Technical Assistance is available to all growers in Santa Barbara County. Mobile Irrigation Lab (MIL) program funds are provided in full or in part by

Cachuma Resource Conservation District • 920 E Stowell Road, Santa Maria, California 93454

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

SCE Energy Conservation Series

Pumped and Primed to Save Energy

The information in this guide is valuable to any of our customers that operate a pumping plant to irrigate crops, landscaping or turf grass, supply water for domestic use or who provides water to an industrial process.

Annual energy costs represent a significant percentage of operating expenses for most agricultural businesses and municipalities—sometimes as much as 60 to 70%. A significant portion of that comes from the energy required to irrigate farmable and municipal lands, parks and other public places.

Knowing and understanding your Overall Pumping Plant Efficiency will help you manage your energy costs much more effectively. We have compiled this handy guide to help you in that effort.[1]

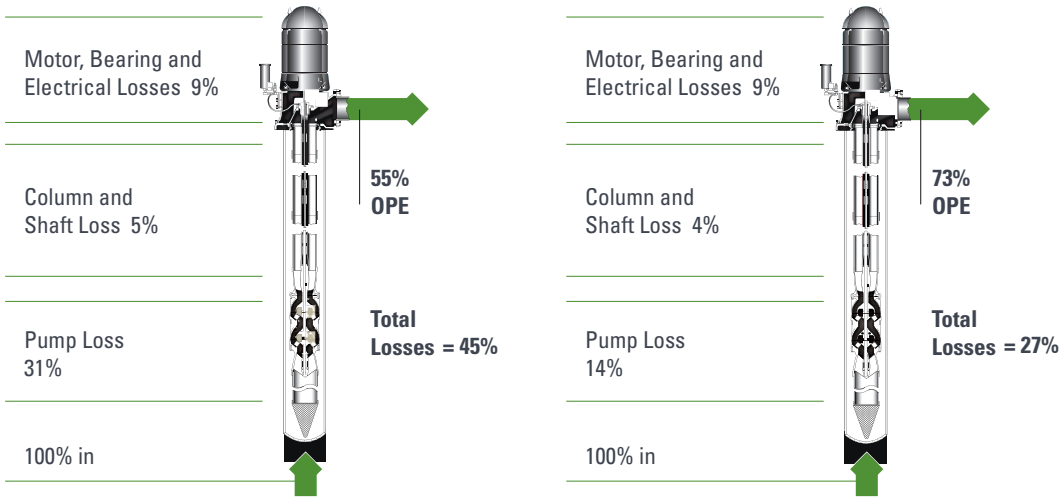
Pumps and Pumping Plants: What's the Difference?

Before exploring the fundamentals of improving pump efficiency, it is important to understand the difference between a pump and the pumping plant.

The pumping plant is more than just the pump. It encompasses the pump **plus** motor equipment and controls, including all associated fittings from the water source through the pump to the discharge into the distribution system.

What Factors Affect Pump Performance?

To ensure your pumps are capable of irrigating or supplying water effectively–and that you're not wasting energy– it is critical to routinely evaluate your pumping plant's operating efficiency, as many "working" pumps are nonetheless not working well.



***Efficient Versus Inefficient Pumping Plants*[2]**

Pumping plants can lose efficiency at many stages throughout the system.

[1] *Pump Testing and Hydraulic Services Manual*, 2012.
[2] Ibid.

A pump's performance is affected by a variety of factors:

- ✔ Type, size and condition of pump
- ✔ Pump speed plus total head or pump pressure
- ✔ Condition of the well
- ✔ Conversion of mechanical energy (pump) to water-energy (water flow), motor efficiency, and power efficiency
- ✔ Water flow efficiency through pipes, fittings, valves, etc.

Overall Pumping Plant Efficiency (OPE) and Why It's Important

Overall Pumping Plant Efficiency is an important metric for all operators to know. It represents the relationship between the power consumed in kilowatts and acre feet of water delivered in gallons per minute. It's normally expressed as a percentage of how much horsepower is needed by the pumping plant, higher percentages indicating greater pump efficiency.

$$\frac{\text{Output HP}}{\text{Input HP}} = \text{OPE}^{3}$$

Making system changes to improve OPE can help you:

- Lower current pumping requirements with conscientious pumping-system management
- Reduce total energy use, which saves money
- Track trends for budgeting
- Foresee potential problems

Did You Know?

The **annual cost of energy** represents a significant percentage of operating expenses for most agricultural businesses and municipalities—sometimes as much as **60 to 70%**!

Only Testing Will Tell

Improving OPE could result in significant energy and energy cost savings (see accompanying charts)[4]. But OPE can only be measured by a formal pump test. For this reason, we offer a program that will test your pumps free of charge.

	Inefficient Pump	Efficient Pump	Savings
Overall Efficiency	55%	73%	
kWh/Acre Ft.	649	511	138
Acre Ft./Year	822	822	
Annual kWh	533,472	420,000	113,472
Cost per year @ $.11/kWh	$58,682	$46,200	$12,482

Potential Annual Savings for Improving Overall Pumping Plant Efficiency[5]

	Inefficient Plant	Efficient Plant			Payback
	Annual Cost @ 55% OPE	Annual Cost @73% OPE	Annual Operational Savings	Replacement Cost	Yearly
Year 1	$58,682	$46,200	$12,482	$25,000	($12,518)
Year 2	$58,682	$46,200	$12,482		($36)
Year 3	$58,682	$46,200	$12,482		**$12,482**
Year 4	$58,682	$46,200	$12,482		**$12,482**
Year 5	$58,682	$46,200	$12,482		**$12,482**
5 Year Totals	$293, 410	$231, 000	$62,410	$25,000	**$37,410**

5-Year Comparison: Inefficient vs. Efficient Overall Plant Efficiency[6]

[3] *Pump Testing and Hydraulic Services Manual*, 2012.
[4] Ibid.
[5] Ibid.
[6] Ibid.

Job One: Choose the Right Pump for the Right Application

Matching the pump to the task is the first step in ensuring you're operating efficiently and making the best use of energy.

The principal pump type utilized in agriculture is the centrifugal pump, which works by adding kinetic energy to a fluid through a spinning impeller, much as a fan blows air. The type of centrifugal pump needed for the job should be based on the water and pumping requirements.

Turbine Pump:

The smaller diameters found in turbine pumps make them more suitable for shallow or deep-pumping applications. What's more, their more compact design affords greater flexibility for ease of maintenance and reconfiguration.

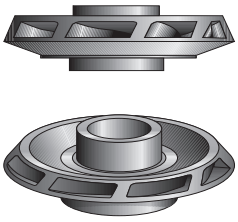
Submersible Pump:

Features a waterproof electric motor connected directly to a turbine pump. They are typically used when the space above ground is at a premium or straight-line access to the water source is not possible. They are also much quieter than above-ground pumps.

Horizontal Pump:

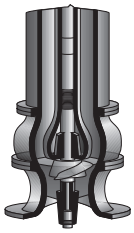
Relatively simple in design and inexpensive, horizontal pumps are centrifugal boosters that are not used for well applications.

Each of these pumps can employ different impellers depending on the application.



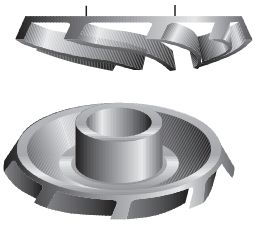
Radial Flow Impeller:

Produce generally high pressures at lower flows and are most often used in booster pumps, horizontal centrifugal pumps and deep well applications.



Axial Flow Impeller:

Provide very high flows at relatively low pressure and are typically used in canal lift pumps, where water flows in a straight line



Mixed Flow Impeller:

Helps water flow through and out of the impeller at an angle less than 90°

Did you know?

Well pumps that pump a lot of sand-filled water **should be tested yearly. Booster pumps** supplied by clean water should be tested every **three years**.

The Importance Of Regular Pump Testing

As explained earlier, a key stepping stone to better energy management is improving OPE, which can only be determined by way of a formal test. Pumps should be tested every one to three years, depending on the annual usage and severity of operating conditions.

Regular pump testing can reveal:

- ✔ How efficiently the pump itself is working
- ✔ How well the pump management system is working including the controls and various other fittings
- ✔ If the pump is using energy most efficiently
- ✔ The potential for more serious problems
- ✔ If you have the correct type of pump in place for the job

SCE's Free Pump Test Program Can Help

Because of the impact of OPE on energy demand across the State of California, we conduct complete and accurate efficiency tests on water pumps. Indeed, the overarching goal of our Pump Test Program is to help operations like yours make the most efficient use of every kilowatt of electricity to save energy and money.

You'll also be interested to know that we frequently offer energy efficiency cash incentives and rebates applicable to pump plant operations.

Talk to your Account Manager about the availability of incentives and rebates in your area.

What We Measure

Our free Pump Test Program measures various aspects of your pump(s) while in operation to determine Overall Pumping Plant Efficiency:

- ✔ Rate of flow
- ✔ Total head
- ✔ Power input to the pumping plant

When your pump test is completed, you'll receive a report showing how your pump is performing—including your OPE, how much your OPE can be improved plus how much you could save on energy costs.

Designing and Maintaining an Efficient System

The performance of your pumping system is determined by many things including its basic design and configuration. That may include the type of motors used, the size of the piping, pumping pressure and more.

Making sure the system is designed correctly from the start —or properly redesigned if necessary—will prove to be cost-effective over time, and could have an immediate positive impact on the cost and use of energy.

Potential Energy Savings: Standard- Versus Premium-Efficiency Motors[7]

For more information, visit the U.S. Department of Energy's Best Practices website at eere.energy.gov.

Motor HP	Standard Efficiency Motor	Annual kWh 6000 Hours Operation	Premium Efficency Motor	Annual kWh 6000 Hours Operation	Energy Savings kWh/Year	Energy Savings $/Year
25	90	93,240	93.9	89,339	3,901	**$429**
50	91.2	184,070	94.8	177,132	6,938	**$763**
100	92.7	362,038	95.4	351,813	10,225	**$1,125**
150	93.1	540,992	95.8	525,407	15,585	**$1,714**
200	93.5	718,630	95.8	700,470	18,160	**$1,998**
250	94.2	886,969	96.0	874,219	12,750	**$1,403**

The following system elements should be given careful consideration:

- ✓ **Energy-Efficient Motors:** Motors are an essential part of your pumping system. But some are more energy-efficient than others. Purchasing a new high-efficiency motor may be more economical overall than repairing a damaged motor when you factor in energy savings. In fact, as the accompanying chart shows, a premium-efficiency motor could save you hundreds of dollars in energy costs each year.
- ✓ **Variable-Speed Drives (VSDs):** For systems with oversized pumps or varying loads, consider installing a VSD. VSDs improve a pump's performance by changing its rotational speed to better match the pumping load. A VSD-controlled pump can maintain pressure when the flow is changing, or constant flow when the pressure is changing. In either case, the result is optimum productivity with reduced energy usage compared to valve throttling or bypassing.
- ✓ **Excessive Pumping Pressure:** Excessive pumping pressures not only make your pumping system work inefficiently; they also waste energy. Several different things could cause this:
  - A defective booster pump control and valves
  - Pumping against a higher head than is needed to move water (false head)
  - Supplying water at a pressure exceeding state regulations

Check your pump pressures regularly to see that they meet but do not exceed requirements.

- ✓ **Piping System Friction Losses:** Pipelines should be sized to keep fluid velocities and total head losses at acceptable levels. Indeed, the best pump system designs balance capital expenditures for piping with treatment requirements, system requirements and overall energy consumption.
- ✓ **Well Conditions and Pumping Costs:** Well performance can also impact Overall Pumping Plant Efficiency along with pumping costs.

  Well-specific capacity—the well flow rate divided by the drawdown for that flow rate—is influenced by such elements as aquifer conditions, well casing diameter, the well screen and more.

  Your well performance will generally degrade with time due to a variety of causes. Well screens can corrode or encrust with various deposits that reduce flow openings into the well; and gravel packs can also become plugged with silt. Attempting to pump too much water by using too big a pump for the aquifer also results in low well-specific capacity.

  Consult with your pump dealer and/or well driller if the pump test history reveals significant reduction in well-specific capacity over time.

Automated SCADA System Saves You Time and Energy

By automating key pump plant operations, an innovative Supervisory Control and Data Acquisition (SCADA) has the potential to maximize your pumping system savings with a minimal use of manpower.

SCADA consists of a central control panel that monitors the entire pumping system. An override feature allows authorized

[7] *Pump Testing and Hydraulic Services Manual*, 2012.

employees to vary the operating schedule at any time or make across-the-board adjustments to different areas.

The SCADA system can be a very smart investment for most any type of operation, providing a payback of less than two years in many cases. Be sure to ask your Account Manager about this innovative solution.

By Conserving Energy, We All Win

For more than 100 years, we've been dedicated to helping communities and other enterprises by providing reliable and affordable power plus energy-saving insights.

As this guide shows, choosing the right pump, plus regular pump testing, maintenance and best practices is good for your business, and everyone who depends on the electrical grid.

Apply for SCE Energy Efficiency Solutions

We offer a variety of programs that can help you address problem areas and lower your energy costs, many of which include incentives such as hardware and more.
Visit sce.com/solutions or call 1-800-736-4777.

Contact Our Pump Testing and Hydraulic Services Department

We offer a variety of services to assist you. **Schedule a pump test at on.sce.com/pumptest** or visit one of our Education Centers:

Tulare
4175 South Laspina Street
Tulare, CA 92374
1-800-772-4822

Irwindale
6090 North Irwindale Avenue
Irwindale, CA 91702
1-800-336-2822

Additional Resources

Hydraulic Institute
pumps.org

SCE for Agricultural and Water Businesses
sce.com/agriculture
sce.com/water

Pump Testing and Hydraulic Services Manual. SCE, 2012.
energy.gov/eere/amo/ta

Interested In Learning More?

Choose from the many topics in our Energy Conservation Series:

- LED Lights: A Bright New Way to Conserve Energy
- Plug In To Greater Energy Savings— With Smart Plug Load Management
- Switch To a More Energy-Efficient Business—With Smart Lighting Controls
- Manufacturing Motors & Compressors: Start Your Energy-Efficient Engines
- On the Menu: Major Energy Savings With Restaurant Refrigeration
- Energy Efficiency Is In the Air: Optimizing Your HVAC
- Energy Efficiency Is In the Air: Optimizing Your HVAC

May 2012

Carpinteria Valley Water District

H_2KNOW

Renew Your Participation in CVWD's Lifeline Customer Assistance Program

Are you currently enrolled in the District's Lifeline Customer Assistance Program? Would you like to continue receiving the monthly discount? If yes, then please submit a copy (April or May 2012) of your Southern California Edison, Gas or mobile home park (MHP) bill indicating your participation in their **CARE** program. **Submittals must be made by June 20, 2012** to ensure continued participation in CVWD's Lifeline Program. **Retroactive discounts will not be applied for submissions received after June 20th.**

Not a current Lifeline Program participant, but qualify? Simply bring in your Edison bill, Gas or MHP bill, which indicates that you are a CARE participant (page 3 of Edison bill), to enroll in the District's program. **The CARE participant's name must be the same as the name indicated on the water account.**

Prop 218 Hearing and Budget Adoption Schedule

The Board of Directors of the Carpinteria Valley Water District will hold a public hearing to consider increases in its Water Rates and Charges beginning with the July 2012 billing period. Below are the scheduled dates for the Prop 218 Hearing and Budget Adoption.

Prop 218 Hearing
Carpinteria City Hall
5775 Carpinteria Avenue
Wednesday, May 30, 2012 at 5:30 p.m.

Budget Adoption
Carpinteria City Hall
5775 Carpinteria Avenue
Wednesday, June 13, 2012 at 5:30 p.m.

The public is encouraged to attend!

May is Water Awareness Month

This May, take an on-line Home Water Survey at

https://www.surveymonkey.com/s/HomeWaterSurvey

and get your choice of a free low-flow showerhead, low water using garden nozzle or garden-wise CD.

Memorial Day Holiday

The District will be **closed Monday, May 28th** in observance of the Memorial Day Holiday.

In case of emergency, call (805) 684-2816.



Free Water Efficiency Workshop for Agricultural Customers

Wednesday, June 13, 2012
8:30 a.m. to 12 p.m.
Carpinteria Lions Park & Event Center
6197 Casitas Pass Rd, Carpinteria

Speakers include:

Ben Faber, PhD. - UC Cooperative Extension Farm Advisor
Topic : Making the System Work Right

Robert Fasteneau - Dept of Water Resources, CIMIS Division
Topic : What is CIMIS and how to use it for irrigation scheduling

Kevin Peterson - Cachuma Resource Conservation District, Mobile Lab
Topic : Ag/Urban Irrigation Mobile Lab Program

To RSVP or for more information,
contact Rhonda at 805-684-2816 ext. 116 or rhonda@cvwd.net

Board of Directors Meetings

Regular Board meetings may be held on the second and fourth Wednesday of every month at 5:30 pm at Carpinteria City Hall, 5775 Carpinteria Ave. The Board may also hold regular Board meetings other Wednesdays of the month at 5:30 pm at the District Offices at 1301 Santa Ynez Avenue.

Visit **www.cvwd.net** for new and updated information.

June 2012

Carpinteria Valley Water District

H_2KNOW

The District will be **closed Wednesday, July 4th** in observance of the **Independence Day Holiday**.
In case of emergency, call (805) 684-2816.

Heard About the Recent Water Emergencies in Gobernador Canyon and on Shepard Mesa??!!

No, there weren't any….unless you were in the shoes of District employees Greg Stanford, Lance Edmondson and Omar Castro. Their emergency began on Monday, June 11 at 9:40 a.m. after an Edison meter meltdown affected the Water District's pumps and motors for Lateral 30 to Gobernador Canyon and Shepard Mesa. District motor and pump # 1 immediately failed (and eventually had to be removed and re-wound in Ventura). And Lance, Greg and Omar worked until 2 a.m. the next morning in conjunction with Edison until the power company disabled its power transformer.

Then at 10 a.m. on Wednesday, June 13, District pump and motor #2 failed (and is in the process of being rewound in Ventura).

Fortunately, pump and motor #3 did not fail, and was able to run on the District's diesel fuel powered emergency generator until 2 p.m. on Friday, June 15 when Edison installed a new meter, a new and larger transformer and new leads and restored power.

Greg and Lance worked until 7:30 p.m. that Friday to install the newly re-wound motor for pump # 1.

Had the District's back-up generator system not worked, or failed, the District would have had to take water from its emergency connection with Casitas Municipal Water District and notify all residents of the problems associated with chloraminated water.

Carpinteria Valley Water District, as a public health and safety utility, requires its Field employees to respond to emergencies, big and little, at all times. The District always has one employee on-call to respond 24 hours a day, seven days a week. Most of the District's emergency service call-outs go unnoticed by the general public.

Shown in the pictures below are Water Treatment Foreman Greg Stanford and Treatment Operator Lance Edmondson installing the rewound motor #1. Lance had been making twice daily trips until then to keep the diesel fuel tank full.

Water Efficiency Workshop for Ag Customers

Pictured standing at left is Ben Faber, UC Cooperative Extension Farm Advisor speaking at the District's June 13th, Water Efficiency Workshop for Agricultural customers. Other speakers included Robert Fastenau with the Department of Water Resources - CIMIS Division and Kevin Peterson with the Cachuma Resource Conservation District, Mobile Lab Program. Approximately 25 area farmers attended the event which focused on water efficient irrigation methods, technology, and programs available to farmers.

Board of Directors Meetings

Regular Board meetings may be held on any given Wednesday of every month at 5:30 pm at Carpinteria City Hall, 5775 Carpinteria Ave. They are typically held on the second and fourth Wednesdays.

Visit **www.cvwd.net** for new and updated information.

Fresh clean drinking water is yours to use whenever you need it, but not to waste. Remember that a little effort and common sense will make a big difference.

Following the tips in this folder can save thousands of gallons of water every year in every household. If you see water being wasted in your own home, tighten up. If you see it being wasted anywhere else, speak up.

Slow the Flow...

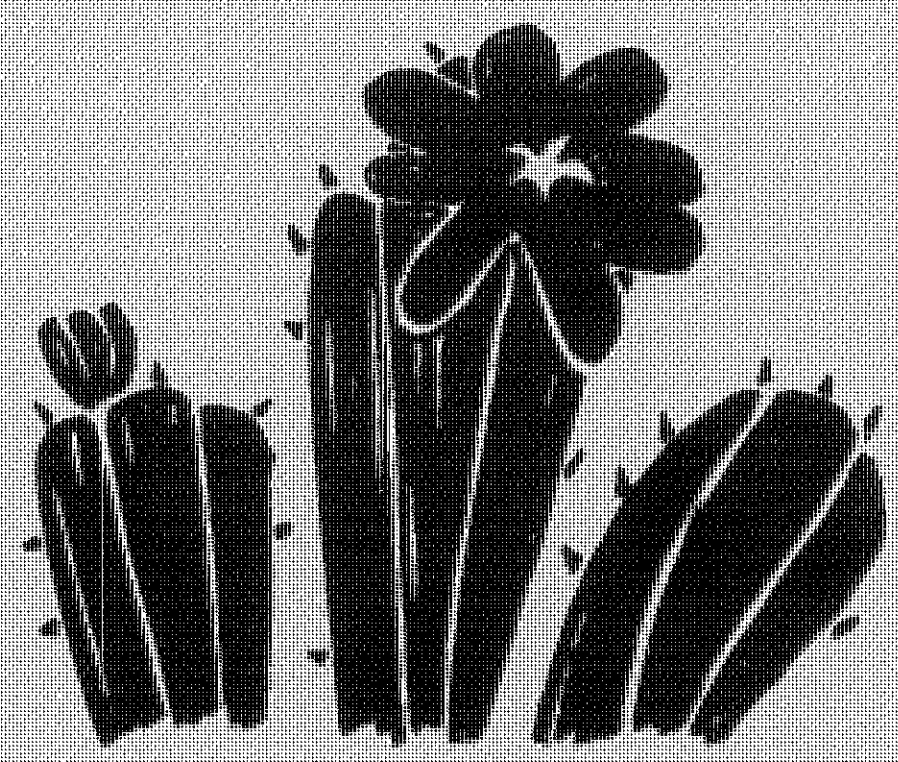
Make Every Drop Count!

CARPINTERIA VALLEY WATER DISTRICT

1301 Santa Ynez
Carpinteria, CA 93013
(805) 684-2816

Saving Water Since 1941

HOME WATER CONSERVATION



A Word About Outside the House

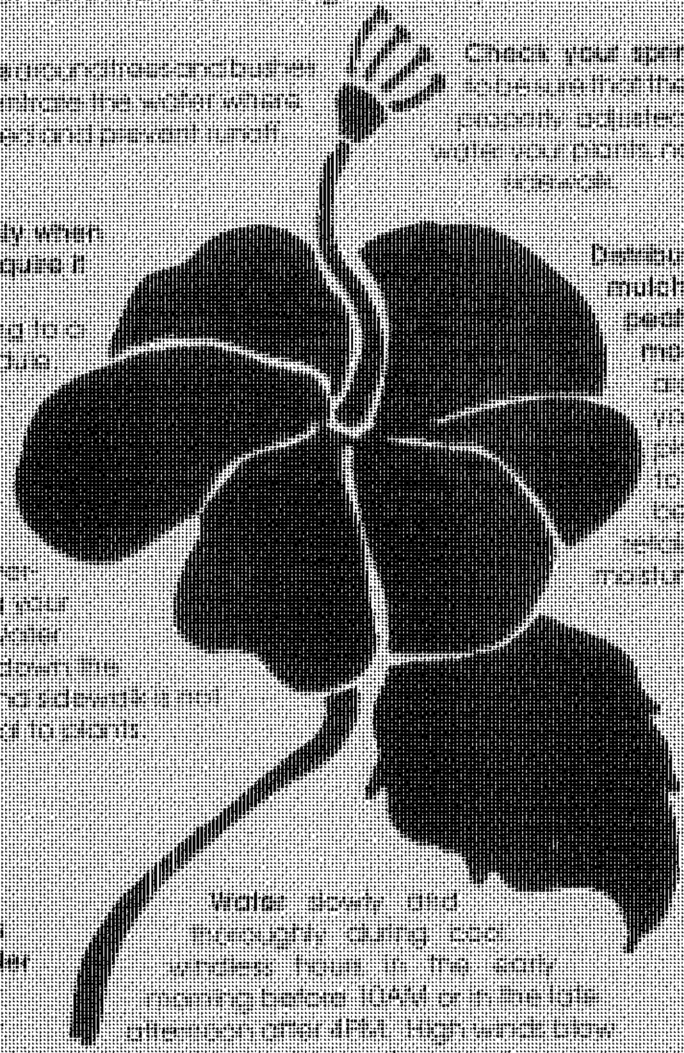
Water Awareness

Save Water While Gardening

Select California native and Mediterranean climate plants and shrubs which require small amounts of water. Ask at your nursery for a list of plants which use less water. Consider alternatives to big, thirsty lawns.

Dig basins around trees and bushes to concentrate the water where it is needed and prevent runoff.

Check your sprinklers to be sure that they are properly adjusted and water your plants, not the sidewalk.



Water only when plants require it and not according to a set schedule.

Distribute mulch or peat moss around your plants to better retain moisture.

Set a timer to avoid over-watering your lawn. Water running down the gutter and sidewalk is not beneficial to plants.

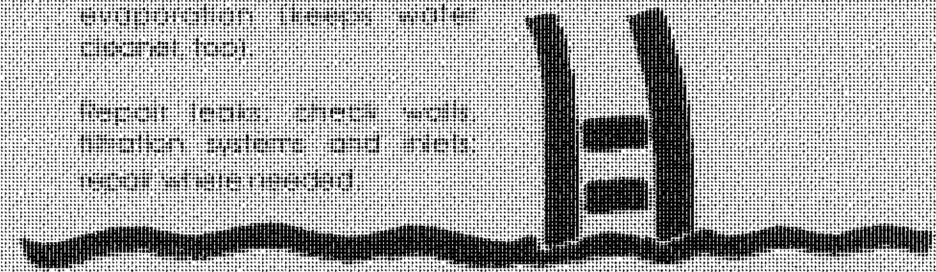
Let grass grow taller in hot weather.

Water slowly and thoroughly during cool windless hours in the early morning before 10AM or in the late afternoon after 4PM. High winds blow away the water and prevent proper coverage.

POOL

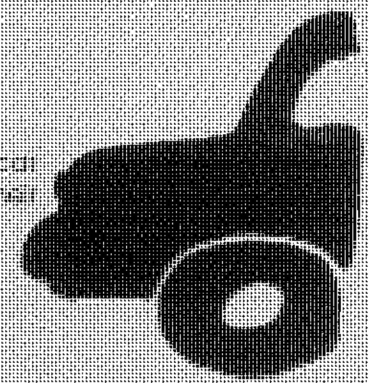
Keep level low to minimize splashing. Use a cover to slow evaporation (keeps water cleaner, too).

Repair leaks; check walls, filtration systems and inlets; repair where needed.



CAR

Take your car to a car wash that recycles their water.



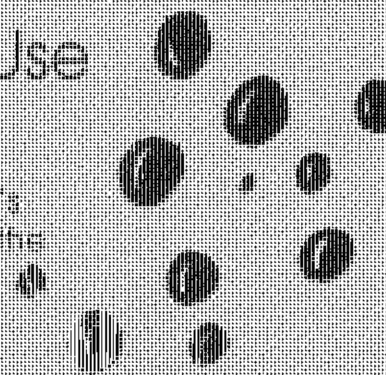
DRIVEWAY, WALKWAYS

Use a broom or rake instead of water to remove leaves, clippings and debris.

Inside Water Use

Bathroom

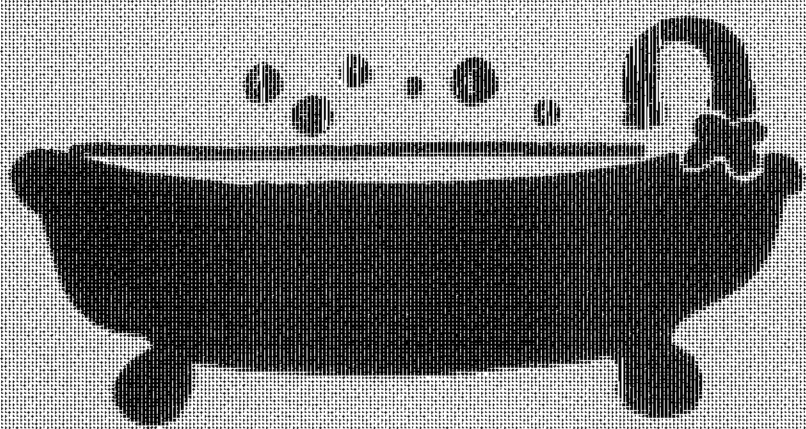
This is where most of the home's water is used, about 45%, so it's the place where you can save the most.



SHOWERING

Reduce the amount of time you spend in the shower. Set a timer, and keep the shower short for every family member. Shortening your showers by five minutes can mean a savings of 20 to 40 gallons of water. Installing a low flow showerhead with a shut-off valve can save you even more.

In the shower, a lot of water can be wasted while soaping up. Wet down, turn off the water, soap up and then turn the water on for rinsing.



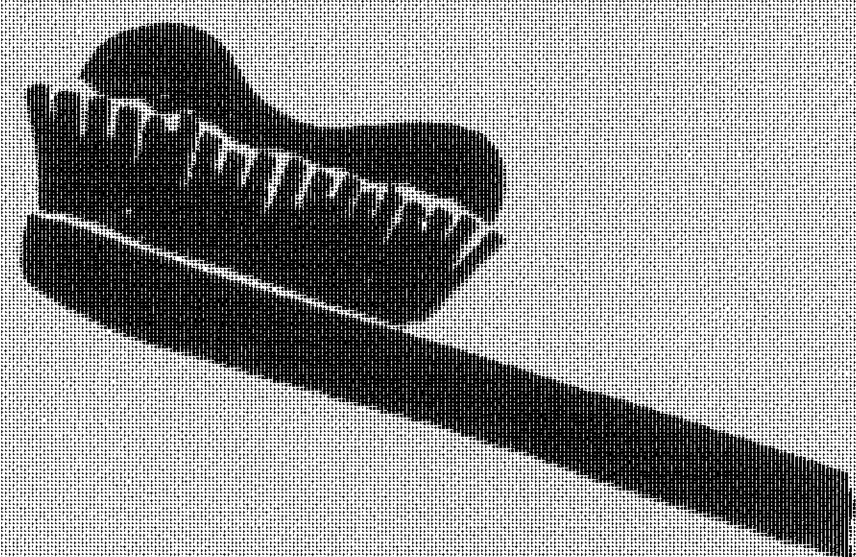
BATHING

Try washing both of your youngsters in the same tub of water if they are not too dirty. Saves water and is fun for the kids. Re-use bath water to water plants and for heavy cleaning jobs.

BRUSHING

Turn the water on to wet the brush. Turn the water off while giving the teeth a good brushing. Fill a glass to rinse your mouth and wash the brush. This can mean the difference between using a pint of water and wasting several gallons.

Make sure you have an aerator on all sink faucets.



TOILETS ARE WATER WASTERS

A well maintained toilet can mean a big water savings. Usually a 100 gallon a day toilet leak is not noticeable. Use a few drops of food coloring or toilet tablets in the tank and wait for 15 minutes. If the toilet is leaking, the water in the bowl will change color. A bad leak can send thousands of gallons silently down the drain. Silently, that is, until you receive your water bill.

Use a waste basket for disposing of facial tissues. Remember, saving one flush is worth five to seven gallons of water in a standard toilet.

DO NOT use a brick in your toilet tank — it may disintegrate and cause problems in your lines. Instead, consider installing a low-flow toilet that uses 1.6 gallons per flush.

Kitchen

COOK AND SAVE WATER

Boiling requires very little water if you use a tight-fitting lid to conserve moisture. Consider steaming vegetables, that way saving all the vitamins and minerals, too. But if you do boil vegetables, save the water for soups and sauces -- they will be tastier and more nutritious.

Remove ice cubes from the freezer a few minutes before you need the ice. The cubes will loosen at room temperature and save several quarts of water if not run under the tap. Don't quick thaw meats under the faucet either.

WASHING DISHES BY HAND

Scrape dishes, but don't pre-rinse. Soak pots and pans before washing. Instead of running water continuously, fill wash and rinse basins with water. Use minimum amount of detergent. Add vinegar (1/4 to 1/2 cup) to dishwater to prevent grease from clinging to dishes, pots and pans.

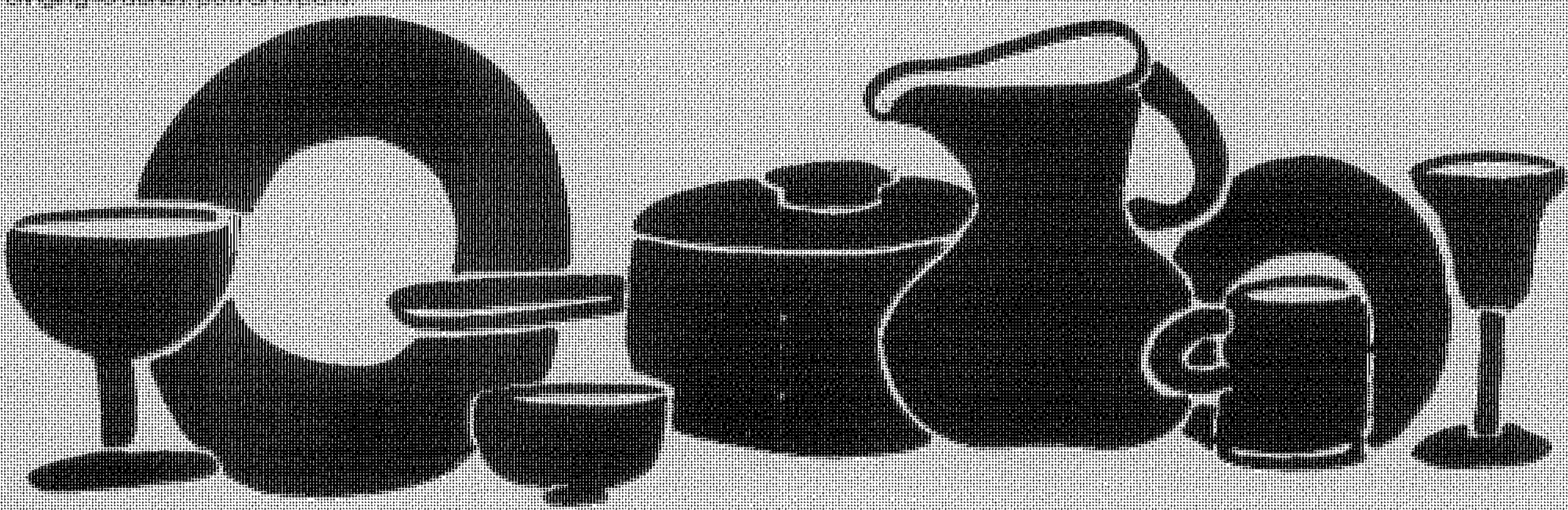
DISHWASHER

Do only full loads. Avoid using extra cycles.

Choose a water saving model. Some dishwashers use up to 25 gallons of water a cycle while newer models may use only 10 gallons. If you are buying a new dishwasher, shop around to find the machines that use less water per cycle and are more efficient.

Repair leaks.
Inspect all connections to be sure they're tight and dry.

Many automatic dishwashers do not require rinsing dishes before loading the machine, but if yours does, pond water in the sink and soak them.



Kitchen

The kitchen is an excellent place for conservation. Be especially conscious of running water and develop the habit of shutting off the tap whenever possible.

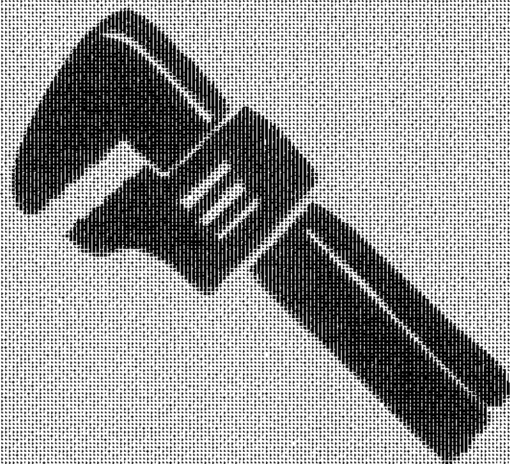
SINK

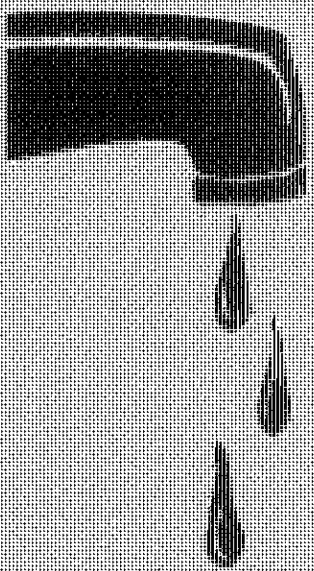
Repair leaks.

Check faucets and pipes for leaks.

Repair washers, repair or replace fixtures if necessary.

Use an aerator or flow restrictor in faucet.





USE YOUR REFRIGERATOR TO **SAVE WATER**

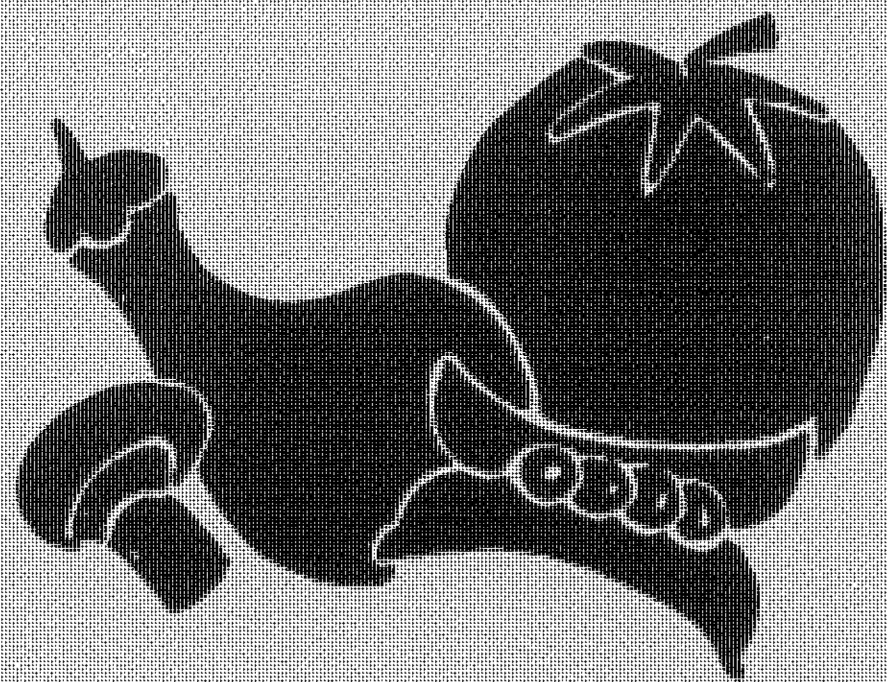
For very young children, keep cups half filled with water in a low, convenient place.

Drink water for good health, but don't waste water by trying to run it cool at the faucet. Fill a container and cool it in the refrigerator. This makes tap water taste better also.

Make Every Drop Count

Save water by accumulating food cuttings in the drain area and only switching on the garbage disposal when it is full. Using left over wash water when you run the disposal will save more of our drinking water.

Each time you need water to wash dishes, scrub vegetables, wash your face, shave, handwash clothes, and many other cleaning jobs, put the stopper in the sink and pond the water you need rather than letting it run down the drain. This habit alone will save as much as five gallons a minute.



Household Cleaning

For every job that uses water, there is a way to economize.

REGULAR CLEANING

Use a pail or basin instead of running water. Use a sponge-mop instead of a string mop. It uses less water for mopping and takes less water to keep the mop clean.

LAUNDRY

More than 10% of all water used in the home is used in the washing machine, so even a small investment of time and money can pay off in the long run. Washing machines use 30-55 gallons per load. Use the load selector to match the water level to size of the load. If there is no selector, do only full loads. Presoak heavily soiled items. Always use a minimum amount of detergent.

Re-use water

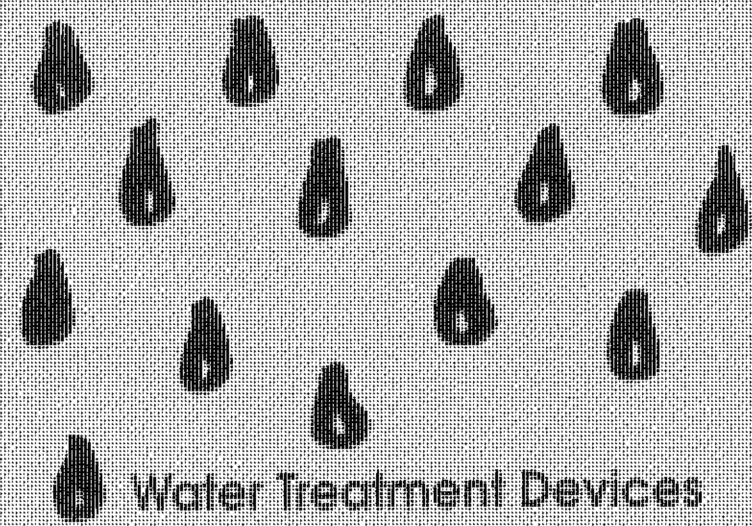
For many laundry and household cleaning jobs, a low-sudsing, biodegradable detergent will result in cleaner rinse water which can be used again.

HEAVY CLEANING

Presoak grills, oven parts, etc., overnight. Wash with an abrasive scrub brush or pad and use plenty of elbow grease to minimize water use.

Repair Leaks

Check faucets and hose connections for leaks. Repair or replace when necessary. Inspect pipes for pin hole leaks, leaking joints, etc.



Water Treatment Devices

Although California's public water is safe and meets all State and Federal Health Standards, some residents have installed water softeners and drinking water filters at their homes and businesses. The amounts of water that water softeners and reverse osmosis systems use in their normal operations is a concern as our area has so little water to spare.

If you own or rent a water softener or R.O. system, there are several things you can do to minimize the amount of water used in their operation.

1. Contact your dealer or the manufacturer to assure the water softener regeneration is only taking place as needed. Get a softener that regenerates when necessary instead of by the clock. This could save thousands of gallons of water.

2. Contact your dealer or the manufacturer to arrange for the installation of an automatic shut-off valve on your reverse osmosis system. The shut-off valve will reduce the amount of water used in production of the reverse osmosis drinking water.

3. Consider alternatives to your choice of water treatment equipment. Newer equipment may be more water efficient.

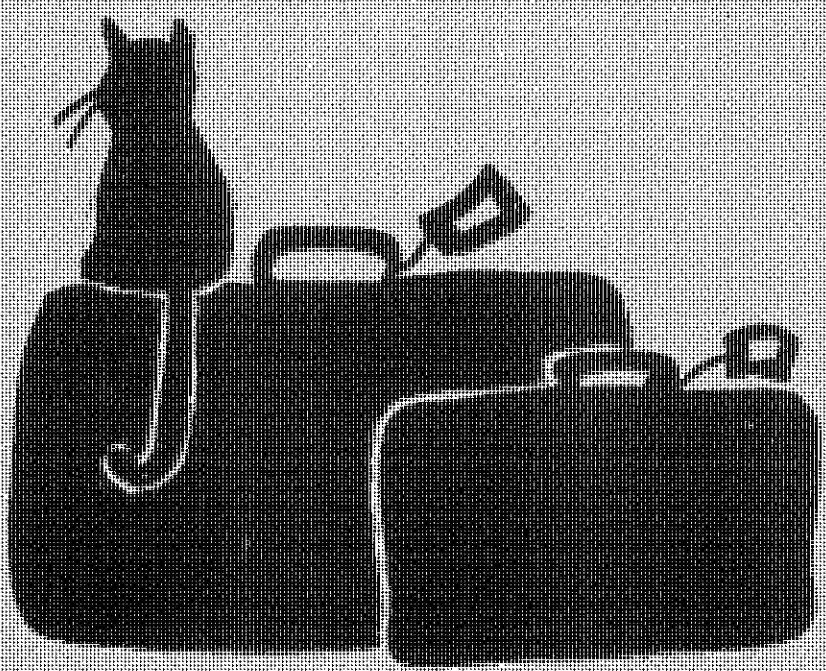
4. Consider whether these devices are needed at your home.

Check Before You Travel

When leaving on vacation it is a good idea to shut off the water at the main outside valve. While you are away an undetected leak could result in great waste, possible damage, and an expensive water bill.

Check outside water faucets to see that they are turned off completely.

Check washing machines and other water appliances for leaks.



The Final Test of a Leak Proof House is Your Meter

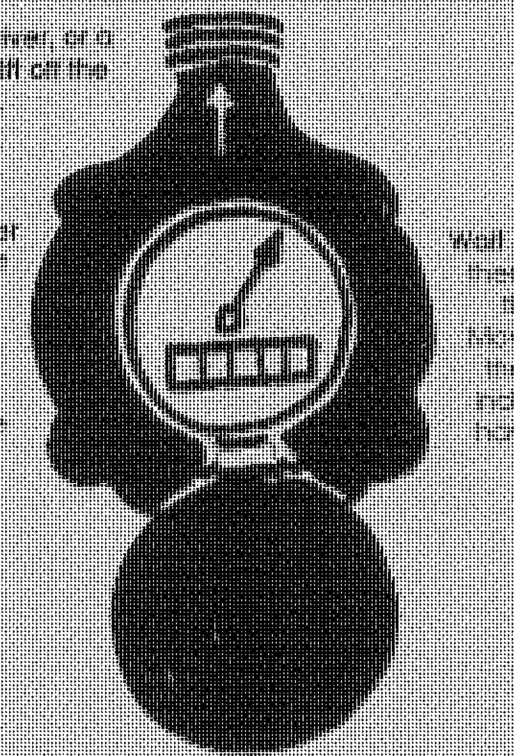
HERE'S HOW IT'S DONE:

Turn off all faucets inside and outside the house.

Locate your meter box. In most neighborhoods, you'll find it located in a small concrete vault near the street.

Using a screwdriver, or a similar device, lift off the concrete cover.

Check the meter dial to see what number it is registering. (If you have a round-reading meter, read the "one foot" dial.)



Wait 30 minutes then recheck the dial. Movement of the dial will indicate you have a leak.

The greater the movement of the dial, the larger the leak. The repair may be an easy one, only a new washer or faucet may be needed, but be sure to call a plumber if the repair seems complicated.

CONTACT INFORMATION

Cachuma Resource Conservation District
[illegible]

University of California Cooperative Extension
Santa Maria area [illegible]

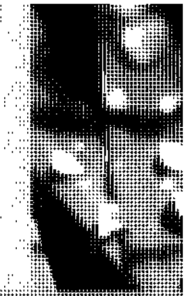
Santa Barbara area [illegible]

California Department of Water Resources
Southern District Office [illegible]

CIMIS Help Line [illegible]

Cachuma Resource
Conservation District

USDA Service Center
920 East Stowell Rd.
Santa Maria, CA
93454



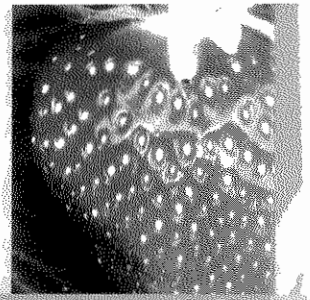
IMPROVING IRRIGATION EFFICIENCY

CALIFORNIA IRRIGATION MANAGEMENT
INFORMATION SYSTEM (CIMIS)

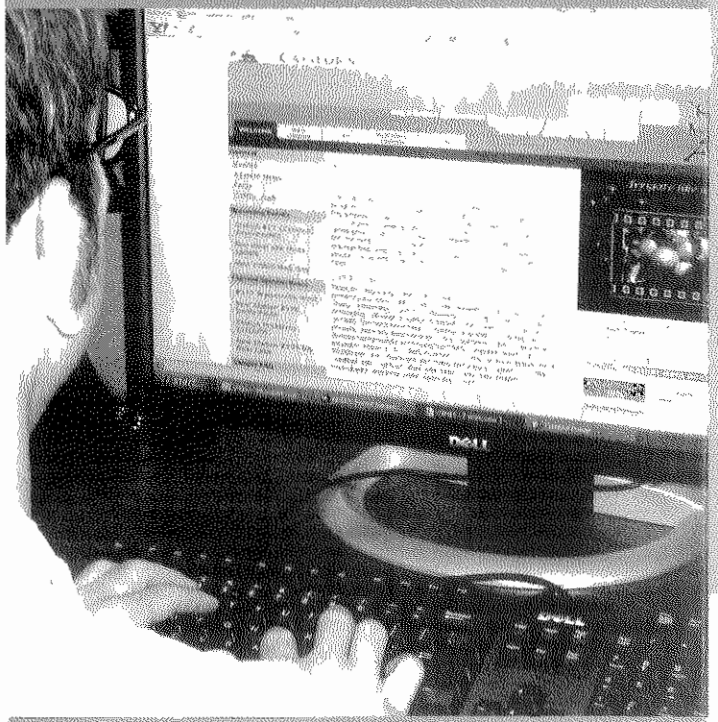
Providing a tool to improve irrigation efficiency
Santa Barbara and San Luis Obispo Counties

Santa Barbara County Water Agency
California Department of Water Resources

About CIMIS



CIMIS, the California Irrigation Management Information System, is a network of over 125 computerized weather stations, located at key agricultural and urban sites throughout California. Ten of these CIMIS stations are located in Santa Barbara and San Luis Obispo Counties. CIMIS provides local weather data daily.



Benefits of CIMIS

Knowing when and how much to irrigate can be difficult to determine. CIMIS data can assist irrigation managers increase irrigation efficiency. This can reduce water, energy, labor, and fertilizer costs, as well as improve the health of the crop or landscape.

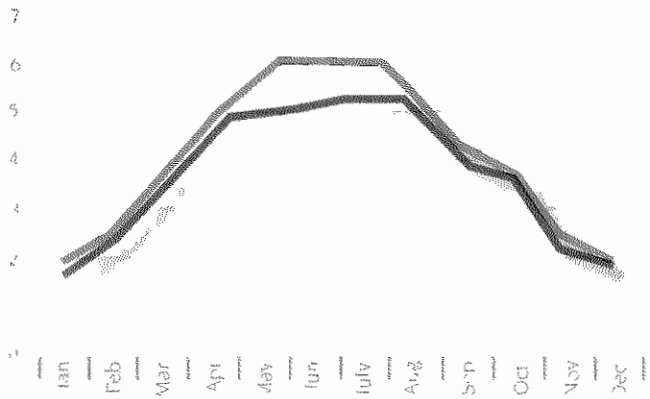
How CIMIS Works

Weather data is collected from each CIMIS station, fed into a centralized computer data base, and converted into reference evapotranspiration (ETo). ETo is the combined value of estimated daily turf grass water use and soil evaporation.

Using crop coefficients and ETo, the water needs for a particular crop or turf grass can be estimated. Crop coefficients have been developed for many vegetables, field crops, trees, vines, turf grasses, and landscape plants. Known crop coefficients are available in UC Cooperative Extension publications.

With this information, irrigators can establish an irrigation schedule. In many cases, proper scheduling can reduce the amount of water applied during a season, and at the same time improve growth.

Average Monthly ETo



Accessing CIMIS

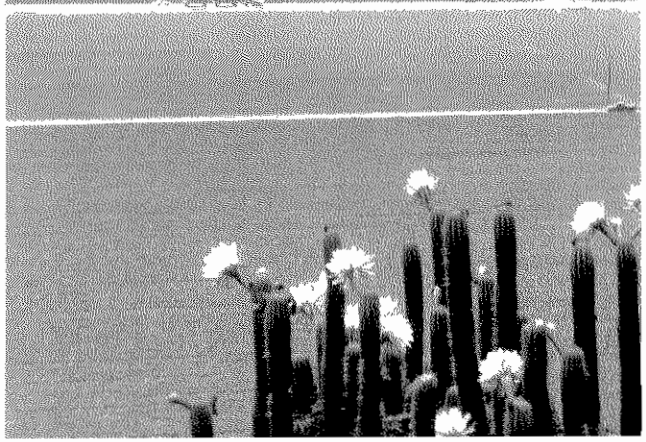
There are two ways to access CIMIS ETo data for scheduling irrigation in Santa Barbara County.

Hotline:
You may access ETo data for the last seven days Santa Barbara County CIMIS stations by calling t toll-free CIMIS Hotline.

From anywhere: 1-888-CIMIS2U (1-888-246-472
From Santa Maria: (805) 928-9344

The Hotline is updated each weekday by 9:00 am

Internet:
Log on to www.cimis.water.ca.gov to access ETo data for the last seven days, or monthly averages the last eleven months at any station statewide.



Benefits of The Program

The Cachuma Resource Conservation District provides **free** irrigation evaluations for growers, to evaluate irrigation systems and make recommendations to improve performance.

Participation in this program is voluntary and all evaluation results are confidential.

Irrigation efficiency can save you water, energy, and money. By applying the proper amount of water, you could:

- Improve crop quality
- Increase production
- Lower energy costs
- Reduce water usage and loss
- Lower pesticide costs

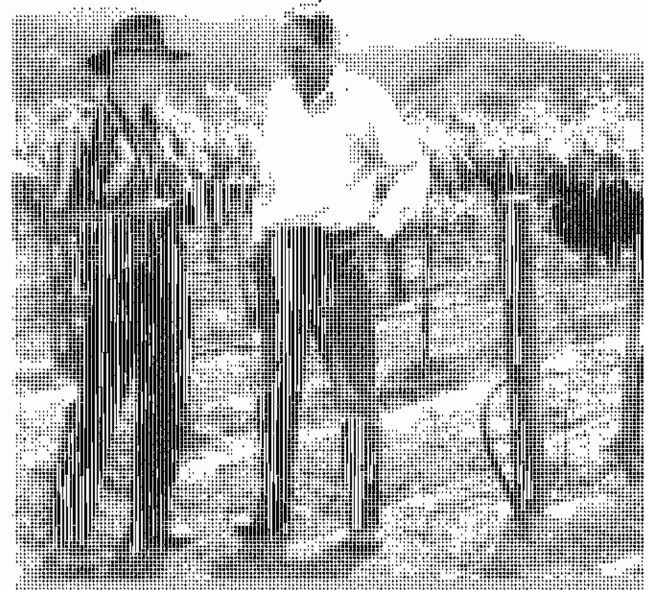
Free, voluntary, confidential evaluation: improve your irrigation efficiency!

Cachuma Resource
Conservation District

USDA Service Center
920 East Stowell Rd.
Santa Maria, CA
93454

Irrigation System Evaluations

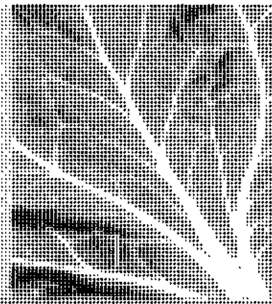
For Agricultural Water U



Providing a tool to improve irrigation efficie
Santa Barbara and San Luis Obispo Coun

Cachuma Resource Conservation Dist
Santa Barbara County Water Agency

About The Program



Free on-site Mobile Lab services are available to Santa Barbara and San Luis Obispo County growers. Over [illegible] evaluations have been performed on over [illegible] acres.

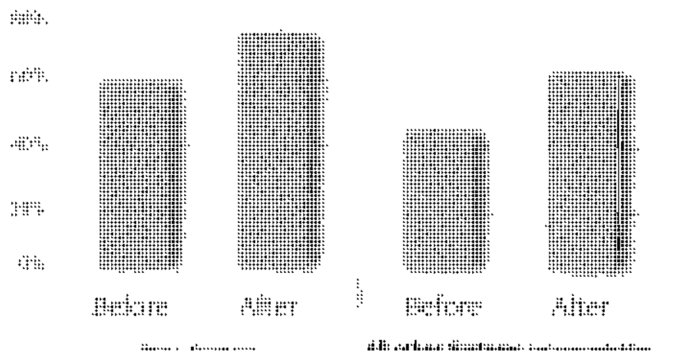
To schedule an irrigation evaluation, call the Cachuma Resource Conservation District at [illegible] ext. [illegible]

The Mobile Irrigation Lab is staffed by trained professionals from the Cachuma Resource Conservation District (RCD). Irrigation evaluations use standard procedures developed by California Polytechnic State University at San Luis Obispo and the California Department of Water Resources.

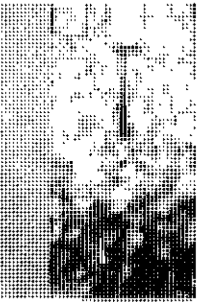
The Evaluation

The Mobile Irrigation Lab comes right to your field. All you need to provide, if available, is a layout of your irrigation system and information on your irrigation schedule. We provide:

- Distribution Uniformity (DU): Evaluation of water distribution with a focus on uniformity and rate of application. Uniformity will increase irrigation efficiency.
- Crop Water Survey: Estimate of seasonal evapotranspiration, effective rainfall, leaching, and irrigation water requirements for an average season.
- Energy Efficiency: Evaluation of pumping plant efficiency related to the system design and operation.
- Water Quality: Measurements of pH, electrical conductivity, and nitrate (plus hardness and iron in micro-irrigation systems) that allow calculations of total dissolved solids (TDS) and leaching fraction in irrigation water.



Follow Up



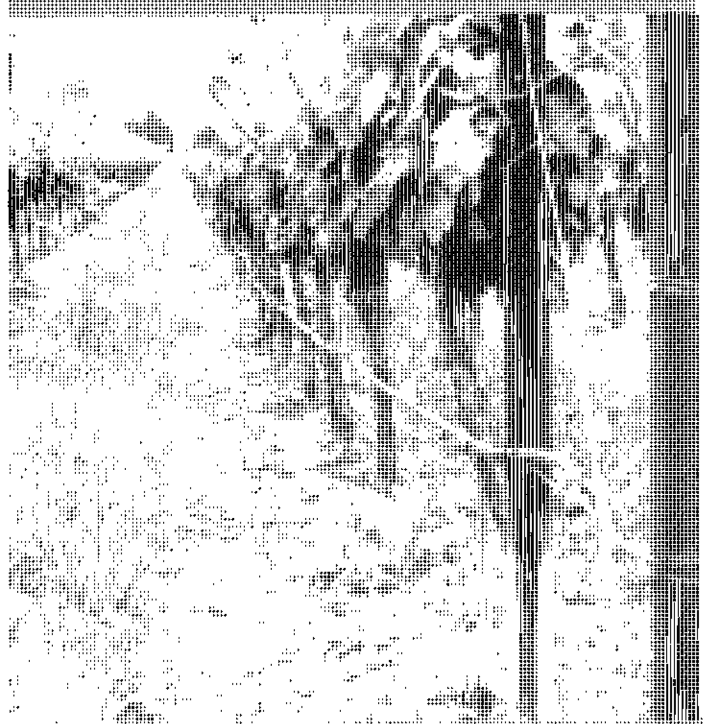
After the evaluation, you will receive our observ[illegible] and recommendations on system design, oper[illegible] and maintenance. The evaluation also provide[illegible] specific irrigation scheduling recommendation[illegible] Detailed information on the use of the Califor[illegible] Irrigation Management Information System (CI[illegible] is available on request.

Interviews are conducted with each participant [illegible] discuss evaluation results and provide an opportunity for feedback. Engineering assistan[illegible] is also offered to facilitate the implementation [illegible] recommended practices.

BENEFICIOS DEL PROGRAMA

El distrito de conservación de recursos de Cachuma ofrece evaluaciones de sistemas de riego **en forma gratuita** para productores y regadores, dando recomendaciones que ayudan a mejorar el manejo y la eficiencia de los sistemas de riego.

La participación es en forma voluntaria y todos los resultados de las evaluaciones son confidenciales.



Al regar en forma eficiente usted puede ahorrar agua, energía y dinero. Al aplicar la cantidad correcta de agua en sus cultivos usted también va a poder ser capaz de:

- Mejorar la calidad del cultivo
- Aumentar la producción
- Disminuir los costos de energía
- Reducir el uso y las pérdidas de agua
- Disminuir los costos por pesticidas

Cachuma Resource Conservation District

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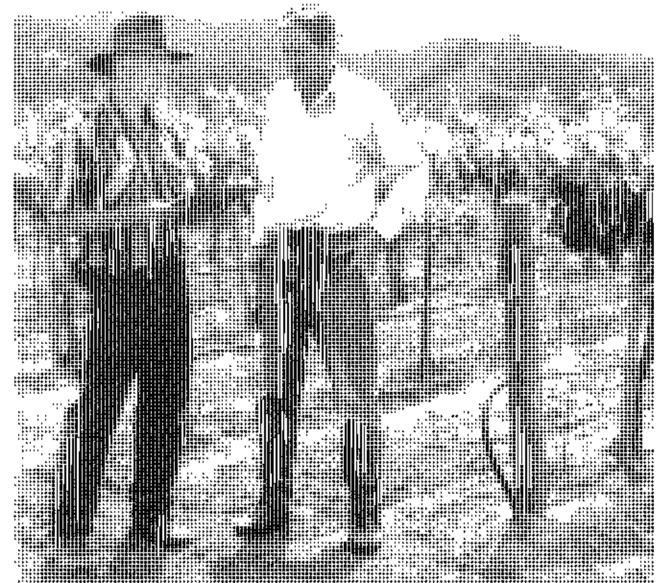
EVALUACIONES DE SISTEMAS DE RIEGO

PARA USUARIOS DE AGUA AGRÍCO



Son una herramienta para mejorar la eficiencia del r
en los condados de Santa Barbara y San Luis Obis

Distrito de Conservación de Cachuma

Información acerca del programa

Los servicios del laboratorio móvil de riego se encuentran disponibles para los agricultores de los condados de Santa Barbara y San Luis Obispo. Se han realizado más de 800 evaluaciones sobre más de 70,000 acres en producción.

Para obtener una evaluación **gratis** de su sistema, llame al Distrito de Conservación de Cachuma al número (805) 928-9269 x. 120.

El personal que trabaja para el laboratorio móvil de riego está compuesto por profesionales entrenados. Las evaluaciones requieren llevar a cabo procedimientos comunes de mediciones en el campo, los cuales han sido desarrollados por la Universidad Politécnica de California en San Luis Obispo y el Departamento de Recursos Hídricos de California.

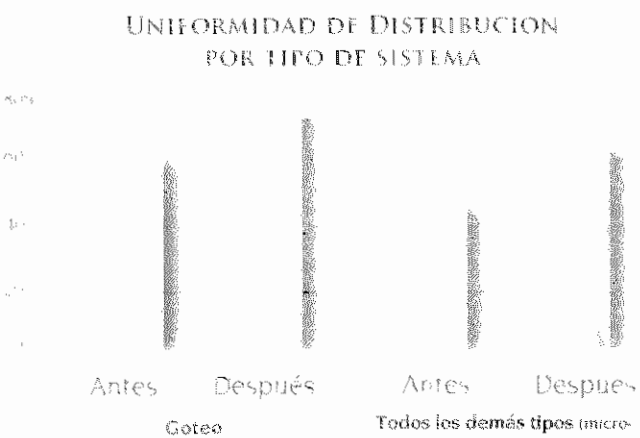
La evaluación

El laboratorio móvil llega a su campo. Todo lo que usted tiene que hacer es tener un esquema de la localización de su sistema de riego y la información sobre los tiempos y la duración de los riegos.

- *La Uniformidad de Distribución* (DU): Para lograr tener un sistema de riego altamente eficiente, lo primero que hay que hacer es regar en forma pareja y uniforme. La tasa de aplicación de agua del sistema también es calculada.

- *Eficiencia en el uso de la energía*: Evaluación de la eficiencia del bombeo dependiendo del diseño y del manejo del sistema de riego.

- *Calidad del agua*: Mediciones del pH, la conductividad eléctrica, el contenido de Nitrato (además de la dureza del agua y el contenido de hierro para sistemas de micro-aspersión), permiten calcular la cantidad total de sólidos disueltos y la fracción de lixiviación del agua de riego.



Seguimiento

Después de la evaluación, se le entregaran los resultados de las observaciones y mediciones c campo, se le daran recomendaciones para mejorar el diseño, el manejo y el mantenimient del sistema. La evaluación, incluye además, sugerencias de cuándo y cuánto regar que se calculan específicamente para el área en donde se encuentra su rancho. Se le entregaro además información detallada de cómo acceder a los da del CIMIS (Sistema de Información del Manejo Riego en California).

Las revniones se llevan a cabo personalmente c cada agricultor para permitir el intercambio de conocimiento e ideas, así explicar los resultado recomendaciones. Además contamos con la ayu de ingenieros para la implementación de las prácticas recomendadas.

What is CIMIS?

CIMIS, the California Irrigation Management Information System, is a network of almost 100 computerized weather stations, located at key agricultural and urban sites throughout California. Six of these CIMIS stations are located in Santa Barbara County. The CIMIS program was developed by the California Department of Water Resources and the University of California to help agricultural growers and landscape managers irrigate more efficiently.

Why use CIMIS?

Improvements in agricultural and landscape irrigation efficiency can mean the difference between profit and loss to irrigation managers. Increased irrigation efficiency can reduce water, energy, labor, and fertilizer costs, as well as improve the health of the crop or landscape. Knowing when and how much to irrigate, however, can be difficult for irrigation managers to determine.

CIMIS can help by providing data to assist irrigation managers with their scheduling decisions.

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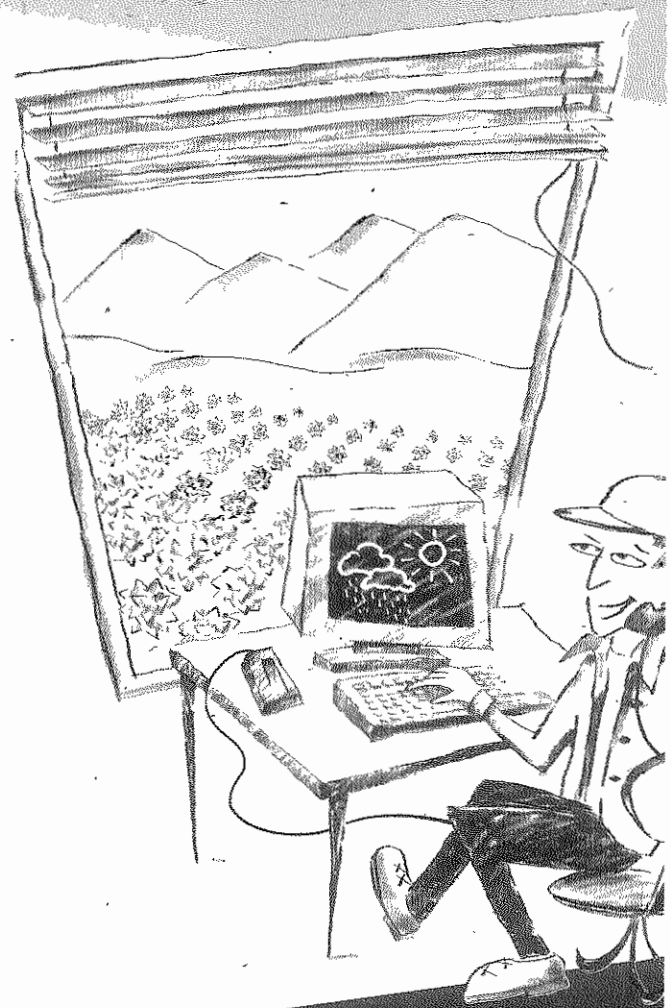
CIMIS

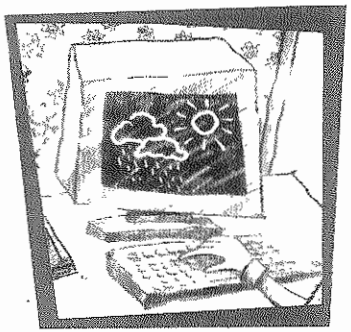
California Irrigation Management Information System



Providing a tool to improve irrigation efficiency in Santa Barbara County

Cachuma Resource Conservation District
Santa Barbara County Water Agency
California Department of Water Resources
US Bureau of Reclamation

How does CIMIS work?



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With this information, irrigators can establish an irrigation schedule. In many cases, proper scheduling can reduce the amount of water applied during a season, and at the same

How can I access CIMIS information?

There are three ways to access CIMIS ETo data for scheduling irrigations in Santa Barbara County.

1. You may access current ETo data by calling the toll-free CIMIS Hotline. The CIMIS Hotline for Santa Barbara County may be reached by dialing 1-888-CIMIS2U (1-888-246-4728). From the Santa Maria area, please call 928-9344.

The Hotline is updated each weekday by 9:00 am with ETo data for the previous seven days for each CIMIS weather station in Santa Barbara County.

There are five mailboxes on the Hotline:
1: Greeting and Information
2: CIMIS Overview
3: Data for Santa Maria & Guadalupe
4: Data for Santa Barbara & Goleta
5: Data for Santa Ynez & Cuyama

2. You may become a CIMIS user by acquiring a password to access the centralized CIMIS computer in Sacramento, using a computer modem. You can have a password assigned to you by calling 1-800-922-4647. Access to the CIMIS computer database is free of charge.

3. Through the internet, you can access ETo data for the last seven days, or monthly averages for the last eleven months. The internet address is http//:wwwdla.water.ca.gov/cgi-

Need help with CIMIS?

For more information, contact any of the following offices:

Cachuma Resource Conservation District

USDA Service Center
920 E. Stowell Road
Santa Maria, CA 93454
805) 928-9269

University of California Cooperative Extension

North County: Warren Bendixen
624 West Foster Road
Santa Maria, CA 93455
(805) 934-6240

South County: Ben Faber
669 County Square Drive
Suite 100
Ventura, CA 93003-5401
805) 645-1462

California Department Of Water Resources

Southern District Office
Sergio Fierro
P.O. Box 29068
Glendale, CA 91209-9068

how to be water-wise in Your Garden

sbwater.org

family of santa barbara county water providers

check your sprinkler system for leaks

Once a month, turn on your sprinklers and check for leaks, overspray, and broken or misdirected sprinkler heads and emitters.

use the watering calculator

Log on to sbwater.org for a customized irrigation schedule based on your zip code, soil and plants, and type of sprinklers. Adjust your sprinklers accordingly.

For more information:

sbwater.org or call 805-568-3440

Provided by:

Family of Santa Barbara County Water Providers

use water-wise plants

Select water-wise plants when re-landscaping with water-wise plants appropriate for our local climate. Search the plant database at sbwater.org.

smart irrigation controllers

Smart irrigation controllers automatically calculate a scientifically-based irrigation schedule based on local weather and your plant and soil type.

how to be water-wise in Your Garden

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family of santa barbara county water providers
sbwater.org
saving you water

DON'T
WASTE
WATER!


TURN
OFF
THE
FAUCET
WHILE
YOU
BRUSH
YOUR
TEETH

DON'T
OVER-
WATER
PLANTS

WATER SERVED BY REQUEST ONLY

This restaurant supports conservation efforts
of the Carpinteria Valley Water District.
Serving water only upon request
eliminates unconsumed glasses of water
and the water used to wash them.
For every glass of water not served,
as much as 2 gallons of water is saved.

Thank you for supporting our
water conservation efforts.

Carpinteria Valley Water District
www.cvwd.net
(805) 684-2816

Front

Dear Neighbor:

California's water is precious. Saving water is now more important than ever. In the spirit of neighbor helping neighbor, I wanted to alert you to the following:

- ☐ **Your sprinklers are watering the pavement.** Adjusting your sprinkler heads to prevent overspray and runoff will save precious water.
- ☐ **Your sprinklers were on during the rain.** Shutting off your sprinkler system when rain is predicted saves water. It's typically not necessary to water for a week or more following a storm.
- ☐ **You have a broken sprinkler, and/or your irrigation system is leaking.** A broken sprinkler can waste 10 gallons per minute or 100 gallons in a 10-minute cycle. Making repairs right away is important to save water.
- ☐ **Your sprinklers don't need to run every day.** Most landscapes do fine with only 2 or 3 days a week of watering, even less in the winter. To determine when to water, step on your grass. If it springs back, it doesn't need water.
- ☐ **Your sprinklers are on during the day.** Watering only in the late evening or the early morning hours reduces water loss from evaporation and wind.

Save Our Water

See the reverse side for more outdoor conservation tips.

For more information visit:
www.sbwater.org

(805)684-2816 x 116
Carpinteria Valley Water District

Back

LANDSCAPE

- Water your lawn only when it needs it. Water early in the morning or later in the evening when temperatures are cooler.
  SAVE: 25 gallons / each time you water
- Check your sprinkler system frequently and adjust sprinklers so only your lawn is watered and not the house, sidewalk, or street.
  SAVE: 15-12 gallons / each time you water
- Choose a water-efficient irrigation system such as drip irrigation for your trees, shrubs, and flowers.
  SAVE: 15 gallons / each time you water
- Water deeply but less frequently to create healthier and stronger landscapes.
- Put a layer of mulch around trees and plants to reduce evaporation and keep the soil cool. Organic mulch also improves the soil and prevents weeds.
  SAVE: 20-30 gallons / each time you water / 1,000 sq. ft.
- Plant drought-resistant trees and plants.
  SAVE: 30- 60 gallons / each time you water / 1,000 sq. ft.

Information about evapotranspiration (ET) and weather based irrigation controllers is available at: http://www.cuwcc.org and wwwcimis.water.ca.gov

CLEANUP

- Use a broom to clean driveways, sidewalks and patios.
  SAVE: 8-18 gallons / minute
- Wash cars/boats with a bucket, sponge and hose with self-closing nozzle.
  SAVE: 8-18 gallons / minute

For more information visit:
www.sbwater.org

(805)684-2816 x 116
Carpinteria Valley Water District

April 2011

Carpinteria Valley Water District

H_2KNOW

DISTRICT TO PARTICIPATE IN CACHUMA BOARD'S UPPER REACH RELIABILITY PROJECT

Following Board review and discussion at its regularly scheduled Board meeting held on March 23, 2011, the Board approved a motion to direct Bob Lieberknecht, District representative to the Cachuma Operation and Maintenance Board (COMB), to take the necessary steps to support COMB's proposed Upper Reach Reliability Project. This proposed Project includes several major improvements in the reach of the South Coast Conduit (SCC) from its beginning on the south coast side of the Tecolote Tunnel down as far as the Goleta Water District's Corona Del Mar Treatment Plant. More than half of CVWD's current water supply comes through the SCC from Lake Cachuma. In the photo below Directors Ducharme (left) and Orozco (center) can be seen inspecting and discussing the need for replacement of the south portal, the uppermost structure on the SCC with COMB General Manager Kate Rees (right) during a tour conducted on March 14, 2011.

The south portal is one of several structures along the 50 plus year old SCC that pose significant risk of failure due to factors of location, age, stress and corrosion from hydrogen sulfide gas originating in the Tecolote Tunnel. No net costs to the District for this Project are projected in the coming fiscal year, 2011-12. Depending on the Plan option, District expense will vary from between $244,000 to $122,000 in fiscal year 2012-2013, adding upward pressure on the water rates at that time. The District's cost sharing percentage (12.2%) closely reflects the District's recent 15 year average historical usage of the South Coast Conduit system. Other COMB member agencies participating in the Project will be the Goleta Water District, City of Santa Barbara and Montecito Water District.

El Districto es bilingue. Favor de llamar (805) 684-2816 con cualquier pregunta sobre su cuenta o el uso de agua, estamos aqui para asistirlos.

Save Water and Money
With a Free Water Check-up!

Check-ups include:

- evaluation of household leaks
- measurement of shower and faucet flow rates
- measurement of toilet flush volumes
- useful conservation tips

The District provides free low-flow faucet aerators and showerheads to replace existing high-volume fixtures.

To schedule an appointment, contact Rhonda
(805) 684-2816 ext. 116
rhonda@cvwd.net

Board of Directors Meetings

Regular Board meetings may now be held on the second and fourth Wednesday of every month at 5:30 pm at Carpinteria City Hall, 5775 Carpinteria Avenue. The Board may also hold regular Board meetings other Wednesdays of the month at 5:30 pm at the District Offices at 1301 Santa Ynez Avenue.

Carpinteria Valley Water District

Board of Directors

June Van Wingerden
President

Matthew T. Roberts
Vice-President

Lynne Durcharme
Robert R. Lieberknecht
Alonzo Orozco

Staff

Charles Hamilton
General Manager

Engineering
Bob McDonald
District Engineer

Rhonda Gutierrez
Brian King
Mike Shaffer

Business
Norma Rosales
Assistant General Manager

Esperanza Barbosa
Alex Keuper
Suzie Lara
Tootie Maier
Patty Rodriguez

Operations and Maintenance
Omar Castro
O&M Manager

Lance Edmondson
Jon Macias
Danny Rada
Greg Stanford
Sarah Strassburg

Visit our website ***www.cvwd.net*** *for new and updated information.*

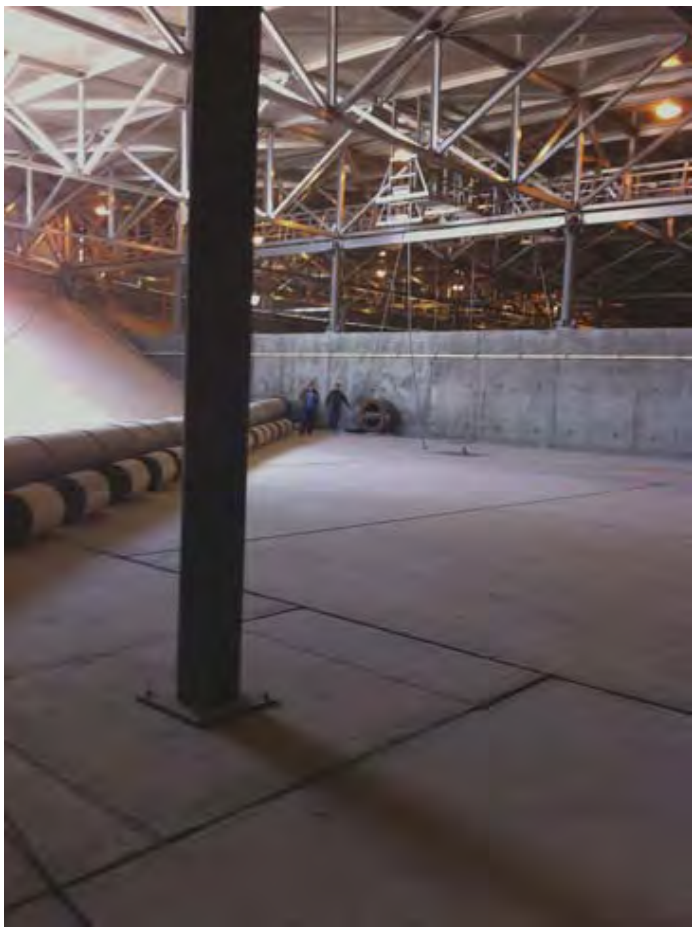
March 2011

Carpinteria Valley Water District

H_2KNOW

Ortega Reservoir

The Ortega Reservoir shared by Montecito Water District and Carpinteria Valley Water District (CVWD) is undergoing repairs on leaking concrete joints and minor corrosion on valves. Below are photos inside of the reservoir. The work is being done during the winter months so that the impact of the reservoir being offline to water supply reliability is minimized. The contractor's schedule states a completion date of April 15, 2011. This should prevent any water shortages or low pressure from occurring in CVWD's water system. However, in the event weather conditions change and higher demands occur the District may call for reductions in non essential water use during the remainder of the project.



Pictured left, Director Matt Roberts inspects a valve corroded with rust which can also be seen in the picture on the right.

El Districto es bilingue. Favor de llamar (805) 684-2816 con cualquier pregunta sobre su cuenta o el uso de agua, estamos aqui para asistirlos.

Native Plant Garden Tour

Landscape irrigation accounts for a great portion of residential water use in Carpinteria. CVWD encourages the use of efficient landscape irrigation practices such as planting California native plants or other low water using plants in Carpinteria gardens.

California native plants will be highlighted in gardens from Goleta to Thousand Oaks on the Native Plant Garden tour sponsored by the Channel Islands Chapter of the California Native Plants Society and the Santa Barbara Botanic Garden.

Two gardens located in Carpinteria will be featured on the tour. The self-guided tour offers maps to each location and hosts at each garden to answer your questions.

Native Plant Garden Tour

April 16, 2011
10 a.m. - 4 p.m.

Cost: $15 for members of either organization
$25 for non-members

For more information, call (805) 682-4726 or visit www.cnps.org or www.sbbg.org

Board of Directors Meetings

The Board of Directors has approved a new Board meeting place and schedule. Regular Board meetings may now be held on the second and fourth Wednesday of every month at 5:30 pm at Carpinteria City Hall, 5775 Carpinteria Avenue. The Board may also hold regular Board meetings other Wednesdays of the month at 5:30 pm at the District Offices at 1301 Santa Ynez Avenue.

Carpinteria Valley Water District

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Mike Shaffer

Business
Norma Rosales
Assistant General Manager

Esperanza Barbosa
Alex Keuper
Suzie Lara
Tootie Maier
Patty Rodriguez

Operations and Maintenance
Omar Castro
O&M Manager

Lance Edmondson
Jon Macias
Danny Rada
Greg Stanford
Sarah Strassburg

Visit our website ***www.cvwd.net*** *for new and updated information.*

Most sprinkler systems go on early in the morning when you are still sleeping. About once a month it's a good idea to turn your sprinklers on and check for leaks, overspray, and broken or misdirected sprinkler heads and emitters.

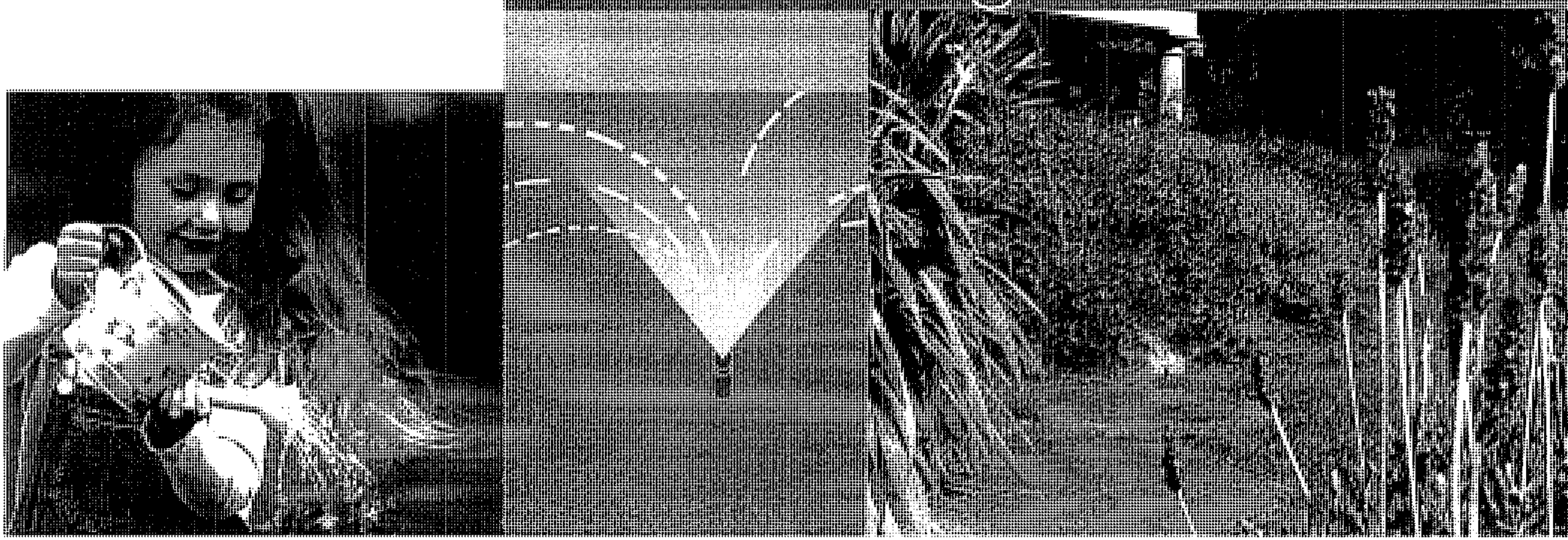
Whether you are putting in a new landscape or slowly changing the current landscaping at your home, select water-wise plants that are appropriate for our local climate. A searchable water-wise plant database is available at sbwater.org.

For more information:

805-568-3440

Provided by:

Family of Santa Barbara County Water Providers



our garden can be a mystery. The average person ses twice the amount of water needed to keep lants healthy. However, simple adjustments can nake a big difference.

Here are easy ways to save water outdoors:

use the watering calculator

n easy way to determine how much and how often o water your garden is by using the landscape water- g calculator at sbwater.org. Just enter your zip code, ype of soil, plants and sprinklers into the watering alculator and it will provide you with a schedule. hen adjust your irrigation controller accordingly.

adjust sprinkler pressure

ressure that is too high causes the water exiting the prinkler to turn to mist, which can be blown away by ven just a gentle breeze. Install a pressure regulator o increase the efficiency of your sprinklers.

rain sensor

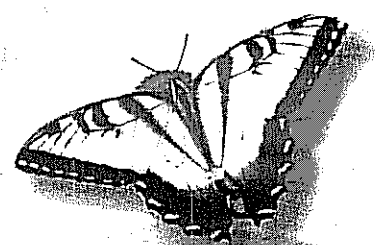
Have this inexpensive device wired to your irrigation controller and it will automatically shut off your sprinklers when it is raining.

change your sprinkler timer battery

If your irrigation controller's backup battery is dead, a power outage will cause it to reset to the default settings, watering about twice as much as necessary. Replace your battery as needed, at least once a year.

change your watering schedule

On many irrigation controllers today, there is a feature called "water budget", or seasonal adjust, which lets you easily change your watering schedule as the weather changes. Locate the water budget feature on your controller, then set the water budget to the weekly watering index. For your weekly watering index visit sbwater.org.



smart irrigation controllers

Smart irrigation controllers automatically calculate a scientifically-based irrigation schedule using several factors, including your plant and soil type. These controllers then adjust the irrigation schedule as local weather changes. Whether it is for your home or your business, with smart irrigation controllers, you'll spend less time and money maintaining your landscape. For the latest information on smart irrigation controllers, go to sbwater.org.

sbwater.org

COMMERCIAL REBATE PROGRAM

REBATES INCREASED FOR A LIMITED TIME!*

SAVE WATER
SAVE A BUCK
in Santa Barbara County

Install High Efficiency Toilets, Urinals and Washing Machines and

SLASH YOUR WATER AND ENERGY BILLS!

UPGRADE YOUR BUSINESS WITH NEW EQUIPMENT!

LOWER YOUR MAINTENANCE!

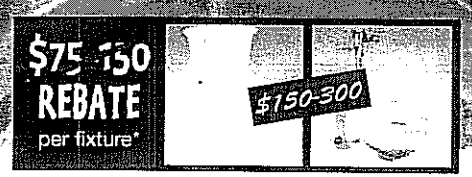
We'll even give you rebate dollars

Ultra Low Flush Toilets	Ultra Low Flush & Waterless Urinals	High Efficiency Clothes Washers
$150-300 REBATE per fixture	$300 REBATE per fixture	$350 REBATE per washer

REBATE PROGRAM FOR BUSINESSES

ULTRA LOW FLUSH TOILETS

or High Efficiency Toilets- only 1.3 gallon per flush!



SAVE ABOUT $60 - $100
a year in water and sewer bill savings for each fixture installed

ULTRA LOW FLUSH & WATERLESS URINALS

SAVE ABOUT $60 - $100
a year in water and sewer bill savings

*Rebate amounts vary depending upon the type of toilet retrofitted and your business type. Please see specific rebate information on the application form on the back of this brochure.

HIGH EFFICIENCY CLOTHES WASHERS

High Efficiency Washers (HEWs) pay for themselves and...

USE 50% LESS ENERGY
than traditional models

LOWER WATER, SEWER AND ENERGY COSTS
associated with washing by 35-50%

SAVES YOU ABOUT $1000
in reduced operating costs over the life of the machine as compared to traditional models

For an approved list of washers go to **www.sbwater.org.**

Please be aware that you may be eligible for additional rebate dollars for High Efficiency Washers from Southern California Gas Company. Call **1-800-GAS-2000** for more information.

*Increased rebate amounts are available on a first-come, first-served basis. If higher rebates are exhausted when you apply, you can still receive the original rebate amounts.

IT'S EASY TO GET YOUR REBATE!

If you are a commercial customer of one of the following water agencies:
City of Santa Barbara
City of Santa Maria
Carpinteria Valley Water District
Montecito Water District
Goleta Water District
City of Lompoc

SIMPLY FOLLOW THE STEPS BELOW

CALL 1-800-215-7559
A telephone representative will verify that funds are still available. Rebates are subject to available funds. A telephone representative will aid in verifying your eligibility, including product make and model numbers, prior to your purchase.

PURCHASE AND INSTALL
qualifying models of toilets, urinals, and/or clothes washers.

FILL OUT THE REBATE APPLICATION
on the back side of this brochure. Be sure to include your original sales receipt(s).

MAIL COMPLETED APPLICATION TO:
Rebate Program, 123 E. Anapamu Street, Suite 240
Santa Barbara, CA 93101

- Rebate customers will be handled on a first come, first served basis.
- Program runs January 1, 2004-December 31, 2007, as funding is available.
- Customer may be required to have an on-site inspection.

For more information please call
1-800-215-7559

Program is coordinated by the Santa Barbara County Water Agency. Visit our website at www.sbwater.org.

SAVE WATER
SAVE A BUCK
in Santa Barbara County

Commercial Rebate Application

Please complete numbers 1 through 8.
Please enclose the original sales receipts with your application.

1. Please check your Water Utility listed below:

- ☐ City of Santa Barbara
- ☐ City of Santa Maria
- ☐ Carpinteria Valley Water District
- ☐ Montecito Water District
- ☐ Goleta Water District
- ☐ City of Lompoc*

2. Your Business Service Address Information

Your Business Name _____

Street Address _____

Apt/Unit # _____

City _____

State _____ Zip Code _____

Do you own or rent the property? ☐ Own ☐ Rent

What type of Business do you operate? _____

3. Water Bill Account Number

Name on the Account _____

Account Holder's telephone # _____

Your telephone # _____
(If different than Account Holder)

Water Utility Account Number _____

4. Your Mailing Address

(All communication including check will be sent to this address)

Street Address _____

Apt/Unit # _____

City _____

State _____ Zip Code _____

ULTRA LOW FLUSH TOILETS AND URINALS

5. If your business is a RESTAURANT, FOOD STORE or WHOLE SALE ESTABLISHMENT, please complete the following section...

Tank-type Ultra Low Flush Toilets Installed:

Toilet Manufacturer	Model of Toilet(s)	# of Toilets of this manufacturer/ model	Rebate $ per Toilet	Subtotal Rebate $
1.			$300	
2.				
3.				
			TOTAL:	

Flushometer Ultra Low Flush Toilets Installed:

Toilet Manufacturer	Model of Toilet(s)	# of Toilets of this manufacturer/ model	Rebate $ per Toilet	Subtotal Rebate $
1.			$300	
2.				
3.				
			TOTAL:	

Urinals Installed:

Urinal Manufacturer	Model of Urinal(s)	# of Urinals of this manufacturer/ model	Rebate $ per Urinal	Subtotal Rebate $
1.			$300	
2.				
3.				
			TOTAL:	

*If your business is in the City of Lompoc you may be eligible for additional rebate dollars. Call 875-8298 for information.

ULTRA LOW FLUSH TOILETS AND URINALS

6. ALL OTHER BUSINESSES and SCHOOLS, please complete the following section...

Tank-type Ultra Low Flush Toilets Installed:

Toilet Manufacturer	Model of Toilet(s)	# of Toilets of this manufacturer/ model	Rebate $ per Toilet	Subtotal Rebate $
1.			$150	
2.				
3.				
			TOTAL:	

Flushometer Ultra Low Flush Toilets Installed:

Toilet Manufacturer	Model of Toilet(s)	# of Toilets of this manufacturer/ model	Rebate $ per Toilet	Subtotal Rebate $
1.			$150	
2.				
3.				
			TOTAL:	

Urinals Installed:

Urinal Manufacturer	Model of Urinal(s)	# of Urinals of this manufacturer/ model	Rebate $ per Urinal	Subtotal Rebate $
1.			$300	
2.				
3.				
			TOTAL:	

HIGH EFFICIENCY CLOTHES WASHERS

7. ALL BUSINESS TYPES, please complete the following section...

Clothes Washers Installed: MUST BE CEE CERTIFIED

Washer Manufacturer	Model of Washer(s)	# of Washers of this manufacturer/ model	Rebate $ per Washer	Subtotal Rebate $
1.			$350	
2.				
3.				
			TOTAL:	

Route operators are eligible for rebates but must include a copy of a 5 year lease agreement showing address at which washers are located.

GRAND TOTAL All Rebates: $_____

8. Signature required for this rebate program

"I certify that the information contained on this application is true and correct, and that I have not previously participated in a local ULFT rebate program.
I understand that rebate dollars are for customers of the participating water utilities and subject to available funds.
All toilets being submitted for rebates are 1.6 gallons or less and replacing non-1.6 gallon models. All toilets must be of commercial grade with elongated bowls and open front seats. The seat height must be between 17"-19" from the floor. The flush handle must be on the side of the fixture with the most space.
All urinals being submitted for rebates are 1 gallon or less and replacing non-one gallon urinals.
All washers being submitted for rebates are on the CEE approved washer list (www.sbwater.org).
I agree to the program requirements as stated on this application.
I understand that my site may be subject to inspection as a requirement for rebate payment."

Name (print) _____

Signature _____

Date _____ E-mail _____

Mail Application & Receipts to:
Rebate Program, 123 E. Anapamu Street, Suite 240
Santa Barbara, CA 93101
Program Hotline: 1-800-215-7559

SAVE WATER
SAVE A BUCK

Attention Business Owners

Highest Rebates YET!

If you're thinking of replacing your old washing machines, toilets, or urinals with HIGH PERFORMANCE, MONEY SAVING APPLIANCES, now is the time!

LIMITED TIME ONLY!!! UP TO $350 BACK!

- **Buy a high efficiency toilet, urinal, or washing machine, and receive the following rebates:**

High Efficiency Toilets	**$150-$300**
Waterless or Low-Flush Urinals	**$300**
High Efficiency Clothes Washers	**$350**

- High efficiency washers can **save up to 50% of water and 50% energy costs** and are easier on clothes!
- High Efficiency Toilets and Low-Flush Urinals can **save you $60-$100 per fixture per year on water bills** and many High Efficiency toilets out perform standard models!
- Commercial, Industrial, and Institutional water customers only
- Visit www.sbwater.org/CIIRebateProgram.htm or **call 1-800-215-7559** for rebate requirements
- www.flexyourpower.org to see if you're eligible for other rebates

Family of Santa Barbara County Water Providers
C/O Santa Barbara County Water Agency
123 E. Anapamu Street
Santa Barbara, CA 93101
Info: 1-800-215-7559
www.sbwater.org

family of santa barbara county water providers
sbwater.org
saving you water

October 2010

Carpinteria Valley Water District

H_2KNOW

Groundwater Model Project Status Report

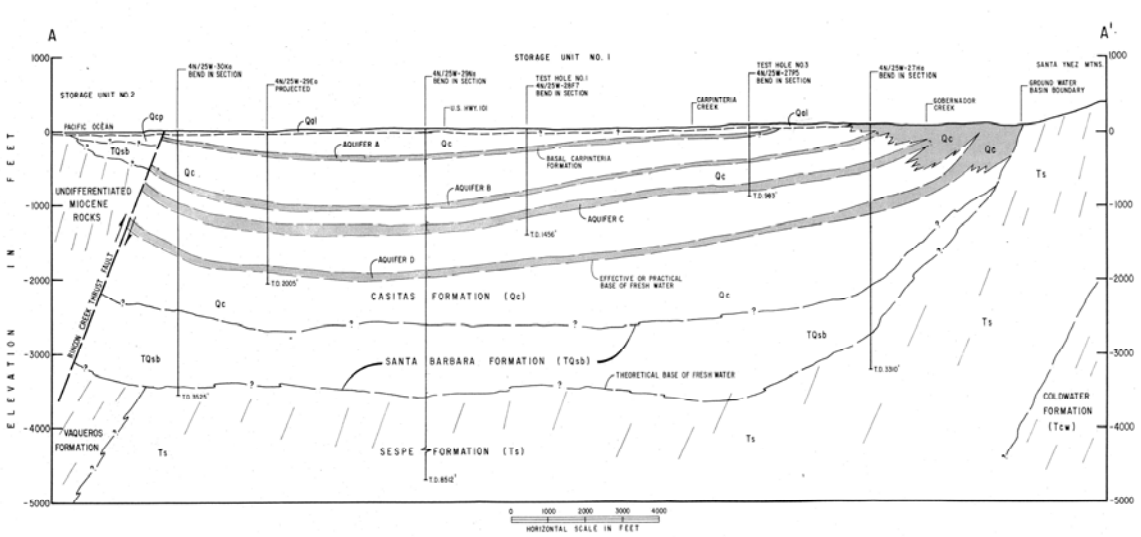
At the September 8th Board of Directors meeting, Robert Marks of Pueblo Water Resources presented the status and projected schedule of the District's Hydrogeologic Update and Groundwater Model Project. The project funded primarily with a grant of about $248,000 from the California Department of Water Resources will give the District the capability to model and make informed decisions about the Carpinteria Groundwater Basin.

The Hydrogeologic update consisted of data compilation and review, information about the basin structure, characterization of aquifer hydraulic parameters, water level conditions, hydrologic budget and water balance.

The Groundwater Model, as a basin management tool, utilizes the latest subsurface and water balance information. It simulates the occurrence and movement of groundwater in the basin. In addition, the Model will allow District staff to assess potential impacts of increases in groundwater pumping, evaluate basin response to long-term drought and simulate alternative basin management scenarios.

The completion of this project, scheduled for May 2011, coincides with the District's completion of recent large groundwater related improvements such as Headquarters Well, El Carro Well and Foothill Storage Tank, further enabling more efficient use of groundwater and reducing overdependence on imported surface water.

Use of groundwater is a key to the District's meeting all current and future federal and state drinking water standards.



At left, is a cross section of the Carpinteria Groundwater Basin. The illustration is courtesy of Geotechnical Consultants.

Columbus Day: The District office **will be open** for business Monday, October 11th.

El Districto es bilingue. Favor de llamar (805) 684-2816 con cualquier pregunta sobre su cuenta o el uso de agua, estamos aqui para asistirlos.

Water Meter Accessibility

The District's water meters are read on a monthly basis, **Monday through Friday, 7 a.m. to 7 p.m. and Saturday, 7 a.m. to 3 p.m.** Please keep your water meter accessible so that a quick and accurate read can be taken. Should an emergency arise it is important that staff can get to the meters for repairs. Below are ways to keep the meters clear for easy access.

Trees, shrubs, plantings

- Keep trees, shrubs and planting around the meter box trimmed.
- Please minimize plants in the area of the meter box to avoid damage to them from foot traffic.

Pets

- Please keep your pets, especially dogs confined in an area away from the meter ***or*** provide protected access to the meter to prevent interference from your pet.

Objects that cover or block you meter

- Make sure that no objects are placed so that they cover or block access to the meter box. Items that have been found blocking water meters include cars, trailers, garbage and recycling containers, construction equipment or supplies, landscape bark or gravel.

Locked Gates

- If your meter is located behind a gate that is normally kept locked, please contact us to arrange access.

Please call the District (805) 684-2816 if you have any questions or concerns.

Adjust Landscape Watering

The fall season is upon us and it is a good time to adjust automatic irrigation controllers to reflect the change in weather. The Landscape Watering Calculator and the Watering Index are two good resources found at www.sbwater.org. to help you use water efficiently.

Landscape Watering Calculator

An on-line program in which you answer questions about your landscape and watering system in order to develop a weekly watering schedule. To use the program, visit ***www.sbwater.org/Water_Calc_Map. html***

Weekly Watering Index

The Watering Index can be found on the home page of sbwater.org. It allows automatic irrigation controllers with a water budget adjustment feature to be easily modified. For more information, visit ***www.sbwater.org/ WateringIndex.htm***

Board of Directors Meetings

The Board of Directors may hold regular Board meetings on any Wednesday at 4 p.m. at the District Offices at 1301 Santa Ynez Avenue, except on the second Wednesday of the month. The second Wednesday meeting is held at 5:30 p.m. at Carpinteria City Hall, 5775 Carpinteria Avenue.

To find out about specific meeting dates, contact the District at 684-2816 x104 or go to www.cvwd.net.

Visit our website ***www.cvwd.net*** *for new and updated information.*

September 2009

Carpinteria Valley Water District

H_2KNOW

Laundry to Landscape Graywater Systems

In response to the state-wide drought, California recently adopted new code language for residential graywater reuse that took effect August 4th. Local building permits are no longer necessary for systems connected to clotheswashers and single-fixture systems (fixtures to a common drain) that reuses water for landscaping. This change makes it a lot easier and less costly for homeowners to install graywater systems to water their landscape, reduce their water consumption as well as decrease wastewater treatment.

There are still, however, requirements that must be met in order to protect public health.

Some of the requirements are listed here:

- The system must have a diverter valve that can route graywater to the sanitary sewer system if necessary.
- Water from kitchen sinks or used to wash diapers or other infectious garments shall not be used.
- The graywater can be discharged above ground, but the discharge point must be covered by mulch.
- The water can't pond or run off of your property onto a neighbor's property or into storm drains. It must stay on the property from which it is generated.
- Graywater cannot be used in spray irrigation systems.
- It must have an air-gap or backflow prevention device to protect the potable water supply.
- Graywater is not to be used for root crops or edible portions of food crops.

For the full list of requirements, visit the *What's New* section of our website www.cvwd.net

El Carro Well Project - Update

The El Carro Well and Piplines Project, scheduled to be started this summer has been delayed due to a property lease agreement negotiation that has not yet been resolved. The El Carro Well half of the Project is the drilling of a replacement well located at the existing El Carro Well site. The new construction window for this half of the project is summer of 2010. In the meantime the District will focus efforts on completing the other half of the Project - the Central Zone Pipeline Project. The project is currently being designed. Construction is expected to begin in the spring of 2010. The alignment of pipeline work will be mostly along sections of El Carro Lane and Santa Monica Road. Affected customers will be notified in early 2010. All customers are welcome to participate in the planning process. If you have any questions or comments please contact Robert McDonald, CVWD District Engineer at 805-684-2816 ext. 107.

El Districto es bilingue. Favor de llamar (805) 684-2816 con cualquier pregunta sobre su cuenta o el uso de agua, estamos aqui para asistirlos.

"Water Served Upon Request" Restaurant Table Tents

A number of restaurants in Carpinteria are using "Water Served Upon Request" table tents with great success. Some of the restaurants using the table tents include Jack's Bagels, Gianfranco's Trattoria, IHOP, The Worker Bee, and Cajun Kitchen. Jack's Bagels owner, Doralee Jacobson, was an initial supporter and advocate for the table tents. The owners of Gianfranco's Trattoria have reported that, "Since we began using these notices we are experiencing savings in not only labor (eliminating washing un-used glasses) but also savings in water usage and thereby water costs."

To participate in the District's *Water Served Upon Request Program*, please contact Rhonda at (805) 684-2816 x 116 or email rhonda@cvwd.net.

Rain Barrel Sale @ Cost: $50 Saturday, September 26, 2009, 9 am to 4 pm SBCC's Shoreline Parking Lot 3

Help Conserve Water Resources.
Reduce Runoff, Prevent Water Pollution.
Harvest Rainwater for Your Garden!

Container is 55 gallons, eco-friendly, is easy to install and all accessories are included. Valued at $120, you get it for $50!

The sale, sponsored by the SB County Water Agency and Project Clean Water will be held at the corner of Shoreline and Loma Alta Drive.

Cash or Check Only!

For more information, call (805) 568-3546

Board of Directors Meetings

The Board Meetings for the month of **September:**
Wednesday, September 16 at 4 p.m. in the District Boardroom, 1301 Santa Ynez Avenue.

A special joint Board meeting of the Cachuma Operation and Maintenance Board and Carpinteria Valley Water District will be held at 4 p.m. Monday, September 21st in the District Boardroom.

Effective October 2009, Board meetings scheduled the second Wednesday of the month will be held at Carpinteria City Hall, 5775 Carpinteria Avenue 5:30 p.m.

Visit our website ***www.cvwd.net*** *for new and updated information.*

April 2008

Carpinteria Valley Water District

H_2KNOW

Carpinteria Valley Water Supplies…. An April Status Report….

Carpinteria Valley Water District has 3 sources of supply for water:

1) Carpinteria Groundwater Basin (water produced by District wells)
2) Cachuma Project (Santa Ynez River water stored behind Bradbury Dam)
3) State Water Project (water from Northern California rivers and streams)

Carpinteria Groundwater Basin

Water Quality: Excellent, but needs filtration for high levels of manganese. (There is normally no fluctuation in the quality of groundwater.)

Water Reliability: Excellent due to recent rainfall and groundwater Basin replenishment; but also Not Good due to failure of two major District wells requiring replacement and one major well now undergoing repairs.

Cachuma Project

Water Quality: Good, but below average due to Zaca Fire sediment run-off during recent rainfall. Related to Zaca fire impacts, the District is experiencing increased costs to effectively treat Lake Cachuma water this year. The Cachuma source of water continues to be the most problematic for the District in meeting current and soon to be enforced safe drinking water standards set by the U.S Environmental Protection Agency and the California Department of Public Health.

Water Reliability: Excellent due to the recent rainfall. Lake Cachuma has filled and spilled this year.

State Water Project

Water Quality: Excellent, but requires increased seasonal treatment due to recent rainfall.

Water Reliability: Poor. Replenishment of storage in the Northern California system is below expectations year. A recent State Court decision to protect Delta smelt has resulted in restrictions on deliveries and flows through the Delta. Project allocation to water contractors is at 35%.

April Board of Directors Meetings

The Board Meetings for the month of April will be:

Wednesday	**April 9**	**4 pm**	**District Boardroom**	**1301 Santa Ynez Ave**
Wednesday	**April 23**	**4 pm**	**District Boardroom**	**1301 Santa Ynez Ave**

El Districto es bilingue. Favor de llamar (805) 684-2816 con cualquier pregunta sobre su cuenta o el uso de agua, estamos aqui para asistirlos.

Earth Day 2008

"*Reduce Your Eco-Footprint*"
2008 South Coast Earth Day Festival
Sunday, April 20th
10 am to 5:30 pm
Santa Barbara County Courthouse
Sunken Gardens

The Earth Day festival features a children's activity area, live music from the solar-powered stage, free bicycle check-ups, an "energy village", presentations of new and upcoming technologies by environmental entrepreneurs and innovators.

Landscape Water Conservation Tool

The MP Rotator is a multi-stream rotor that is similar in size to a traditional landscape spray sprinkler. It will fit any Hunter, Rainbird or Toro pop up body, transforming it into a highly efficient, low precipitation rate sprinkler. The MP Rotator runs twice as long traditional spray sprinklers but uses 30% less water because it applies water more slowly and evenly.

Installers find the MP Rotator saves time and water with quick retrofit capabilities to current spray head systems in lawn and shrub applications. Heads can be spaced as close as 8' and as far as 30'; it can also water strips as narrow as 4' wide. All MP Rotator sprinklers can be combined on the same zone for greater design and installation flexibility, allowing coverage to tight corners and wide spaces with only one valve. The MP Rotator provides maximum uniformity because it automatically adjusts the water flow when the arc pattern and radius distance are adjusted.

Easy Arc Adjustment

Easy Radius Adjustment

Please contact Rhonda at (805) 684-2816 for additional information regarding the MP Rotator Sprinkler.

Green Gardener Program

The Green Gardener Program trains gardeners in resource-efficient landscaping practices. Green Gardeners will be included on a list provided to homeowners looking for "green" landscaping services. **Bilingual Instruction available. Classes begin April 9, 2008**

For more info, call 568-3541 or visit www.greengardener.org

Visit our website at *www.cvwd.net* for new and updated information.

Carpinteria Valley Water District Board of Directors

Fred Lemere
President

June Van Wingerden
Vice President

Jim Drain
Bob Lieberknecht
Matt Roberts

Board Meetings

CVWD's Board of Directors regularly meets on the 3rd or 4th Wednesday of each month. Regular meetings begin at 4 p.m., are open to the public, and are held at 1301 Santa Ynez Ave., Carpinteria. For more information on the meeting schedule, phone (805) 684-2816

Staff

Charles Hamilton
General Manager

Suzie Lara
Alex Keuper

Engineering
Bob McDonald
District Engineer

Brian King
Rhonda Gutierrez

Business
Norma Rosales
Business Manager

Esperanza Barbosa
Tootie Maier
Patty Rodriguez

Operations and Maintenance
Omar Castro
O&M Manager

Jon Macias
Justin Martinez
Anne Mounce
Danny Rada
Daniel Rodriguez
Greg Stanford
Sarah Strassburg-Salas

Appendix K

Water Quality Monitoring Program

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 004 NAME: LYONS WELL CLASS: STBY STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 004		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**004**	**LYONS WELL**						
	GP	SECONDARY/GP									
		00440	BICARBONATE ALKALINITY	290.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		00916	CALCIUM	116.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		00445	CARBONATE ALKALINITY	10.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		00940	CHLORIDE	56.0000	MG/L	500.000	--------	2012/06/11	108	2021/06	
		00081	COLOR	5.0000	UNITS	15.000	--------	2012/06/11	108	2021/06	
		01042	COPPER	10.0000	UG/L	1000.000	50.000	2012/06/11	108	2021/06	
		38260	FOAMING AGENTS (MBAS)	.1000	MG/L	0.500	--------	2012/06/11	108	2021/06	
		00900	HARDNESS (TOTAL) AS CACO3	413.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		71830	HYDROXIDE ALKALINITY	10.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		01045	IRON	210.0000	UG/L	300.000	100.000	2014/09/03	108	2023/09	
		00927	MAGNESIUM	30.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		01055	MANGANESE	310.0000	UG/L	50.000	20.000	2014/09/03	108	2023/09	
		00086	ODOR THRESHOLD @ 60 C	1.0000	TON	3.000	1.000	2012/06/11	108	2021/06	
		00403	PH, LABORATORY	7.8000		--------	--------	2012/06/11	108	2021/06	
		01077	SILVER	1.0000	UG/L	100.000	10.000	2012/06/11	108	2021/06	
		00929	SODIUM	57.0000	MG/L	--------	--------	2012/06/11	108	2021/06	
		00095	SPECIFIC CONDUCTANCE	989.0000	US	1600.000	--------	2012/06/11	108	2021/06	
		00945	SULFATE	126.0000	MG/L	500.000	0.500	2012/06/11	108	2021/06	
		70300	TOTAL DISSOLVED SOLIDS	650.0000	MG/L	1000.000	--------	2012/06/11	108	2021/06	
		82079	TURBIDITY, LABORATORY	1.8000	NTU	5.000	0.100	2012/06/11	108	2021/06	
		01092	ZINC	20.0000	UG/L	5000.000	50.000	2012/06/11	108	2021/06	
	IO	INORGANIC									
		01105	ALUMINUM	20.0000	UG/L	1000.000	50.000	2012/06/11	108	2021/06	
		01097	ANTIMONY	1.0000	UG/L	6.000	6.000	2012/06/11	108	2021/06	
		01002	ARSENIC	2.0000	UG/L	10.000	2.000	2012/06/11	108	2021/06	
		81855	ASBESTOS			--------	--------		108	2015/10	DUE NOW
		01007	BARIUM	63.2000	UG/L	1000.000	100.000	2012/06/11	108	2021/06	
		01012	BERYLLIUM	1.0000	UG/L	4.000	1.000	2012/06/11	108	2021/06	
		01027	CADMIUM	.2000	UG/L	5.000	1.000	2012/06/11	108	2021/06	
		01034	CHROMIUM (TOTAL)	2.0000	UG/L	50.000	10.000	2012/06/11	108	2021/06	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: NAME: LYONS WELL CLASS: STBY STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 004	IO	INORGANIC									
		01032	CHROMIUM, HEXAVALENT	.0000	UG/L	--------	--------	2002/07/01	108	2011/07	DUE NOW
		00951	FLUORIDE (F) (NATURAL-SOURCE)	.2000	MG/L	2.000	0.100	2012/06/11	108	2021/06	
		01051	LEAD	.6000	UG/L	--------	5.000	2012/06/11	108	2021/06	
		71900	MERCURY	.0200	UG/L	2.000	1.000	2012/06/11	108	2021/06	
		01067	NICKEL	1.0000	UG/L	100.000	10.000	2012/06/11	108	2021/06	
		A-031	PERCHLORATE	2.0000	UG/L	6.000	4.000	2012/06/11	108	2021/06	
		01147	SELENIUM	3.0000	UG/L	50.000	5.000	2012/06/11	108	2021/06	
		01059	THALLIUM	.2000	UG/L	2.000	1.000	2012/06/11	108	2021/06	
	NI	NITRATE/NITRITE									
		00618	Nitrate (as N)			--------	--------		12	2015/10	DUE NOW
		71850	NITRATE (AS NO3)	32.4000	MG/L	45.000	2.000	2014/09/03	12	2015/09	DUE NOW
		00620	NITRITE (AS N)	.1000	UG/L	1000.000	400.000	2012/06/11	108	2021/06	
	RA	RADIOLOGICAL									
		01501	GROSS ALPHA	.0000	PCI/L	15.000	3.000	2004/06/02	108	2013/06	DUE NOW
	S1	REGULATED VOC									
		34506	1,1,1-TRICHLOROETHANE	.5000	UG/L	200.000	0.500	2012/06/11	108	2021/06	
		34516	1,1,2,2-TETRACHLOROETHANE	.5000	UG/L	1.000	0.500	2012/06/11	108	2021/06	
		34511	1,1,2-TRICHLOROETHANE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34496	1,1-DICHLOROETHANE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34501	1,1-DICHLOROETHYLENE	.5000	UG/L	6.000	0.500	2012/06/11	108	2021/06	
		34551	1,2,4-TRICHLOROBENZENE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34536	1,2-DICHLOROBENZENE	.5000	UG/L	600.000	0.500	2012/06/11	108	2021/06	
		34531	1,2-DICHLOROETHANE	.5000	UG/L	0.500	0.500	2012/06/11	108	2021/06	
		34541	1,2-DICHLOROPROPANE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34561	1,3-DICHLOROPROPENE (TOTAL)	.5000	UG/L	0.500	0.500	2009/06/01	108	2018/06	
		34571	1,4-DICHLOROBENZENE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34030	BENZENE	.5000	UG/L	1.000	0.500	2012/06/11	108	2021/06	
		32102	CARBON TETRACHLORIDE	.5000	UG/L	0.500	0.500	2012/06/11	108	2021/06	
		77093	CIS-1,2-DICHLOROETHYLENE	.5000	UG/L	6.000	0.500	2012/06/11	108	2021/06	
		34423	DICHLOROMETHANE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34371	ETHYLBENZENE	.5000	UG/L	300.000	0.500	2012/06/11	108	2021/06	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: NAME: LYONS WELL CLASS: STBY STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 004	S1	46491	METHYL-TERT-BUTYL-ETHER (MTBE)	1.0000	UG/L	13.000	3.000	2012/06/11	108	2021/06	
		34301	MONOCHLOROBENZENE	.5000	UG/L	70.000	0.500	2012/06/11	108	2021/06	
		77128	STYRENE	.5000	UG/L	100.000	0.500	2012/06/11	108	2021/06	
		34475	TETRACHLOROETHYLENE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34010	TOLUENE	.5000	UG/L	150.000	0.500	2012/06/11	108	2021/06	
		34546	TRANS-1,2-DICHLOROETHYLENE	.5000	UG/L	10.000	0.500	2012/06/11	108	2021/06	
		39180	TRICHLOROETHYLENE	.5000	UG/L	5.000	0.500	2012/06/11	108	2021/06	
		34488	TRICHLOROFLUOROMETHANE	.5000	UG/L	150.000	5.000	2012/06/11	108	2021/06	
		81611	TRICHLOROTRIFLUOROETHANE (FREON 113)	.5000	UG/L	1200.000	10.000	2012/06/11	108	2021/06	
		39175	VINYL CHLORIDE	.5000	UG/L	0.500	0.500	2012/06/11	108	2021/06	
		81551	XYLENES (TOTAL)	.5000	UG/L	1750.000	--------	2012/06/11	108	2021/06	
	S2	REGULATED SOC									
		39033	ATRAZINE	.0000	UG/L	3.000	1.000	2003/06/02	108	2012/06	DUE NOW
		39055	SIMAZINE	.0000	UG/L	4.000	1.000	2003/06/02	108	2012/06	DUE NOW

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 006 NAME: SMILLIE CLASS: LARG STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 006		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**006**	**SMILLIE**						
	GP	SECONDARY/GP									
		00440	BICARBONATE ALKALINITY	280.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		00916	CALCIUM	108.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		00445	CARBONATE ALKALINITY	10.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		00940	CHLORIDE	30.0000	MG/L	500.000	--------	2012/06/11	36	2015/06	DUE NOW
		00081	COLOR	5.0000	UNITS	15.000	--------	2012/06/11	36	2015/06	DUE NOW
		01042	COPPER	10.0000	UG/L	1000.000	50.000	2012/06/11	36	2015/06	DUE NOW
		38260	FOAMING AGENTS (MBAS)	.1000	MG/L	0.500	--------	2012/06/11	36	2015/06	DUE NOW
		00900	HARDNESS (TOTAL) AS CACO3	385.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		71830	HYDROXIDE ALKALINITY	10.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		01045	IRON	50.0000	UG/L	300.000	100.000	2012/06/11	36	2015/06	DUE NOW
		00927	MAGNESIUM	28.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		01055	MANGANESE	10.0000	UG/L	50.000	20.000	2012/06/11	36	2015/06	DUE NOW
		00086	ODOR THRESHOLD @ 60 C	1.0000	TON	3.000	1.000	2012/06/11	36	2015/06	DUE NOW
		00403	PH, LABORATORY	7.8000		--------	--------	2012/06/11	36	2015/06	DUE NOW
		01077	SILVER	1.0000	UG/L	100.000	10.000	2012/06/11	36	2015/06	DUE NOW
		00929	SODIUM	38.0000	MG/L	--------	--------	2012/06/11	36	2015/06	DUE NOW
		00095	SPECIFIC CONDUCTANCE	867.0000	US	1600.000	--------	2012/06/11	36	2015/06	DUE NOW
		00945	SULFATE	136.0000	MG/L	500.000	0.500	2012/06/11	36	2015/06	DUE NOW
		70300	TOTAL DISSOLVED SOLIDS	590.0000	MG/L	1000.000	--------	2012/06/11	36	2015/06	DUE NOW
		82079	TURBIDITY, LABORATORY	.3000	NTU	5.000	0.100	2012/06/11	36	2015/06	DUE NOW
		01092	ZINC	20.0000	UG/L	5000.000	50.000	2012/06/11	36	2015/06	DUE NOW
	IO	INORGANIC									
		01105	ALUMINUM	10.0000	UG/L	1000.000	50.000	2012/06/11	36	2015/06	DUE NOW
		01097	ANTIMONY	1.0000	UG/L	6.000	6.000	2012/06/11	36	2015/06	DUE NOW
		01002	ARSENIC	2.0000	UG/L	10.000	2.000	2012/06/11	36	2015/06	DUE NOW
		81855	ASBESTOS	.0000	MFL	7.000	0.200	2006/07/10	108	2015/07	DUE NOW
		01007	BARIUM	37.1000	UG/L	1000.000	100.000	2012/06/11	36	2015/06	DUE NOW
		01012	BERYLLIUM	1.0000	UG/L	4.000	1.000	2012/06/11	36	2015/06	DUE NOW
		01027	CADMIUM	.2000	UG/L	5.000	1.000	2012/06/11	36	2015/06	DUE NOW
		01034	CHROMIUM (TOTAL)	1.0000	UG/L	50.000	10.000	2012/06/11	36	2015/06	DUE NOW

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: NAME: SMILLIE CLASS: LARG STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 006	IO	INORGANIC									
		01032	CHROMIUM, HEXAVALENT	.0000	UG/L	--------	--------	2002/07/01	36	2005/07	DUE NOW
		00951	FLUORIDE (F) (NATURAL-SOURCE)	.1000	MG/L	2.000	0.100	2012/06/11	36	2015/06	DUE NOW
		01051	LEAD	.2000	UG/L	--------	5.000	2012/06/11	36	2015/06	DUE NOW
		71900	MERCURY	.0200	UG/L	2.000	1.000	2012/06/11	36	2015/06	DUE NOW
		01067	NICKEL	1.0000	UG/L	100.000	10.000	2012/06/11	36	2015/06	DUE NOW
		A-031	PERCHLORATE	2.0000	UG/L	6.000	4.000	2012/06/11	36	2015/06	DUE NOW
		01147	SELENIUM	2.0000	UG/L	50.000	5.000	2012/06/11	36	2015/06	DUE NOW
		01059	THALLIUM	.2000	UG/L	2.000	1.000	2012/06/11	36	2015/06	DUE NOW
	NI	NITRATE/NITRITE									
		00618	Nitrate (as N)			--------	--------		12	2015/10	DUE NOW
		71850	NITRATE (AS NO3)	13.6000	MG/L	45.000	2.000	2012/06/11	12	2013/06	DUE NOW
		00620	NITRITE (AS N)	.1000	UG/L	1000.000	400.000	2012/06/11	36	2015/06	DUE NOW
	RA	RADIOLOGICAL									
		01501	GROSS ALPHA	.0000	PCI/L	15.000	3.000	2004/06/02	108	2013/06	DUE NOW
	S1	REGULATED VOC									
		34506	1,1,1-TRICHLOROETHANE	.5000	UG/L	200.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34516	1,1,2,2-TETRACHLOROETHANE	.5000	UG/L	1.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34511	1,1,2-TRICHLOROETHANE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34496	1,1-DICHLOROETHANE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34501	1,1-DICHLOROETHYLENE	.5000	UG/L	6.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34551	1,2,4-TRICHLOROBENZENE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34536	1,2-DICHLOROBENZENE	.5000	UG/L	600.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34531	1,2-DICHLOROETHANE	.5000	UG/L	0.500	0.500	2012/06/11	36	2015/06	DUE NOW
		34541	1,2-DICHLOROPROPANE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34561	1,3-DICHLOROPROPENE (TOTAL)	.5000	UG/L	0.500	0.500	2009/06/01	36	2012/06	DUE NOW
		34571	1,4-DICHLOROBENZENE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34030	BENZENE	.5000	UG/L	1.000	0.500	2012/06/11	36	2015/06	DUE NOW
		32102	CARBON TETRACHLORIDE	.5000	UG/L	0.500	0.500	2012/06/11	36	2015/06	DUE NOW
		77093	CIS-1,2-DICHLOROETHYLENE	.5000	UG/L	6.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34423	DICHLOROMETHANE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34371	ETHYLBENZENE	.5000	UG/L	300.000	0.500	2012/06/11	36	2015/06	DUE NOW

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: NAME: SMILLIE CLASS: LARG STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 006	S1	46491	METHYL-TERT-BUTYL-ETHER (MTBE)	1.0000	UG/L	13.000	3.000	2012/06/11	36	2015/06	DUE NOW
		34301	MONOCHLOROBENZENE	.5000	UG/L	70.000	0.500	2012/06/11	36	2015/06	DUE NOW
		77128	STYRENE	.5000	UG/L	100.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34475	TETRACHLOROETHYLENE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34010	TOLUENE	.5000	UG/L	150.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34546	TRANS-1,2-DICHLOROETHYLENE	.5000	UG/L	10.000	0.500	2012/06/11	36	2015/06	DUE NOW
		39180	TRICHLOROETHYLENE	.5000	UG/L	5.000	0.500	2012/06/11	36	2015/06	DUE NOW
		34488	TRICHLOROFLUOROMETHANE	.5000	UG/L	150.000	5.000	2012/06/11	36	2015/06	DUE NOW
		81611	TRICHLOROTRIFLUOROETHANE (FREON 113)	.5000	UG/L	1200.000	10.000	2012/06/11	36	2015/06	DUE NOW
		39175	VINYL CHLORIDE	.5000	UG/L	0.500	0.500	2012/06/11	36	2015/06	DUE NOW
		81551	XYLENES (TOTAL)	.5000	UG/L	1750.000	--------	2012/06/11	36	2015/06	DUE NOW
	S2	REGULATED SOC									
		39033	ATRAZINE	.5000	UG/L	1.000	0.500	2006/07/10	108	2015/07	DUE NOW
		39055	SIMAZINE	1.0000	UG/L	4.000	1.000	2006/07/10	108	2015/07	DUE NOW

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 015 NAME: HEADQUARTERS WELL CLASS: LARG STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 015		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**015**	**HEADQUARTERS WELL**						
	GP	SECONDARY/GP									
		00440	BICARBONATE ALKALINITY	320.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		00916	CALCIUM	102.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		00445	CARBONATE ALKALINITY	10.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		00940	CHLORIDE	44.0000	MG/L	500.000	--------	2015/06/01	36	2018/06	
		00081	COLOR	5.0000	UNITS	15.000	--------	2015/06/01	36	2018/06	
		01042	COPPER	10.0000	UG/L	1000.000	50.000	2015/06/01	36	2018/06	
		38260	FOAMING AGENTS (MBAS)	.1000	MG/L	0.500	--------	2015/06/01	36	2018/06	
		00900	HARDNESS (TOTAL) AS CACO3	366.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		71830	HYDROXIDE ALKALINITY	10.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		01045	IRON	30	UG/L	300.000	100.000	2015/11/04	36	2018/11	
		00927	MAGNESIUM	27.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		01055	MANGANESE	90	UG/L	50.000	20.000	2015/11/04	36	2018/11	
		00086	ODOR THRESHOLD @ 60 C	1.0000	TON	3.000	1.000	2015/06/01	36	2018/06	
		00403	PH, LABORATORY	7.6000		--------	--------	2015/06/01	36	2018/06	
		01077	SILVER	1.0000	UG/L	100.000	10.000	2015/06/01	36	2018/06	
		00929	SODIUM	53.0000	MG/L	--------	--------	2015/06/01	36	2018/06	
		00095	SPECIFIC CONDUCTANCE	869.0000	US	1600.000	--------	2015/06/01	36	2018/06	
		00945	SULFATE	116.0000	MG/L	500.000	0.500	2015/06/01	36	2018/06	
		70300	TOTAL DISSOLVED SOLIDS	580.0000	MG/L	1000.000	--------	2015/06/01	36	2018/06	
		82079	TURBIDITY, LABORATORY	.2000	NTU	5.000	0.100	2015/06/01	36	2018/06	
		01092	ZINC	20.0000	UG/L	5000.000	50.000	2015/06/01	36	2018/06	
	IO	INORGANIC									
		01105	ALUMINUM	10.0000	UG/L	1000.000	50.000	2015/06/01	36	2018/06	
		01097	ANTIMONY	1.0000	UG/L	6.000	6.000	2015/06/01	36	2018/06	
		01002	ARSENIC	2.0000	UG/L	10.000	2.000	2015/06/01	36	2018/06	
		81855	ASBESTOS	.0000	MFL	7.000	0.200	2006/07/10	108	2015/07	DUE NOW
		01007	BARIUM	64.0000	UG/L	1000.000	100.000	2015/06/01	36	2018/06	
		01012	BERYLLIUM	1.0000	UG/L	4.000	1.000	2015/06/01	36	2018/06	
		01027	CADMIUM	.2000	UG/L	5.000	1.000	2015/06/01	36	2018/06	
		01034	CHROMIUM (TOTAL)	1.0000	UG/L	50.000	10.000	2015/06/01	36	2018/06	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: NAME: HEADQUARTERS WELL CLASS: LARG STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 015	IO	INORGANIC									
		01032	CHROMIUM, HEXAVALENT			--------	--------		0	2015/10	DUE NOW
		00951	FLUORIDE (F) (NATURAL-SOURCE)	.3000	MG/L	2.000	0.100	2015/06/01	36	2018/06	
		01051	LEAD	.5000	UG/L	--------	5.000	2015/06/01	36	2018/06	
		71900	MERCURY	.0200	UG/L	2.000	1.000	2015/06/01	36	2018/06	
		01067	NICKEL	1.0000	UG/L	100.000	10.000	2015/06/01	36	2018/06	
		A-031	PERCHLORATE	3.0000	UG/L	6.000	4.000	2015/06/01	36	2018/06	
		01147	SELENIUM	1.0000	UG/L	50.000	5.000	2015/06/01	36	2018/06	
		01059	THALLIUM	.2000	UG/L	2.000	1.000	2015/06/01	36	2018/06	
	NI	NITRATE/NITRITE									
		00618	Nitrate (as N)			--------	--------		12	2015/10	DUE NOW
		71850	NITRATE (AS NO3)	18.4000	MG/L	45.000	2.000	2015/06/01	12	2016/06	
		00620	NITRITE (AS N)	.2000	UG/L	1000.000	400.000	2015/06/01	36	2018/06	
	RA	RADIOLOGICAL									
		01501	GROSS ALPHA	.0000	PCI/L	15.000	3.000	2006/11/06	108	2015/11	DUE NOW
	S1	REGULATED VOC									
		34506	1,1,1-TRICHLOROETHANE	.5000	UG/L	200.000	0.500	2015/06/01	36	2018/06	
		34516	1,1,2,2-TETRACHLOROETHANE	.5000	UG/L	1.000	0.500	2015/06/01	36	2018/06	
		34511	1,1,2-TRICHLOROETHANE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34496	1,1-DICHLOROETHANE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34501	1,1-DICHLOROETHYLENE	.5000	UG/L	6.000	0.500	2015/06/01	36	2018/06	
		34551	1,2,4-TRICHLOROBENZENE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34536	1,2-DICHLOROBENZENE	.5000	UG/L	600.000	0.500	2015/06/01	36	2018/06	
		34531	1,2-DICHLOROETHANE	.5000	UG/L	0.500	0.500	2015/06/01	36	2018/06	
		34541	1,2-DICHLOROPROPANE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34561	1,3-DICHLOROPROPENE (TOTAL)	.5000	UG/L	0.500	0.500	2015/06/01	36	2018/06	
		34571	1,4-DICHLOROBENZENE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34030	BENZENE	.5000	UG/L	1.000	0.500	2015/06/01	36	2018/06	
		32102	CARBON TETRACHLORIDE	.5000	UG/L	0.500	0.500	2015/06/01	36	2018/06	
		77093	CIS-1,2-DICHLOROETHYLENE	.5000	UG/L	6.000	0.500	2015/06/01	36	2018/06	
		34423	DICHLOROMETHANE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34371	ETHYLBENZENE	.5000	UG/L	300.000	0.500	2015/06/01	36	2018/06	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: NAME: HEADQUARTERS WELL CLASS: LARG STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 015	S1	46491	METHYL-TERT-BUTYL-ETHER (MTBE)	1.0000	UG/L	13.000	3.000	2015/06/01	36	2018/06	
		34301	MONOCHLOROBENZENE	.5000	UG/L	70.000	0.500	2015/06/01	36	2018/06	
		77128	STYRENE	.5000	UG/L	100.000	0.500	2015/06/01	36	2018/06	
		34475	TETRACHLOROETHYLENE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34010	TOLUENE	.5000	UG/L	150.000	0.500	2015/06/01	36	2018/06	
		34546	TRANS-1,2-DICHLOROETHYLENE	.5000	UG/L	10.000	0.500	2015/06/01	36	2018/06	
		39180	TRICHLOROETHYLENE	.5000	UG/L	5.000	0.500	2015/06/01	36	2018/06	
		34488	TRICHLOROFLUOROMETHANE	.5000	UG/L	150.000	5.000	2015/06/01	36	2018/06	
		81611	TRICHLOROTRIFLUOROETHANE (FREON 113)	.5000	UG/L	1200.000	10.000	2015/06/01	36	2018/06	
		39175	VINYL CHLORIDE	.5000	UG/L	0.500	0.500	2015/06/01	36	2018/06	
		81551	XYLENES (TOTAL)	.5000	UG/L	1750.000	--------	2015/06/01	36	2018/06	
	S2	REGULATED SOC									
		39033	ATRAZINE	.5000	UG/L	1.000	0.500	2006/07/10	108	2015/07	DUE NOW
		39055	SIMAZINE	1.0000	UG/L	4.000	1.000	2006/07/10	108	2015/07	DUE NOW

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 017 NAME: STAGE-2: #1 GOBERNADOR CYN CLASS: DBPQ STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 017		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**017**	**STAGE-2: #1 GOBERNADOR CYN**						
		(UNIDENTIFIED GROUP)									
		82721	DIBROMOACETIC ACID (DBAA)	5	UG/L	--------	1.000	2015/11/02	3	2016/02	
		77288	DICHLOROACETIC ACID (DCAA)	4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-049	HALOACETIC ACIDS (5) (HAA5)	16	UG/L	60.000	--------	2015/11/02	3	2016/02	
		A-041	MONOBROMOACETIC ACID (MBAA)	3	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-042	MONOCHLOROACETIC ACID (MCAA)	2	UG/L	--------	2.000	2015/11/02	3	2016/02	
		82723	TRICHLOROACETIC ACID (TCAA)	4	UG/L	--------	1.000	2015/11/02	3	2016/02	
	S2	REGULATED SOC									
		A-001	THIOBENCARB			--------	--------		3	2015/10	DUE NOW
	TH	TRIHALOMETHANES									
		82080	TOTAL TRIHALOMETHANES	26.1	UG/L	80.000	--------	2015/11/02	3	2016/02	
	UA	STATE UCMR									
		32101	BROMODICHLOROMETHANE (THM)	6.8	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32104	BROMOFORM (THM)	5.5	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32106	CHLOROFORM (THM)	3.4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32105	DIBROMOCHLOROMETHANE (THM)	10.4	UG/L	--------	1.000	2015/11/02	3	2016/02	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 018 NAME: STAGE-2: #2 SHEPARD MESA CLASS: DBPQ STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 018		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**018**	**STAGE-2: #2 SHEPARD MESA**						
		(UNIDENTIFIED GROUP)									
		82721	DIBROMOACETIC ACID (DBAA)	4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		77288	DICHLOROACETIC ACID (DCAA)	4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-049	HALOACETIC ACIDS (5) (HAA5)	15	UG/L	60.000	--------	2015/11/02	3	2016/02	
		A-041	MONOBROMOACETIC ACID (MBAA)	3	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-042	MONOCHLOROACETIC ACID (MCAA)	2	UG/L	--------	2.000	2015/11/02	3	2016/02	
		82723	TRICHLOROACETIC ACID (TCAA)	4	UG/L	--------	1.000	2015/11/02	3	2016/02	
	S2	REGULATED SOC									
		A-001	THIOBENCARB			--------	--------		3	2015/10	DUE NOW
	TH	TRIHALOMETHANES									
		82080	TOTAL TRIHALOMETHANES	39.0	UG/L	80.000	--------	2015/11/02	3	2016/02	
	UA	STATE UCMR									
		32101	BROMODICHLOROMETHANE (THM)	10.5	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32104	BROMOFORM (THM)	7.6	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32106	CHLOROFORM (THM)	5.4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32105	DIBROMOCHLOROMETHANE (THM)	15.5	UG/L	--------	1.000	2015/11/02	3	2016/02	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 019 NAME: STAGE-2: #3 CASITAS PASS RD CLASS: DBPQ STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 019		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**019**	**STAGE-2: #3 CASITAS PASS RD**						
		(UNIDENTIFIED GROUP)									
		82721	DIBROMOACETIC ACID (DBAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
		77288	DICHLOROACETIC ACID (DCAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-049	HALOACETIC ACIDS (5) (HAA5)	1	UG/L	60.000	--------	2015/11/02	3	2016/02	
		A-041	MONOBROMOACETIC ACID (MBAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-042	MONOCHLOROACETIC ACID (MCAA)	2	UG/L	--------	2.000	2015/11/02	3	2016/02	
		82723	TRICHLOROACETIC ACID (TCAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
	S2	REGULATED SOC									
		A-001	THIOBENCARB			--------	--------		3	2015/10	DUE NOW
	TH	TRIHALOMETHANES									
		82080	TOTAL TRIHALOMETHANES	13.9	UG/L	80.000	--------	2015/11/02	3	2016/02	
	UA	STATE UCMR									
		32101	BROMODICHLOROMETHANE (THM)	2.3	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32104	BROMOFORM (THM)	5.5	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32106	CHLOROFORM (THM)	1.4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32105	DIBROMOCHLOROMETHANE (THM)	4.7	UG/L	--------	1.000	2015/11/02	3	2016/02	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210001 NAME: CARPINTERIA VALLEY WATER DISTRICT COUNTY: SANTA BARBARA

SOURCE NO: 020 NAME: STAGE-2: #4 POLO FIELDS CLASS: DBPQ STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST RESULT	UNITS	MCL	DLR	LAST SAMPLE	FREQ MONTHS	NEXT SAMPLE DUE	NOTES
4210001 - 020		**4210001**	**CARPINTERIA VALLEY WATER DISTRICT**	**020**	**STAGE-2: #4 POLO FIELDS**						
		(UNIDENTIFIED GROUP)									
		82721	DIBROMOACETIC ACID (DBAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
		77288	DICHLOROACETIC ACID (DCAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-049	HALOACETIC ACIDS (5) (HAA5)	1	UG/L	60.000	--------	2015/11/02	3	2016/02	
		A-041	MONOBROMOACETIC ACID (MBAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
		A-042	MONOCHLOROACETIC ACID (MCAA)	2	UG/L	--------	2.000	2015/11/02	3	2016/02	
		82723	TRICHLOROACETIC ACID (TCAA)	1	UG/L	--------	1.000	2015/11/02	3	2016/02	
	S2	REGULATED SOC									
		A-001	THIOBENCARB			--------	--------		3	2015/10	DUE NOW
	TH	TRIHALOMETHANES									
		82080	TOTAL TRIHALOMETHANES	11.9	UG/L	80.000	--------	2015/11/02	3	2016/02	
	UA	STATE UCMR									
		32101	BROMODICHLOROMETHANE (THM)	2.3	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32104	BROMOFORM (THM)	3.4	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32106	CHLOROFORM (THM)	1.5	UG/L	--------	1.000	2015/11/02	3	2016/02	
		32105	DIBROMOCHLOROMETHANE (THM)	4.7	UG/L	--------	1.000	2015/11/02	3	2016/02	

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210010 NAME: CITY OF SANTA BARBARA WATER DEPARTMENT COUNTY: SANTA BARBARA

SOURCE NO: 003 NAME: CATER TREATMENT PLANT RAW CLASS: SWSW STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST SAMPLE	COUNT	FREQ	MODIFIED SCHEDULE	NEXT SAMPLE DUE		
4210010003		**4210010**	**CITY OF SANTA BARBARA WATER DEPARTMENT**	**003**	**CATER TREATMENT PLANT RAW**					
	GP	**SECONDARY/GP**								
		82383	AGGRSSIVE INDEX (CORROSIVITY)	2015/11/10	13	12		2016/11		
		00440	BICARBONATE ALKALINITY	2015/11/10	19	12		2016/11		
		00916	CALCIUM	2015/11/10	43	12		2016/11		
		00445	CARBONATE ALKALINITY	2015/11/10	19	12		2016/11		
		00940	CHLORIDE	2015/11/10	44	12		2016/11		
		00081	COLOR	2015/11/10	44	12		2016/11		
		01042	COPPER	2016/01/12	47	12		2017/01		
		38260	FOAMING AGENTS (MBAS)	2015/11/10	21	12		2016/11		
		00900	HARDNESS (TOTAL) AS CACO3	2015/11/10	43	12		2016/11		
		71830	HYDROXIDE ALKALINITY	2015/11/10	19	12		2016/11		
		01045	IRON	2016/01/12	48	12		2017/01		
		00927	MAGNESIUM	2016/01/12	45	12		2017/01		
		01055	MANGANESE	2016/01/12	46	12		2017/01		
		00086	ODOR THRESHOLD @ 60 C	2015/11/10	42	12		2016/11		
		00403	PH, LABORATORY	2015/11/10	43	12		2016/11		
		01077	SILVER	2015/11/10	21	12		2016/11		
		00929	SODIUM	2016/01/12	47	12		2017/01		
		00095	SPECIFIC CONDUCTANCE	2015/11/10	44	12		2016/11		
		00945	SULFATE	2015/11/10	44	12		2016/11		
		70300	TOTAL DISSOLVED SOLIDS	2015/11/10	44	12		2016/11		
		82079	TURBIDITY, LABORATORY	2015/11/10	43	12		2016/11		
		01092	ZINC	2016/01/12	46	12		2017/01		
	IO	**INORGANIC**								
		01105	ALUMINUM	2016/01/12	41	12		2017/01		
		01097	ANTIMONY	2015/11/10	19	12		2016/11		
		01002	ARSENIC	2016/01/12	39	12		2017/01		
		81855	ASBESTOS	2010/07/08	14	108		2019/07		
		01007	BARIUM	2015/11/10	21	12		2016/11		
		01012	BERYLLIUM	2015/11/10	19	12		2016/11		
		01027	CADMIUM	2015/11/10	21	12		2016/11		

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: 4210010 NAME: CITY OF SANTA BARBARA WATER DEPARTMENT COUNTY: SANTA BARBARA

SOURCE NO: 003 NAME: CATER TREATMENT PLANT RAW CLASS: SWSW STATUS: Active

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST SAMPLE	COUNT	FREQ	MODIFIED SCHEDULE	NEXT SAMPLE DUE		
4210010003	IO	INORGANIC								
		01034	CHROMIUM (TOTAL)	2016/01/12	36	12		2017/01		
		01291	CYANIDE	2015/11/10	18	12		2016/11		
		00951	FLUORIDE (F) (NATURAL-SOURCE)	2015/11/10	38	12		2016/11		
		01051	LEAD	2015/11/10	21	12		2016/11		
		71900	MERCURY	2015/11/10	21	12		2016/11		
		01067	NICKEL	2015/11/10	19	12		2016/11		
		A-031	PERCHLORATE	2015/11/10	14	12		2016/11		
		01147	SELENIUM	2015/11/10	21	12		2016/11		
		01059	THALLIUM	2015/11/10	19	12		2016/11		
	NI	NITRATE/NITRITE								
		00618	NITRATE (as N)	2015/11/10	63	12		2016/11		
		00620	NITRITE (AS N)	2015/11/10	53	36		2018/11		
	RA	RADIOLOGICAL								
		01501	GROSS ALPHA	2014/10/22	17	108	M	2023/10		
	S1	REGULATED VOC								
		34506	1,1,1-TRICHLOROETHANE	2014/10/22	20	36		2017/10		
		34516	1,1,2,2-TETRACHLOROETHANE	2014/10/22	20	36		2017/10		
		34511	1,1,2-TRICHLOROETHANE	2014/10/22	20	36		2017/10		
		34496	1,1-DICHLOROETHANE	2014/10/22	20	36		2017/10		
		34501	1,1-DICHLOROETHYLENE	2014/10/22	20	36		2017/10		
		34551	1,2,4-TRICHLOROBENZENE	2014/10/22	19	36		2017/10		
		34536	1,2-DICHLOROBENZENE	2014/10/22	20	36		2017/10		
		34531	1,2-DICHLOROETHANE	2014/10/22	20	36		2017/10		
		34541	1,2-DICHLOROPROPANE	2014/10/22	20	36		2017/10		
		34561	1,3-DICHLOROPROPENE (TOTAL)	2014/10/22	19	36		2017/10		
		34571	1,4-DICHLOROBENZENE	2014/10/22	20	36		2017/10		
		34030	BENZENE	2014/10/22	24	36		2017/10		
		32102	CARBON TETRACHLORIDE	2014/10/22	20	36		2017/10		
		77093	CIS-1,2-DICHLOROETHYLENE	2014/10/22	19	36		2017/10		
		34423	DICHLOROMETHANE	2014/10/22	20	36		2017/10		
		34371	ETHYLBENZENE	2014/10/22	24	36		2017/10		

LAST SAMPLE DATE AND MONITORING SCHEDULE

SYSTEM NO: NAME: COUNTY:

SOURCE NO: NAME: CLASS: STATUS:

PSCODE		GROUP/CONSTITUENT IDENTIFICATION		LAST SAMPLE	COUNT	FREQ	MODIFIED SCHEDULE	NEXT SAMPLE DUE		
4210010003	**S1**	46491	METHYL-TERT-BUTYL-ETHER (MTBE)	2014/10/22	33	36		2017/10		
		34301	MONOCHLOROBENZENE	2014/10/22	20	36		2017/10		
		77128	STYRENE	2014/10/22	20	36		2017/10		
		34475	TETRACHLOROETHYLENE	2014/10/22	34	36		2017/10		
		34010	TOLUENE	2014/10/22	23	36		2017/10		
		34546	TRANS-1,2-DICHLOROETHYLENE	2014/10/22	20	36		2017/10		
		39180	TRICHLOROETHYLENE	2014/10/22	20	36		2017/10		
		34488	TRICHLOROFLUOROMETHANE	2014/10/22	20	36		2017/10		
		81611	TRICHLOROTRIFLUOROETHANE (FREON 113)	2014/10/22	19	36		2017/10		
		39175	VINYL CHLORIDE	2014/10/22	20	36		2017/10		
		81551	XYLENES (TOTAL)	2014/10/22	23	36		2017/10		