Cambria Community Services District
Urban Water Management Plan

FINAL

December 15, 2016

MADDAUS
WATER
MANAGEMENT INC.

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LIST OF ACRONYMS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AF	acre-feet
AFY	acre-feet per year
AMI	Advanced Metering Infrastructure
AWWA	American Water Works Association
BMP	Best Management Practice
CCSD	Cambria Community Services District
CDP	Census Designed Place
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CII	Commercial, Industrial, and Institutional
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DDW	State Water Resources Control Board Division of Drinking Water
DMM	Demand Management Measures
DSS	Least Cost Planning Decision Support System
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ETo	Evapotranspiration
FY	fiscal year
GPCD	gallons per capita per day
gpf	gallons per flush
gpm	gallons per minute
HET	High-Efficiency Toilet
LAFCO	Local Agency Formation Commission
LHMP	Local Hazard Mitigation Plan
MOU	Memorandum of Understanding Regarding Water Conservation in California
MWM	Maddaus Water Management Inc.
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PEIR	Program (or Programmatic or Program-level) Environmental Impact Report
POUR	Point of use recycled
PWS	Public Water Systems
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SB X7-7	Water Conservation Bill of 2009
SCADA	Supervisory Control and Data Acquisition
SEIR	Supplemental Environmental Impact Report
SEMS	Standardized Emergency Management System
SOI	Southern Oscillation Index
SWF	Sustainable Water Facility
SWRCB	State Water Resources Control Board
SWTR	surface water treatment rule
TDS	total dissolved solids
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
WDR	Waste Discharge Requirement
WMP	Water Master Plan
WRAC	Water Resource Advisory Committee
WRDA	Federal Water Resources Development Act
WRR	Water Recycling Requirement
WUEP	Water Use Efficiency Program
WWTP	Wastewater Treatment Plant

1. INTRODUCTION AND OVERVIEW

This report presents the 2015 Urban Water Management Plan (2015 UWMP) for the Cambria Community Services District (CCSD) service area. This section describes the general purpose of the 2015 UWMP, discusses 2015 UWMP implementation, and provides general information about CCSD and its service area characteristics.

1.1 Background and Purpose

The intent of this plan is to provide the Department of Water Resources (DWR) and the public with information on present and future water sources and demands and to provide an assessment of CCSD's water resource needs. Specifically, the 2015 UWMP must provide water supply planning for a 20-year planning period in 5-year increments; identify and quantify adequate water supplies for existing and future demands during normal, dry and drought years; and assure efficient use of urban water supplies. This 2015 UWMP addresses all Water Code requirements for such a plan as shown in the completed DWR UWMP checklist provided in Appendix A.

1.2 Urban Water Management Planning and the California Water Code

The 2015 UWMP update for the Cambria Community Services District was prepared in compliance with the Urban Water Management Planning Act (UWMP Act), California Water Code (CWC) §10610 through §10657, as amended. The California Department of Water Resources has produced the "Guidebook to Assist Urban Water Suppliers to Prepare a 2015 Urban Water Management Plan" (Final, March 2016), which was used to guide the development of CCSD's 2015 UWMP. When compared to CCSD's earlier 2010 UWMP, the 2015 UWMP update has been rearranged to better correlate with the outline and content needs suggested within the March 2016 DWR Guidebook. Many of the tables presented herein are also intended to match the formatting suggested within the DWR Guidebook with the intention of facilitating a future DWR review.

The UWMP Act requires that "every urban water supplier shall prepare and adopt an Urban Water Management Plan." An urban water supplier is defined as "a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually." CCSD, as defined in the California Water Code Section 10617, qualifies as an urban water supplier. CCSD is a public agency directly providing water for municipal purposes to approximately 4,028 customer accounts, which is more than 3,000 customers, so a UWMP is required to be completed for 2015 and every five years thereafter and submitted to the California Department of Water Resources.

In order for an urban water supplier to be eligible for any water management grant or loan administered by DWR, the agency must have a current UWMP on file that has been determined by DWR to address the requirements of the California Water Code. A current UWMP must also be maintained by the water supplier throughout the term of any grant or loan administered by DWR. A UWMP may also be required in order to be eligible for other State funding, depending on the conditions that are specified in the funding guidelines.

1.2.1 Urban Water Management Planning Act of 1983 (AB 797)

The UWMP Act requires urban water suppliers to report, describe, and evaluate:

- Water deliveries and uses
- Water supply sources
- Efficient water uses
- Demand Management Measures (Conservation Measures), including implementation strategy and schedule

The UWMP Act directs water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future demands. Urban water suppliers are required to assess current demands and supplies over a 20-year planning horizon and consider various drought scenarios. The UWMP Act also requires water shortage contingency planning and drought response actions be included in a UWMP.

This 2015 UWMP coalesces important information on CCSD's water supply planning and studies, emergency response, and conservation activities.

A checklist to ensure compliance of this 2015 UWMP with the UWMP Act requirements is provided in Appendix A.

1.2.2 Applicable Changes to the Water Code since 2010 UWMPs

Listed below are the applicable changes to the water code since the 2010 Urban Water Management Plan.

Change Number	Topic	CWC Section	Legislation Bill	Summary	Section in CCSD 2015 UWMP
1	Demand Management Measures	10631 (f) (1) and (2)	AB 2067, 2014	Requires water suppliers to provide narratives describing their water demand management measures, as provided. Requires retail water suppliers to address the nature and extent of each water demand management measure implemented over the past 5 years and describe the water demand management measures that the supplier plans to implement to achieve its water use targets.	Chapter 9
2	Submittal Date	10621 (d)	AB 2067, 2014	Requires each urban water supplier to submit its 2015 plan to the Department of Water Resources by July 1, 2016.	Chapter 10
3	Electronic Submittal	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to be submitted electronically to the department.	Chapter 10
4	Standardized Forms	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by the department.	Water agencies are required to submit UWMP data electronically to DWR using standardized tables. CCSD is including the UWMP standardized forms as tables in this 2015 UWMP.
5	Water Loss	10631 (e) (1) (J) and (e) (3) (A) and (B)	SB 1420, 2014	Requires the plan to quantify and report on distribution system water loss.	Section 4.3, Appendix K
6	Estimating Future Water Savings	10631 (e) (4)	SB 1420, 2014	Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.	Section 4.4, Appendix G

7	Defining Water Features	10632	AB 2409, 2010	Requires urban water suppliers to analyze and define water features that are artificially supplied, including ponds, lakes, waterfalls, and fountains, separately from swimming pools/spas.	Section 8.2

1.2.3 Water Conservation Act of 2009 (SB X7-7)

In addition to the UWMP Act, the Water Conservation Act of 2009 (Senate Bill X7-7 or SB X7-7) requires urban water suppliers to report in their UWMPs base daily per capita water use (baseline), urban water use target, interim urban water use target, and compliance daily per capita water use. Beginning in 2016, retail water suppliers are required to comply with the water conservation requirements in SB X7-7 in order to be eligible for State water grants or loans.

1.3 UWMP Organization

The following information is included in this report and is discussed in individual sections below:

Section 1 – Introduction and Overview: In this introductory section, a discussion on the importance of water management planning is provided and the extent of CCSD's efforts in related activities.

Section 2 – Plan Preparation: This section describes the basis for preparing the 2015 UWMP, the regional planning involved, the calendar year and units of measure, and the coordination and outreach efforts CCSD utilized.

Section 3 – System Description: This section of the plan includes a map of CCSD's service area and a description of the service area and climate. A discussion of the Public Water System(s), the organizational structure, and the history of the water supplier are also provided.

Section 4 – System Water Use: This section describes the urban water system demands, including calculating baseline water use and interim and urban water use targets. It quantifies the current water system demand by category and projects them over the planning horizon of the 2015 UWMP, including water sales to other agencies, system water losses, and water use target compliance projections.

Section 5 – Baselines and Targets: This section includes information regarding the baselines and targets for CCSD.

Section 6 – System Supplies: This section describes and quantifies the current and projected sources of water available to CCSD. A description and quantification of potential recycled water uses and supply availability are also included in this section.

Section 7 – Water Supply Reliability: This section describes the reliability of CCSD's water supply and provides a 20-year reliability projection. This description is provided for normal, single dry years, and multiple dry years.

Section 8 – Water Shortage Contingency Planning: This section provides CCSD's staged contingency plan to be implemented during water shortages, including catastrophic supply interruption.

Section 9 – Demand Management Measures: CCSD's efforts to promote conservation and to reduce demand on water supply is detailed in this section, which also specifically addresses several demand management measures.

Section 10 – Plan Adoption, Submittal, and Implementation: This section outlines the steps taken to adopt and submit the 2015 UWMP, including CCSD's efforts to publicly circulate the plan for review and comment. This section of the plan also includes a discussion of CCSD's intent to implement the 2015 UWMP.

Section 11 – References: All applicable references contained within this 2015 UWMP are noted in this section.

Section 12 – Appendices: As shown in the Table of Contents, a number of appendices are included consisting of documents related to this 2015 UWMP preparation.

2. PLAN PREPARATION

The 2015 UWMP update was jointly prepared by the CCSD District Engineer[1] and Maddaus Water Management (MWM) with support from CCSD staff and CCSD legal counsel.

References used to support development of the UWMP are provided in Section 11. Questions concerning the UWMP should be directed to the CCSD District Office at P.O. Box 65, Cambria, CA 93465, or by calling the District Office at 805-927-6223. Requests for copies of the UWMP or supporting CCSD references should be submitted to the CCSD District Clerk. The 2015 update will also be posted on the CCSD website at www.cambriacsd.org.

2.1 Basis for Preparing a Plan

In accordance with the California Water Code (CWC) as previously described in Section 1.2 of this plan, CCSD has prepared this plan in compliance with State law and following the guidelines as outlaid by the Department of Water Resources in their "*Guidelines for Urban Water Suppliers*" guidebook, posted as Final in March 2016. The 2015 UWMP is the 5-year update to the 2010 UWMP and will supersede the contents of the former plan.

2.1.1 Public Water Systems

Public Water Systems (PWS) are the systems that provide drinking water for human consumption. These systems are regulated by the State Water Resources Control Board (SWRCB), Division of Drinking Water (DDW). The California Health and Safety Code 116275(h) defines a "Public Water System" as a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year. Therefore, the CCSD water system is a Public Water System by definition and operates under a domestic water supply permit issued by DDW.

Table 2-1 lists the name and number of connections reported in this 2015 UWMP.

Table 2-1. Public Water Systems

Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (AFY)
CA4010014	Cambria Community Services District	4,028	467
	TOTAL	4.028	467

2.2 Regional Planning

CCSD is a signatory agency to a Regional Water Management Plan Memorandum of Understanding (MOU), which is administered by San Luis Obispo County. CCSD is also a voting member of the County's Water Resource Advisory Committee (WRAC), which typically meets monthly and advises the County Board of Supervisors on various water-related issues.

[1] Robert C. Gresens, P.E. C 34018 (6/30/2017). The 2010 UWMP was prepared as a planning-level document and is not for construction.

2.3 Individual or Regional Planning and Compliance

Table 2-2 defines the type of plan for this 2015 UWMP.

Table 2-2. Plan Identification

Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance**
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		

2.3.1 Regional UWMP

The CCSD service area is not interconnected with other water agencies or water wholesalers, which may be attributable to its relatively isolated location. CCSD is not part of a Regional UWMP.

2.4 Calendar Year and Units of Measure

This section identifies the basis of reporting and units of measure as used for this 2015 UWMP.

2.4.1 Calendar Year Reporting

Since CCSD reports on a calendar year basis rather than fiscal, it is required to include the water use and planning data for the entire calendar year of 2015. This 2015 UWMP reflects that requirement.

2.4.2 Units of Measure

For consistency, CCSD utilizes acre-feet (AF) throughout this plan as the unit of measure when reporting water volume. Table 2-3 provides agency identification information, type of year reporting, and units of measure used.

Table 2-3. Agency Identification

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year (select one)	
☑	UWMP Tables Are in Calendar Years
☐	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF

2.5 Coordination and Outreach

This section describes the coordination and outreach efforts of CCSD during preparation of the 2015 UWMP.

2.5.1 Wholesale and Retail Coordination

CCSD is not a water wholesaler and does not receive any of its water supply from a water wholesale agency.

Table 2-4. Water Supplier Information Exchange

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name *(Add additional rows as needed)*
Notes: N/A

2.5.2 Coordination with Other Agencies and the Community

Coordination of CCSD's 2015 UWMP update occurred via discussions with the San Luis Obispo County Department of Planning and Building. A public review draft of the 2015 UWMP was also provided for review during November 2016, which was made available at the CCSD District office and Cambria library, as well as being posted on the CCSD website at www.cambriacsd.org. On December 15, 2016, a public hearing was held as part of CCSD's Board meeting to further solicit public comments and seek CCSD Board input on the 2015 UWMP Update.

CCSD has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the 2015 UWMP. Multiple attempts for community outreach have been provided as discussed in notices under Section 2.5.3.

2.5.3 Notice to Cities and Counties

In accordance with the requirements of CWC 10621(b), a formal 60-day advanced notice was provided to San Luis Obispo County via a letter to County planning staff dated August 18, 2016. Published notices also occurred in The San Luis Obispo *Tribune* newspaper on October 12, 2016 and October 13, 2016. A public hearing was conducted on December 15, 2016 prior to CCSD's Board Adoption of the plan. Noticing for the CCSD public hearing occurred as part of CCSD's established Board meeting noticing protocol, which complies with §6066 of the *Government Code*. Appendix B includes the 60-day noticing letter to the County as well as the published newspaper notices.

3. SYSTEM DESCRIPTION

This section of the plan includes a description of the CCSD water system, service area, population, and climate. A discussion of the Public Water System(s), the organizational structure, and the history of the water supplier is also provided.

3.1 General Description

The Cambria Community Services District provides water service to the unincorporated town of Cambria within San Luis Obispo County. Cambria is located along Highway 1 on the North Coast of San Luis Obispo County approximately 35 miles north of the City of San Luis Obispo. The community is relatively isolated to access north and south from Highway 1 due to the Pacific Ocean being immediately to the west, and the Santa Lucia Mountain Range lying to the east. Highway 46 connects into Highway 1 approximately four miles south of Cambria, and provides the main inland connector route to Highway 101, which is approximately 22 miles inland. To travel inland towards Paso Robles, the route along Highway 46 passes over a summit at 1,720 feet above sea level. Figure 3-1 shows the location of Cambria.

The Cambria Community Services District provides water supply, wastewater collection and treatment, fire protection, garbage collection, and a limited amount of street lighting and recreation. When it was formed in 1977, the Cambria Community Services District became a successor to an earlier Cambria County Water District, which was formed in 1959. CCSD has a five-member elected Board of Directors. Land use authority for the service area is under the auspices of San Luis Obispo County, which also provides the area services for police, flood control, and roadways. The District's service area is also within the Coastal Zone and subject to the Local Coastal Program that was first developed by the County and certified by the California Coastal Commission in 1988. In addition to providing water service within its Urban Services Boundary, CCSD provides water and wastewater services via a contract to the Hearst San Simeon State Parks campground, which is approximately 2 miles north of Cambria, near the intersection of Highway 1 and Simeon Creek Road. Providing water service beyond its current boundary and previously contracted areas is subject to the Measure P, which was voter-approved in 2006. This measure requires amending CCSD's water master plan, completing supporting environmental review, and obtaining voter approval before water service could be extended. Land use is guided through conformance with the San Luis Obispo County North Coast Area Plan, Coastal Zone Land Use Ordinance, and Framework for Planning Coastal Zone, General Plan Land Use, and Circulation Elements.

Prior to 1959, the community water supply was provided by the Cambria Development Company, and earlier by the J.D. Campbell Water Company. The District currently serves a year-round population of about 6,032[2] as well as a large number of visitors to the Central Coast. Figure 3-2 shows CCSD service area and sphere of influence areas, which was last adopted by the San Luis Obispo County Local Agency Formation Commission (LAFCO) in 2007. The CCSD service area covers approximately four (4) square miles.

The District's potable water is supplied solely from groundwater wells in the San Simeon and Santa Rosa Creek aquifers (underflow of these streams). The California Department of Water Resources Bulletin No. 118 identifies these two sources as the San Simeon and Santa Rosa groundwater basins, numbers 3-35 and 3-36, respectively. Appendix C contains the Bulletin 118 summary description of each of the two aquifers, neither of which is listed as being in overdraft status by the State. The San Simeon and Santa Rosa aquifers are relatively shallow and porous, with the groundwater levels typically recharged every year during the rainy season. With CCSD pumping, groundwater levels generally exhibit a characteristic pattern of consistent high levels during the wet season, steady decline during the dry season, and rapid rise when the wet season resumes. Further discussion on CCSD's aquifers can be found in the November 19, 2015 Cambria Community Services District Groundwater Management Plan.

[2] 2010 US Census for Cambria Census Designed Place (CDP).

Appropriations permits issued by the SWRCB to CCSD allow a maximum of 1,230 acre-feet annually from the San Simeon aquifer, while limiting dry season pumping to 370 acre-feet maximum from the time that the creek ceases flow at the Palmer Flats gauging station until October 31. The Santa Rosa Creek SWRCB appropriations permit limits the Santa Rosa aquifer pumping to 518 acre-feet annually, with a dry season pumping limit of 260 acre-feet from May 1 to October 31. The maximum pumping rates allowed are 2.5 cubic feet per second (cfs, or 1,120 gpm) for the San Simeon aquifer and 2.67 cfs (1,197 gpm) for the Santa Rosa aquifer. In addition to the SWRCB permits, California Coastal Commission Coastal Development Permit 428-10 limits CCSD's annual diversion from both basins to 1,230 AFY. Copies of permits are provided in Appendix D.

CCSD may license its existing appropriations permits with the SWRCB. This decision is subject to future CCSD Board deliberations and policy direction. For purposes of completing this 2015 UWMP, conservatively low appropriation values were used based on past production pumping. Should CCSD complete licensing of its existing SWRCB diversion permits, the allowable diversions would be limited to 217.92 AFY from CCSD's Santa Rosa Creek aquifer wells (based on calendar year 2008 pumping) and 798.82 AFY from CCSD's San Simeon Creek aquifer wells (based on calendar year 2000 pumping). These amounts total 1,016.74 AFY (rounded to 1,017 AFY), and may be exclusive of riparian water use. During 2015, 69 acre-feet of product water was re-injected into the San Simeon Creek aquifer by CCSD's Sustainable Water Facility (SWF). Based on modeling estimates by the SWF's geo-hydrologist, approximately 60% of the re-injected water would enter the District's San Simeon Creek aquifer potable water wells, which equates to a net amount of 41 acre-feet. This 41 acre-feet volume is within the 467 acre-feet groundwater total shown in Appendix E, SB X7-7 Table 4-B. Also included within the 467 acre-feet groundwater total during 2015 was approximately 46.5 acre-feet of riparian-use agriculture water provided to the Warren Ranch property (Warren). This agriculture water use was metered from a potable water service connection downstream from the San Simeon aquifer production well meters and is being provided as part of 2006 water rights settlement agreement between CCSD and Warren.

To minimize potable groundwater losses at the aquifer and ocean interface, CCSD percolates treated wastewater effluent into the San Simeon Creek aquifer downstream from its production wells. This practice also helps to prevent saltwater intrusion into the freshwater water aquifer. If the groundwater level drops too far, treated effluent and seawater could migrate toward the water supply wells, deteriorating the quality of the water and potentially rendering the freshwater non-potable. Conditions required by the Regional Water Quality Control Board (RWQCB) Waste Discharge Order (Appendix F) for the CCSD wastewater treatment plant include maintaining a positive differential between the up-gradient groundwater levels at its production wells and the down-gradient percolation ponds. During the summer dry season, and depending upon the prior year's precipitation, CCSD would periodically pump groundwater from its percolation fields in order to maintain this differential. This past practice essentially lost freshwater and associated freshwater storage within the aquifer by further lowering the groundwater table during the late summer/fall period. In response to the 2014 drought emergency, CCSD completed a Sustainable Water Facility at its percolation basin property, which recovers and reuses a mixture of treated and percolated wastewater effluent, deeper saltwater-influenced brackish water, and creek underflow. This water is highly treated by an advanced water treatment facility and re-injected back into the San Simeon Creek aquifer near CCSD's potable wells. The operation of the SWF avoids losing valuable freshwater during the late dry season while also reusing treated wastewater and maintaining a hydraulic gradient. The SWF is capable of re-injecting approximately 1.8 acre-feet of highly treated product water per day when operated continuously over a 24-hour period. Of this re-injected water, approximately 60% will enter CCSD potable wells after travelling underground for at least 60 days. The remaining 40% will either return to the creek channel as underflow or recycle back to the extraction well (Well 9P7).

The Santa Rosa well field is Cambria's oldest supply source and was relegated to a back-up and augmentation role following start-up of the San Simeon well field in 1979. The San Simeon groundwater has better quality than the Santa Rosa groundwater due to lower hardness, total dissolved solids (TDS), iron, and manganese concentrations. In 1999, the Santa Rosa well field was shut down after the discovery of an MTBE plume. Emergency Well SR-4 and associated treatment plant were subsequently installed further upstream from the existing Santa Rosa well field and placed into operation during August of 2001. Since this time, a pump and treat system has been operating at the gas station, which was the MTBE source, which has gradually reduced the extent of the underground MTBE contamination plume. During 2014, and in response to the drought emergency, CCSD bifurcated its two lower Santa Rosa wells (SR3 and SR1) that had been offline

due to MTBE contamination. Well SR-1, the lowest well, which is also closest to the earlier MTBE plume became a non-potable well supply for water that could be trucked for outdoor irrigation purposes. Well SR-3, which was further away and up-gradient from the old MTBE plume, was reactivated following rehabilitation of its iron and manganese removal facility.

In November 2001, the District's Board of Directors declared a Water Code 350 emergency and ceased issuing additional connection permits until an adequate long-term supply project was completed. A draft Environmental Impact Report (EIR) developed for the Sustainable Water Facility's regular coastal development permit addresses growth and the potential to serve future properties that are on CCSD's approved wait list and within CCSD's existing services boundary. To date of this 2015 UWMP Update, the public comments were being carefully reviewed, which are to be addressed within a future Final EIR prior to the CCSD Board's consideration for its certification. To date, no new water connections are being issued and the District remains under a Water Code 350 declaration.

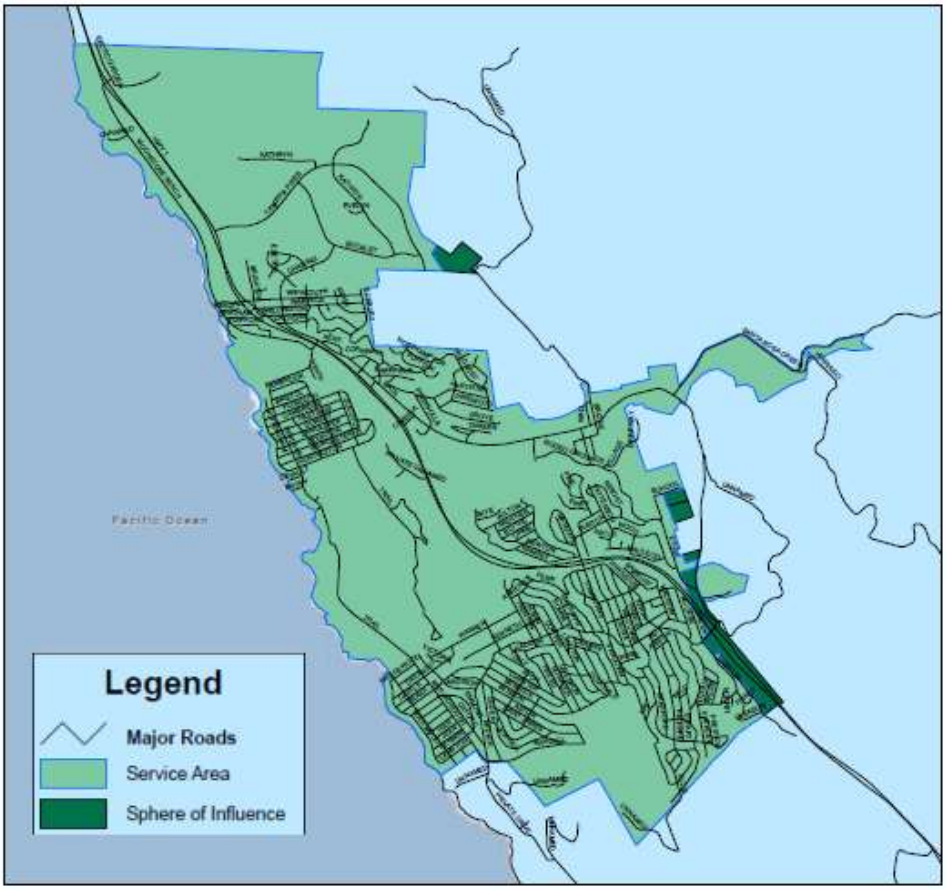
Due to the steep and varying topography of the service area, there are eight pressure zones within the District's water distribution system. The area is served via a system of five groundwater wells, three distribution system pumping stations, various pressure reducing stations, and four tank sites.

3.2 Service Area Boundary Maps

Figure 3-1 shows an overview of CCSD's service area.

Figure 3-1. CCSD Location Map

Figure 3-2. CCSD Service Area and Sphere of Influence Areas[3]



Cambria is known for its outstanding natural environment, which includes native forests of Monterey Pine, creek-side areas, and a scenic coastline. The beauty of the area combined with a mild climate tempered by sea breezes has led to Cambria's popularity and attraction to retirees and tourists. Rainfall averages approximately 20 inches per year and is generally limited to the winter months.

Cambria is within an original Rancho Santa Rosa Mexican land grant area. The town was established in the late 1860s to accommodate shipping of mining and agricultural products in the central coast region. Its importance as a commercial center dissipated around 1900 as mines were depleted and shipping moved further inland by railroad. Today, visitor serving commercial establishments consist of hotels, motels, restaurants, and retail shops. Operated by the California State Parks, Hearst Castle is approximately five miles north of Cambria, which also serves to draw tourism to the area.

Much of the water service area is hilly terrain, with lower lying areas existing along the coastline, the Santa Rosa Creek channel, Main Street, and the Highway 1 corridor. The water service area elevations range from near sea level to approximately 550 feet above sea level. There are two commercial retail areas along Main Street, consisting of East Village and West Village. Much of the hilly areas outside of the lower lying commercial areas were subdivided into 25-foot-wide residential lots during the late 1920s by the Cambria Land Development Company.

[3] From San Luis Obispo County Local Agency Formation Commission

The dominant geologic feature of San Luis Obispo County and the Cambria area is the Santa Lucia Mountain Range. The San Simeon Creek and Santa Rosa Creek basins lie on the westerly slope of the Santa Lucia Range where drainage is to the Pacific Ocean. The maximum elevation of the Santa Rosa basin is 2,933 feet on Cypress Mountain, and the highest point in the San Simeon basin is 3,432 feet on Rocky Butte.

The Santa Lucia Mountains are made up largely from the Franciscan formation, which in the San Simeon and Santa Rosa basins is composed of a mélange of greywacke and metavolcanic rocks. The Franciscan formation is partially overlain with uplifted marine sediments of the late Jurassic, Cretaceous, Tertiary, and Quaternary periods. The most recent formations are Holocene alluvial deposits of gravel, sand, silt, and clay, which make up the streambeds of the creeks. These deposits are the only apparent water-bearing formations within the Santa Rosa and San Simeon drainage basins.

3.3 Service Area Climate

Table 3-0 summarizes the evapotranspiration rates (ETo), precipitation, and temperatures for Cambria. The area benefits from a relatively low evapotranspiration rate when compared to inland areas due to its location being along the coast. The area also has a Mediterranean rainfall pattern with rains typically occurring during the November through March period. The peak summertime irrigation period combined with seasonal tourism results in the maximum daily water demands occurring during the summer. The July 4th holiday weekend often includes the maximum water demand day of the year, which has been approximately 1.58 times the average annual demand over the past ten years[4].

Table 3-0. Historical Monthly Average Climate Data for Cambria

Month	Estimated Monthly Average ET_o[1] (inches)	Average Total Rainfall[2] (inches)	Average Temperature[3] (degrees Fahrenheit)	
			Max	Min
January	1.86	3.53	65	45
February	2.22	3.70	66	46
March	2.93	4.37	66	47
April	3.54	1.19	67	48
May	4.15	0.20	66	50
June	4.49	0.10	67	53
July	4.76	0.02	68	55
August	4.27	0.12	69	56
September	3.54	0.63	71	55
October	3.05	0.94	71	52
November	2.03	1.88	69	49
December	1.64	2.98	65	45
Total	38.48	19.66		

[1] Table 5, 1998 USGS Report 98-4061, Yates & Van Konynenburg.
[2] Rainfall data from CCSD wastewater treatment plant gauge, 1974-1992.
[3] Temperature data from Weather.com website for Cambria, California.

3.3.1 Climate Change

This section was prepared at the guidance of DWR given that UWMPs are referenced in other documentation that must by law address climate change. For a related discussion on climate change, please reference the August 2016 Public Review

[4] CCSD water department data, calendar years 2000 through 2010.

Draft, Cambria Sustainable Water Facility Project, Subsequent Environmental Impact Report (SEIR), Section 8.4 (Greenhouse Gas Emissions and Climate Change).

3.4 Service Area Population and Demographics

CCSD has had a water connection moratorium in place since November of 2001 due to concerns over long-term reliability of its water supply and a need to increase water storage for fire suppression. To address these concerns, CCSD completed a series of water master planning studies, which were incorporated by reference into a program-level water master plan EIR (PEIR) that was certified by the CCSD Board on August 21, 2008. The prior studies recommended a multifaceted approach that included improvements to the potable distribution system to enhance firefighting, water conservation, recycled water for non-potable irrigation, and further augmenting and drought-proofing the local potable supply using seawater desalination. Over the years, CCSD has made steady progress, including the completion of its Pine Knolls storage tanks, and an interconnecting water distribution main across an open space area (the East-West Ranch pipeline, which interconnects the Lodge Hill distribution system with the Park Hill distribution system). In response to a 2014 drought emergency, CCSD more recently completed its Sustainable Water Facility project, which went into service during early 2015. The SWF currently operates under an emergency coastal development permit, which includes conditions to complete a regular coastal development permit. CCSD is currently in the process of applying for a regular coastal development permit, which will be supported by a draft project EIR. The draft SWF project EIR is currently in the process of being completed.

The earlier 2008 water master plan programmatic EIR addressed growth inducement concerns through the adoption of a build-out reduction program mitigation measure. The build-out reduction program was based on detailed geographical information system mapping and analysis coupled with financial modeling. This work was further reviewed by a local citizens' committee, which met for over a year during its development. The result was a recommended build-out goal of 4,650 existing and future residences. This essentially allowed for an existing water connection wait list of 666 lot owners to proceed at a pace estimated to spread out over 22 years into the future, once the moratorium is lifted.

San Luis Obispo County also completed work on the Cambria and San Simeon Acres Community Plans of the North Coast Area Plan. The County Board of Supervisors certified their EIR on the community plans, which adopted an alternative for 4,650 existing and future housing units, and was subsequently incorporated into the San Luis Obispo County North Coast Area Plan. The County also has a growth management ordinance in place that sets maximum growth rates following review of a periodic Resource Management System report to the County Board of Supervisors (periodic reviews are completed every two years). Layered on top of the County's growth management ordinance are conditions imposed by the California Coastal Commission from earlier Coastal Development Permits that may also affect CCSD's growth rate. These include a maximum rate of 125 new residences in any one year.

The timing of future growth is subject to the permitting and approval of future projects by other agencies, economic conditions, and other factors that may not be under the direct control of CCSD. Therefore, any projections on population growth should be viewed with caution. For purposes of developing population estimates, it was assumed that adequate progress would be made on a supplemental source of water to allow the moratorium to be lifted during 2017. The County Board of Supervisors will ultimately determine whether a growth rate could be allowed for Cambria. For purposes of this 2015 UWMP, a 1% per year growth rate was assumed until reaching the buildout maximum of 4,650 existing and future residential connections.

Besides growth rate, and for purposes of forecasting, population from the 2010 census was used, as well as earlier census occupancy averages of approximately 1.66 persons per housing unit.

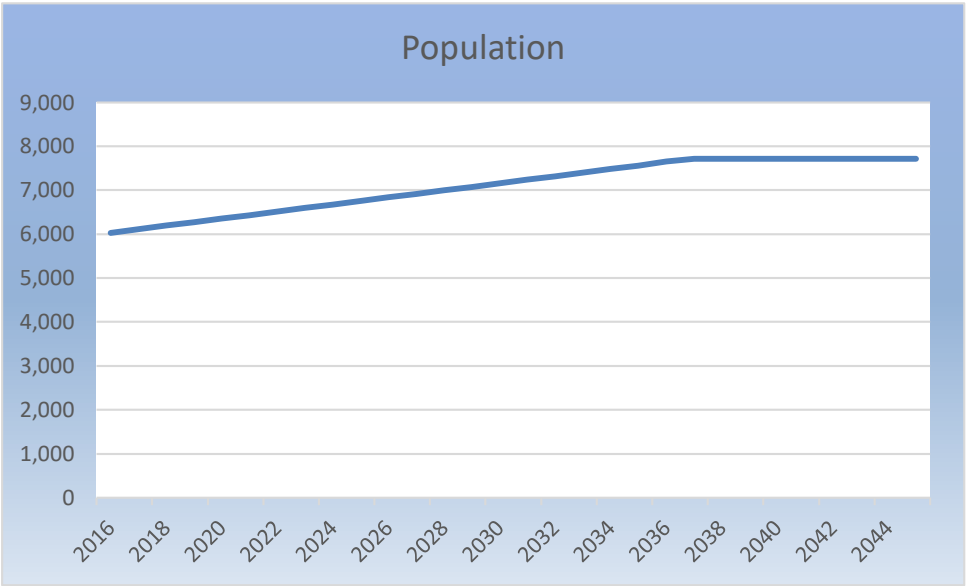
Table 3-1 and Figure 3-3 display CCSD's current and projection population data.

Table 3-1. Population – Current and Projected

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040
	6,032	6,353	6,755	7,157	7,558	7,719

NOTES: Between 2010 and 2016, the population in Cambria has not grown due to a building moratorium. There was minimal change in number of accounts between 2010 and 2015. Therefore, the 2010 census population for Cambria CDP per the "Profile of General Population and Housing Characteristics: 2010" is assumed to be applicable to year 2015 population. From 2016 through year 2037 a population growth rate of approximately 1% per year is projected based on the County of San Luis Obispo growth management ordinance and a maximum population of 7,719 representing 4,650 housing units x 1.66 average people per household based on the 2010 census.

Figure 3-3. CCSD Population Projections



Note: From Table 3-1.

3.4.1 Other Demographic Factors

To avoid possible influence from the recent recession of 2009, demographic information was used from an earlier 2000 US Census. For 2000, Cambria had a total full time population of 6,232, with a median age of 50.7 years. The 2000 vacancy rate of 24.4% indicates a high percentage of the homes may be second or vacation homes. In contrast, the US average for vacancy during the same period was 9%. The vacancy rate from the 2010 census data showed an increase to 32%, as there were a total of 4,062 housing units, with 1,300 that were vacant. For 2010, the average household size was 2.18 persons per occupied home. When including the vacant homes, the average 2010 household drops to 1.48 persons per home. From earlier 2000 and 1990 census data, the overall occupancy rate was approximately 1.66 persons per household, which was derived from dividing the population by the total number of housing units (i.e., both occupied and non-occupied housing units).

The 2010 census data indicated approximately 13.4% of all households in Cambria were within a low income group (i.e., annual income earned less than $24,999). Cambria's 2010 median income was approximately $72,100. To project low

income water demands it was assumed that the 13.4% was evenly distributed between the single-family and multifamily water use sectors. The projected low income demands using this approach are shown in Table 4-5b.

4. SYSTEM WATER USE

Accurately tracking and reporting current water demands allows a water supplier to properly analyze the use of its resources and conduct good resource planning. Estimating future demand as accurately as possible allows water agencies to manage their water supply and appropriately plan their infrastructure investments. Assessments of future growth and related water demand, done in coordination with local planning agencies, provide essential information for developing demand projections.

This section describes the urban water system demands, including calculating baseline (base daily per capita) water use and interim and urban water use targets. It quantifies the current water system demand by category and projects them over the planning horizon of the 2015 UWMP. These projections include metered and billed water, non-revenue water that is metered but may not be billed and is possibly covered by special agreements, system water losses, and water use target compliance.

The section also includes a detailed description of how the baseline and targets were calculated. The calculations follow the technical methods and methodologies described in Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use for the Consistent Implementation of the Water Conservation Requirements of 2009 (DWR 2010). Background information and the approach used to develop baselines and targets are also included.

4.1 Recycled versus Potable and Raw Water Demand

Recycled water is addressed comprehensively in Section 6.5 of this 2015 UWMP, but a summary of recycled water demand is included in Table 4-3. This section addresses potable water demand and also provides for the reporting of raw water demand for the year 2015, which is reported in Table 4-1.

4.2 Water Uses by Sector

Actual and projected CCSD potable water uses for the various customer types metered are shown in Tables 4-1 to 4-3. This data is based on metered customer demands and does not include any water distribution system losses or non-revenue water for water that may be attributable with overall water production. When compared to actual production totals, the 2015 delivered total was approximately 11.6% less, which shows the apparent and real losses (from metering errors, data handling errors, and distribution system leaks) is fairly close to an earlier 2010 US EPA reference[5], which cited 10% or less as being a commonly accepted criteria. The 2015 loss may have been influenced in part by the significantly reduced consumption due to increased conservation measures in response to the drought. This is because certain real and apparent losses are more pressure dependent (such as leaks, which are more of a function of pressure as opposed to the flow within the pipelines), which would tend to increase the percent loss when consumption is significantly reduced. For example, production for 2015 was 37% less when compared to a non-drought 12-month period from July 2012 through June 2013 (FY 2012-2013), which had only 11.4 acre-feet of apparent losses (1.5%).

Between 2005 and 2010, CCSD started tracking registered vacation rental homes, which are used as for-profit commercial enterprises to serve outside visitors. In 2010, there were 247 vacation rental homes, which were carried forward and shown as a separate use category in Table 4-2.

[5] U.S. Environmental Protection Agency. *Control and Mitigation of Drinking Water Losses in Distribution Systems*, EPA 816-R-10-019, November 2010.

Table 4-1. Demands for Potable and Raw Water – Actual

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type	2015 Actual		
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description (*as needed*)	Level of Treatment When Delivered	Volume (AFY)
Single Family	Includes vacation rental water use	Drinking Water	239
Multi-Family		Drinking Water	14
Commercial		Drinking Water	109
Other	CCSD internal account use for 2006 Warren water rights settlement (agriculture water), & process water for water and wastewater treatment.	Drinking Water	51
Losses	Non-revenue water	Drinking Water	54
		TOTAL	467
NOTES: Other water use of 51 acre-feet includes: 46.5 acre-feet provided to Warren property per a 2006 water rights settlement agreement between Warren and the CCSD; 2.9 acre-feet of filter backwash water from the wells SR3 and SR4 wellhead treatment facilities; and 1.6 acre-feet of other internal CCSD meters. This water is metered downstream from the CCSD production well meters, and is authorized and metered. Depending upon the level of use, the metered Warren water may be billed or unbilled water (it is billed when demand exceeds 20 AF). Non-revenue water is the difference between the amount of water produced and the amount of water metered and billed to customers (except for the aforementioned Warren settlement agreement water).			

The future water demand and associated conservation for the years 2015 to 2040 were calculated using the Least Cost Planning Decision Support System Model (DSS Model). The DSS Model is an Excel-based proprietary software created by Maddaus Water Management, which is endorsed by the California Urban Water Conservation Council. Background information on the DSS Model is presented in Appendix G.

The future water demands do meet the SB X7-7 reduction targets, which CCSD adopted as part of its earlier 2010 UWMP Update (using Method 3 described in Section 5.1). The demands assume an average baseline water use per customer category account based on years 2007-2012, excluding recent drought year water use. Table G-1 in Appendix G presents the base year water use profile by customer category. Projected demands include plumbing code savings, which are also explained in Appendix G. CCSD's conservation program is described in Section 9. The key element to the water use reduction is a focused effort on water loss reduction described in Section 9.1.

Table 4-2. Demands for Potable and Raw Water – Projected

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description *(as needed)*	Projected Water Use (AFY)				
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2020	2025	2030	2035	2040
Single Family	Does NOT include vacation rental home water use	440	442	445	455	453
Multi-Family	Does NOT include vacation rental home water use	23	22	23	23	23
Commercial		167	174	182	190	192
Other	CCSD internal account use for 2006 Warren water rights settlement (agriculture water), & process water for water and wastewater treatment.	26	26	26	26	26
Single Family	Vacation rental homes ONLY.	35	35	35	35	35
Losses	Non-revenue water	56	58	59	62	61
	TOTAL	747	757	770	791	789

NOTES: Projected water use only includes savings resulting from plumbing code updates. The passive savings methodology is presented in Appendix G. Other demands include 20 AFY of agriculture water to the Warren property (2015 actual water use was higher than historical average use), which is used in areas where non-potable water is excluded (described further within a 2006 water rights settlement agreement between the CCSD and Warren). Non-revenue water is the difference between the amount of water produced and the amount of water billed to customers. The percentage of non-revenue water was estimated by comparing water production statistics to water sales statistics. Sources of non-revenue water may include:

• Fire Hydrant Operations by the Fire Department - This represents the use of water for emergencies.

• Customer Meter Inaccuracies - Customer meters represent one of the main sources of non-revenue water. As they age, they tend to under-represent the actual customer use.

• Leaky water lines - Leakage from water pipes is a common occurrence in water systems. A significant number of leaks remain undetected over long periods of time as they are very small. However, these small leaks contribute to the overall non-revenue water.

Table 4-3. Total Water Demands

Table 4-3 Retail: Total Water Demands (AFY)						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water* *From Tables 4-1 and 4-2*	467	747	757	770	791	789
Recycled Water Demand *From Table 6-4*	420	598	606	616	633	631
TOTAL WATER DEMAND	887	1,345	1,363	1,386	1,424	1,420

NOTES: The increase in potable and raw demand-between year 2015 actual demand and projected 2020 demand is due to the conservative assumption that drought-year-reduced 2015 demand will rebound to pre-drought 2013 water use levels. Further explained in Section 6, service area wastewater production is estimated to be 80% of potable and raw water demand, with ALL wastewater being used as a seawater barrier (via discharge into the groundwater aquifer at the CCSD's percolation ponds); being re-injected into the groundwater aquifer at the San Simeon well field (via the CCSD's Sustainable Water Facility, indirect potable reuse project); and, as recycled water for outdoor irrigation (estimated to start in 2020, subject to funding availability). In fact, only 20% of potable and raw water is NOT reintroduced into the groundwater aquifer or reused.

4.3 Distribution System Water Losses

Presented in Table 4-4, “water loss” is the difference between water production and water consumption and represents “lost” water from both apparent and real losses. Therefore, distribution system water losses are also known as “apparent and real losses.” The real water losses from the water distribution system are typically leaks within CCSD distribution system and the supplier’s storage facilities, up to the point of customer consumption. Apparent losses may be caused by customer meter inaccuracies, unauthorized consumption, or data handling errors.

Please note that water losses in the following table are NOT equivalent to the estimated non-revenue water presented in Table 4-1 and Table 4-2. Non-revenue water use may include other types of water use, including unbilled metered and unmetered authorized consumption.

To comply with California SB 1420 (2014), this 2015 UWMP includes an audit of CCSD’s FY 2012-2013 period, which began on July 1, 2012. This period was chosen to allow use of financial data, which is also on a fiscal year basis and part of the data needed within the AWWA methodology. The 11.4 acre-feet of water loss is very low (1.5% of total demand) when compared to more current years, as well as a commonly observed value of 10% or less as being within a reasonable operating range. From review of Table 4-2, the losses being used in future projections are approximately 8%. Further discussion on water loss can be found in Section 4.2.

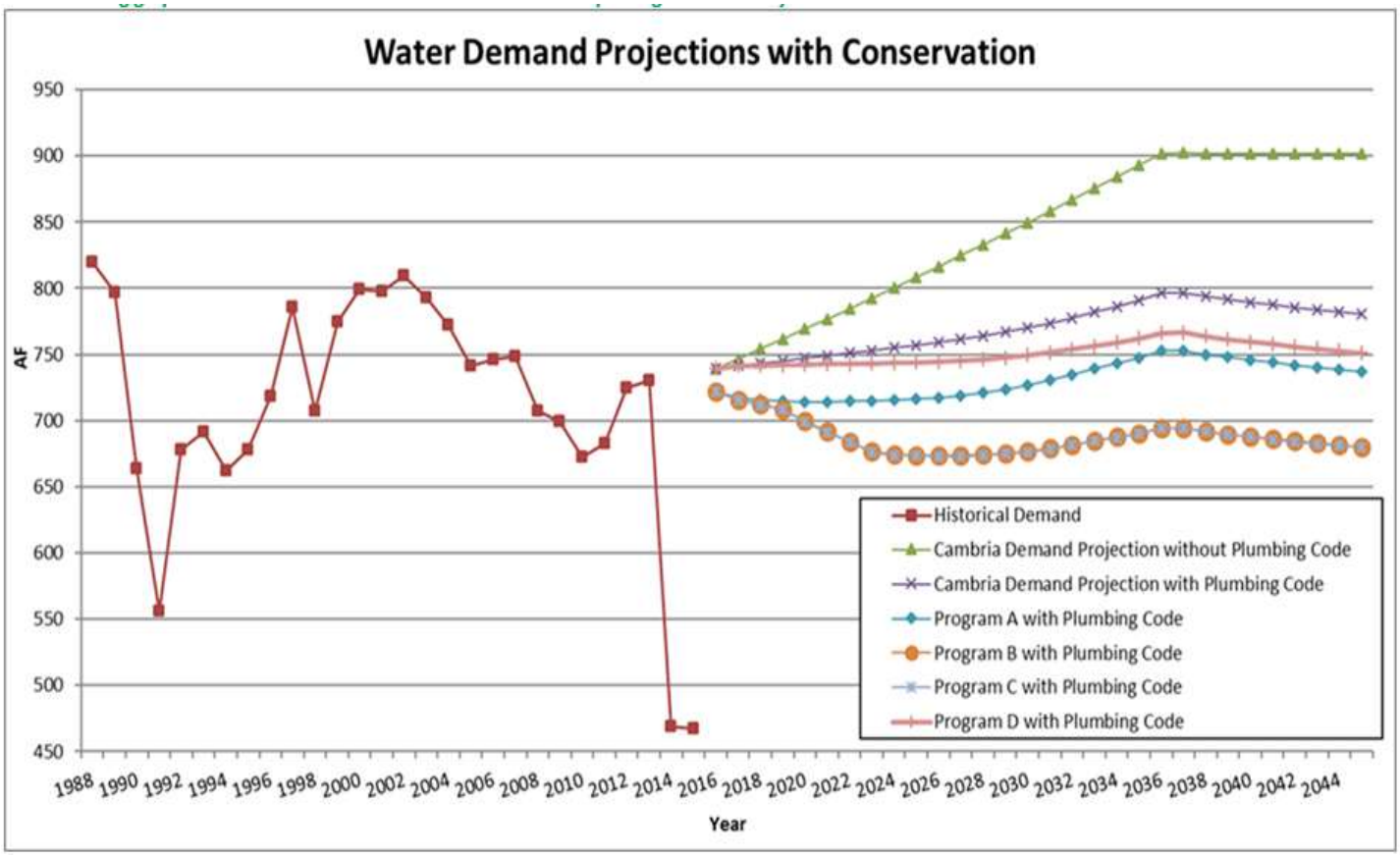
Table 4-4. 12-Month Water Loss Auditing Report

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss* (AFY)
Jul-12	11.4
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the 2012 AWWA worksheet.*	
NOTES: For FY 2012/2013, with the CCSD fiscal year beginning on July 1, 2012. Water loss is in acre-feet.	

4.4 Estimating Future Water Savings

The projected demands presented in this 2015 UWMP include estimated plumbing code savings. CCSD's process of estimating future water savings, the passive savings methodology, can be found in Appendix G. This more recent analysis has shown that future demands can be further reduced depending upon the level of conservation required of any newly constructed homes, as well as continuation of current conservation practices on existing homes. The analyses described in Appendix G are summarized in Figure 4-1, which shows the projected water demands at a buildout of 4,650 existing and future (CCSD wait list) residential housing units. The supporting analysis for this plot assumed a 1% annual growth rate until reaching buildout.

Figure 4-1. DSS Modeling Summary of Future Water Demands



Note: Drought and economic recession years are presented in actual data: 1988-92 (drought), 2007-09 (drought), 2008-2012 (recession), 2014-15 (drought).

Figure 4-1 shows the existing CCSD production in red, which illustrates the exceptional level of conservation achieved in response to the areas epic drought. The DSS Modeling effort conservatively assumed customer demand would rebound to pre-drought levels at its starting point. From here, the Cambria Demand Projection without Plumbing Code plot line shows demands with no conservation occurring, including ones that are currently mandated by the existing plumbing code. The Cambria Demand Projection with Plumbing Code plot line shows the future demands with the benefit of the existing plumbing code's more water efficient requirements taken into consideration. This plot was the basis used in conservatively projecting demands within this 2015 UWMP. Of the various programs developed, the following scenarios were modeled:

- Program A with Plumbing Code plot line shows the estimated future demand with current water conservation demand management measures in place for existing customers (and with no stages of a water shortage emergency in effect) and with existing Green Building Code required technologies being installed in future homes.
- The bottom line plot shows conservation Programs B and C, which are so close in demands that they appear to be one line. Of the plots shown, future conservation Program B is estimated to be modestly more cost effective. Both programs include more aggressive building and landscape design requirements than would be required by state's Green Building Code and the Model Water Efficient Landscape Ordinance. Program B is the recommended program for implementation.
- Program D with Plumbing Code shows the estimated total demand of existing and future connections, assuming no benefit from the conservation efforts by current customers, while maximizing the use of recent water saving technologies being required within future homes[6].

4.5 Water Use for Lower Income Households

Table 4-5 indicates whether or not CCSD has included future water savings in this 2015 UWMP, where that information is located, and that lower income residential demands have been included.

The 2010 census data shows approximately 13.4% of all Cambria households were within a low income group, defined as having an annual income of less than $24,999. Cambria's 2010 median income was approximately $72,100. To project low income water demands it was assumed that the 13.4% was evenly distributed between the single-family and multifamily water use sectors. The projected low income demands using this approach are shown in Table 4-5b.

[6] For example, the Nexus E-water® system, point of use recycled water system, which allows for flushing toilets within homes with treated gray water.

Table 4-5. Inclusion in Water Use Projections

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc.... utilized in demand projections are found.	Appendix G, Table G-1
Are Lower Income Residential Demands Included In Projections?	Yes
NOTES: The 2010 census data indicated approximately 13.4% of all households in Cambria were within a low income group (i.e., annual income earned less than $24,999). Cambria's 2010 median income was approximately $72,100. To project low income water demands it was assumed that the 13.4% were evenly distributed between the single-family and multi-family water use sectors. The projected low income demands using this approach are shown in Table 4-5b.	

Table 4-5b. CCSD Low-Income Projected Water Demands

CCSD Low-Income Projected Water Demands (AF)					
Use Type	2020	2025	2030	2035	2040
Single Family	59	59	60	61	61
Multifamily	3	3	3	3	3
Total	**62**	**62**	**63**	**64**	**64**

4.6 Alternative Projected Demand Scenario

Please refer to Section 4.4 for detailed information.

5. SB X7-7 BASELINES AND TARGETS

This section includes information regarding the baselines and targets for CCSD.

5.1 Updating Calculations from 2010 UWMP

The Water Conservation Bill of 2009 (SB X7-7) is one of four policy bills enacted as part of the November 2009 Comprehensive Water Package (Special Session Policy Bills and Bond Summary). SB X7-7 provides the regulatory framework to support the statewide reduction in urban per capita water use described in the *20x2020 Water Conservation Plan* (DWR 2010). Consistent with SB X7-7, each water supplier must determine and report its existing baseline water consumption and establish future water use targets in gallons per capita per day (GPCD); reporting began with the 2010 UWMP.

SB X7-7 requires water suppliers throughout the state to decrease per capita urban water use by 10% by December 31, 2015 and by 20% by December 31, 2020. The methodology to determine water use baseline and the four methods to determine a future water reduction target are outlined in the SB X7-7 legislation. Urban water suppliers must adopt one of four specific methods for complying with SB X7-7. The four methods consist of the following:

- **Method 1** – This approach requires water suppliers to reduce urban water demands to 80% of the water supplier's baseline per capita daily water use calculated as the average gross water use over a continuous 10-year period ending no earlier than December 31, 2004 and no later than December 31, 2010. Gross water use is defined in SB X7-7 as "the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier" excluding recycled water, long-term storage water, transfers to another water supplier, or water used for agriculture.
- **Method 2** – This method requires that water suppliers determine the per capita water use targets as estimated using 55 gallons per capita per day (GPCD) for indoor purposes, comply with DWR's Model Water Efficient Landscape Ordinance for landscape irrigation, and reach a 10% reduction of baseline commercial, industrial, and institutional water use by 2020.
- **Method 3** – This approach requires water suppliers to meet a daily per capita demand of 95% of the applicable state hydrologic region target, as documented in the state's 20x2020 Water Conservation Plan.
- **Method 4** – This method was finalized by DWR in February 2011. Among other things, this method considers climatic differences and population density.

As part of its 2010 UWMP, CCSD selected DWR Method 3, which is based on 95% of the hydrologic regional goal for the central coast area (117 GPCD). A final check of this goal is also performed to ensure the target meets the legislation's minimum reduction requirement of a 5% reduction when compared to a 5-year baseline average. The first step in this procedure is to develop a 10-year base average, which is shown in Table 5-1. For CCSD, a 10-year base average of 112.4 gallons per capita per day (GPCD) results for the 10-year period of 1997 through 2006, inclusive. This baseline level of use is already less than the central coast area 95% target of 117 GPCD, which must then be compared to a 5-year base period average.

This section discusses the comparison of the results and presents the target defined for CCSD. The results of evaluations of the target reduction methodologies are based on information provided by CCSD on the following:

- Historical water production
- Historical water demand
- Historical connections and population

5.1.1 Update of Target Method

No changes are proposed to the analysis or associated goals developed within CCSD's 2010 UWMP.

5.1.2 SB X7-7 Verification Form

CCSD is in compliance with SB X7-7 for the established water use target for the year 2015 and is currently on track to achieve the 2020 target as well. Compliance is verified by DWR's review of the SB X7-7 Verification Form, which is found in Appendix E of this 2015 UWMP and summarized in Table 5-1 and Table 5-2.

5.2 Baseline Periods

Water use GPCD must be calculated and reported for two baseline periods, the 10- or 15-year baseline (Baseline GPCD) and the 5-year baseline (Target Confirmation). Whether an agency uses a 10- or 15-year baseline depends on the percentage of recycled water delivered in the year 2008.

The following describes the approach used by CCSD in developing its water conservation targets and associated data baselines. The methodology and criteria used followed the approach described within Part II, Section M of the March 2011 DWR Guidebook. Table 5-1 summarizes the baseline periods that were used in the analysis. Because CCSD did not deliver recycled water in excess of 10% of its 2008 potable water deliveries (10% of 707.61 acre-feet., which would be 70.8 acre-feet), a 10-year base period was applied in determining its initial per capita baseline[7].

The data used by CCSD to make these determinations is as follows and is presented in Table 5-1:

- Base period data ranges
- Baseline per capita water demand over a 10-year (1997-2006) period
- Base daily water use over a 5-year range (2003-2007)

5.3 Service Area Population

This section defines CCSD's service area population and the population methodology used by CCSD to estimate it.

In developing the 2015 UWMP, CCSD and MWM evaluated several data sources available for historical and projected population and opted to use ABAG 2013 population data as it represented the most current population information for the service area. CCSD and MWM further refined the ABAG population data by comparing the ABAG boundary to CCSD service area boundary. Population numbers were adjusted to ensure that the population data used was consistent with the actual area served. ABAG population data was further evaluated in comparison to other data sources (e.g., 2010 census data) to identify any anomalies, all of which were addressed. Annual baseline population values and source information can be found in Appendix E, SB X7-7 Table 3.

5.4 Gross Water Use

Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period (either fiscal or calendar year) with certain allowable exclusions as follows:

- Recycled water delivered within the service area
- Indirect recycled water
- Water placed into long term storage (surface or groundwater)

[7] During 2015, the CCSD's Sustainable Water Facility re-injected 69 acre-feet of highly treated brackish water into the San Simeon Creek aquifer near its San Simeon potable wells. The re-injected water comes from a combination of percolated wastewater treatment plant effluent, diluted seawater occurring from a deeper saltwater wedge, and any creek underflow that may be occurring. According to modeled estimates by the project's hydrogeologist, approximately 60% of the re-injected water makes its way to the potable wells, with the remainder entering the subterranean creek channel as underflow or recycling its way back to the extraction well (CCSD well 9P7).

- Water conveyed to another urban supplier
- Water delivered for agricultural use
- Process water

Gross water use must be reported for each year in the baseline periods as well as 2015, the compliance year. During 2015, CCSD delivered metered, potable water to the Warren Ranch property, which was used for agricultural purposes per the terms of a 2006 water rights settlement agreement between CCSD and Warren. This agreement includes a provision to provide 20 acre-feet of such water, which is to serve as a buffer area where non-potable water from well 9P2 is to not be used. This water is metered, but not billed, for amounts up to 20 AFY. For any amounts over 20 AFY, CCSD bills Warren at their retail rates. During 2015, CCSD provided 46.5 acre-feet of metered potable water to the Warren property per the 2006 settlement agreement (CCSD 2006).

In addition to the agriculture water provided to Warren, CCSD has process water for certain analytical instrumentation (analyzer at well SS-3), as well as backwash water at its wellhead treatment wells (SR-3 and SR-4). These uses are each metered downstream from the production well meters and are not billed. For 2015, these metered process water uses amounted to 2.9 acre-feet.

For 2015, the exclusion water appears in Table 4-1 in the "Other" category. Of the 51 acre-feet listed, 49.4 acre-feet were for agriculture and process water uses. The balance was for other CCSD internal accounts, such as public restrooms and other CCSD buildings.

5.5 Baseline Daily per Capita Water Use

Daily per Capita Water Use is reported in gallons and is referred to as "Gallons per Capita per Day" or "GPCD". The GPCD is calculated for each year in the baseline periods and for the compliance year 2015. The data can be found in Appendix E, SB X7-7 Table 4.

5.6 2015 and 2020 Targets

Table 5-1 provides a summary of the baselines for CCSD for two different baseline periods as well as targets for the years 2015 and 2020.

Table 5-1. Baselines and Targets Summary 2015 Compliance Daily per Capita Water Use (GPCD)

Table 5-1 Baselines and Targets Summary
Retail Agency or Regional Alliance Only

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	1997	2006	112	109	105
5 Year	2003	2007	111		

*All values are in Gallons per Capita per Day (GPCD).

Table 5-1 shows the 5-year base GPCD for CCSD as 110.7 GPCD, which is also less than the central coast target of 117 GPCD. Because the 5-year baseline average is greater than 100 GPCD, the 2009 Water Conservation Act (20x20 legislation) requires that a 5% reduction be applied to the 5-year base average. This final check provision was apparently made part of the 20×2020 legislation to ensure that most agencies would be required to conserve, or at least those with greater than 100 GPCD water use. Therefore, even though CCSD customers already meet the central coast hydrologic reduction target,

the UWMP Act still requires an additional 5% reduction. Table 5-1 summarizes the data that was used as the basis in developing reduction targets as well as CCSD's 2020 goal of 105 GPCD, and an interim 2015 goal of 109 GPCD.

As part of the 2015 UWMP all retail water suppliers are to develop an implementation plan for compliance with the Water Conservation Bill of 2009. The plan described below includes a general description of how CCSD intends to reduce per capita water use to meet its urban water use target.

5.7 2015 Compliance Daily per Capita Water Use (GPCD)

This section describes CCSD's compliance and adjustments to Gross Water Use.

5.7.1 Meeting the 2015 Target

CCSD used SB X7-7 Method 3 and is compliant, as shown in Table 5-2 below.

5.7.2 2015 Adjustments to 2015 Gross Water Use

For 2015, CCSD developed a gross water use reduction of 49.4 acre-feet per the discussion in Section 5.4.

5.8 Regional Alliance

Table 5-2 lists CCSD's compliance with SB X7-7 requirements. CCSD is not part of a regional alliance in regards to SB X7-7 compliance. However, it is a signatory member agency of the San Luis Obispo County's Integrated Regional Water Management Plan's MOU.

Table 5-2. 2015 Compliances

Table 5-2: 2015 Compliance. *Retail Agency or Regional Alliance Only*

Actual 2015 GPCD*	2015 Interim Target GPCD*	**Optional Adjustments to 2015 GPCD** *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
63	109	0	0	0	0	63	63	Yes

*All values are in Gallons per Capita per Day (GPCD).

6. SYSTEM SUPPLIES

This section describes CCSD's system supplies, including groundwater, wastewater, recycled water, highly treated brackish water, future water projects, and any climate change impacts.

CCSD relies upon two local coastal stream aquifers for its source of water. During 2014, CCSD also completed a Sustainable Water Facility, which uses a mixture of percolated wastewater treatment plant effluent, diluted seawater from a deep saltwater wedge and creek underflow for its source water. Following treatment by an advanced water treatment plant, the SWF product water is re-injected into the San Simeon Creek aquifer near CCSD's San Simeon Well Field pumps. To meet indirect potable reuse requirements, the re-injected water travels at least 60 days underground before entering the San Simeon wells. The SWF facility began operation in 2015.

6.1 Purchased or Imported Water

CCSD does not purchase or import water from outside sources.

6.2 Groundwater

CCSD's potable water comes entirely from groundwater wells in the San Simeon and Santa Rosa Creek aquifers (underflow of these streams). The DWR identifies these two sources as the San Simeon and Santa Rosa groundwater basins, numbers 3-35 and 3-36, respectively (Bulletin No. 118, see Appendix C). Neither of these aquifers is listed as being in overdraft status by the State. The basins are recharged primarily by San Simeon and Santa Rosa Creeks.

The SWRCB has issued and administered CCSD's diversion permits for both groundwater basins. In addition, the California Coastal Commission has issued coastal development permits that provide further limits to CCSD water withdrawals. The United States Geological Survey (USGS) conducted a detailed study of the hydrogeology of the two groundwater basins that was later summarized in a 1998 report[8].

Although the report is dated 1998, the water budget table was based on an April 1988 through March 1989 timeframe. Table 6-0 presents an update to the simulated annual water budget developed within the USGS report, which was provided as part of CCSD's 2010 UWMP Update. In developing this table, all inflows and outflows were assumed to remain the same as in the 1998 report except for a 1991 change in operation by CCSD to its treated wastewater effluent spray field system. In 1991, CCSD converted a treated wastewater effluent spray field operation into a percolation pond operation. This change decreased losses due to evaporation and increased inflows into the San Simeon Basin by approximately 60 acre-feet.

[8] U.S. Geological Survey. Report 98-4061, Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, San Luis Obispo County, California, 1998.

Table 6-0. Annual Water Budget Summary for San Simeon and Santa Rosa Basins

Budget Item	Santa Rosa Basin			San Simeon Basin		
	Inflow	Outflow	Net Flow	Inflow	Outflow	Net Flow
Rainfall Recharge	140	0	140	50	0	50
Creek Seepage	1,120	650	470	950	410	540
Subsurface Inflow and Outflow						
Onshore Boundaries	370	0	370	150	0	150
Ocean Boundary	0	60	-60	0	320	-320
Agricultural Water Use						
Pumpage	0	890	-570	0	450	-280
Irrigation-Return Flow	320	0		170	0	
Nonagricultural Water Use						
Municipal Pumpage	0	250		0	550	
Rural Pumpage	0	10		0	<10	
Wastewater Recharge			-240			-50
Percolation Ponds	0	0		500	0	
Septic Tanks	10	0		<10	0	
Irrigation-Return Flow	10	0		0	0	
Phreatophyte Transpiration	0	160	-160	0	30	-30
Total Net Flow			-50			+60

Notes:
a. All values rounded to the nearest 10 AFY. Positive net flow indicates flow into basin; negative net flow indicates flow out of basin.
b. From 1998 USGS report 98-4061, p.46, modified to show subsequent change from wastewater effluent spray field operation to percolation ponds.

From review of Table 6-0 municipal pumping from the Santa Rosa and San Simeon aquifers was 250 and 550 acre-feet per year, respectively. The total net flows from Table 6-0 show the Santa Rosa aquifer was estimated to be approximately negative 50 acre-feet, while the San Simeon aquifer was estimated to be positive 60 acre-feet. To balance these two values to zero, it was estimated that municipal pumping would be approximately 200 acre-feet from the Santa Rosa aquifer and 610 acre-feet from the San Simeon aquifer. These values are subsequently used as baseline estimates for normal precipitation year supply volumes, which are further described within Section 7. This table does not include any reductions in municipal pumping, which would occur if CCSD were to adopt one of the conservation plans developed within the DSS Model (e.g., Program B, see Figure 4-1, Section 9, and Appendix G for further details). In addition, Table 6-0 does not show recharge from the SWF separately, which is assumed to be included within the wastewater recharge.

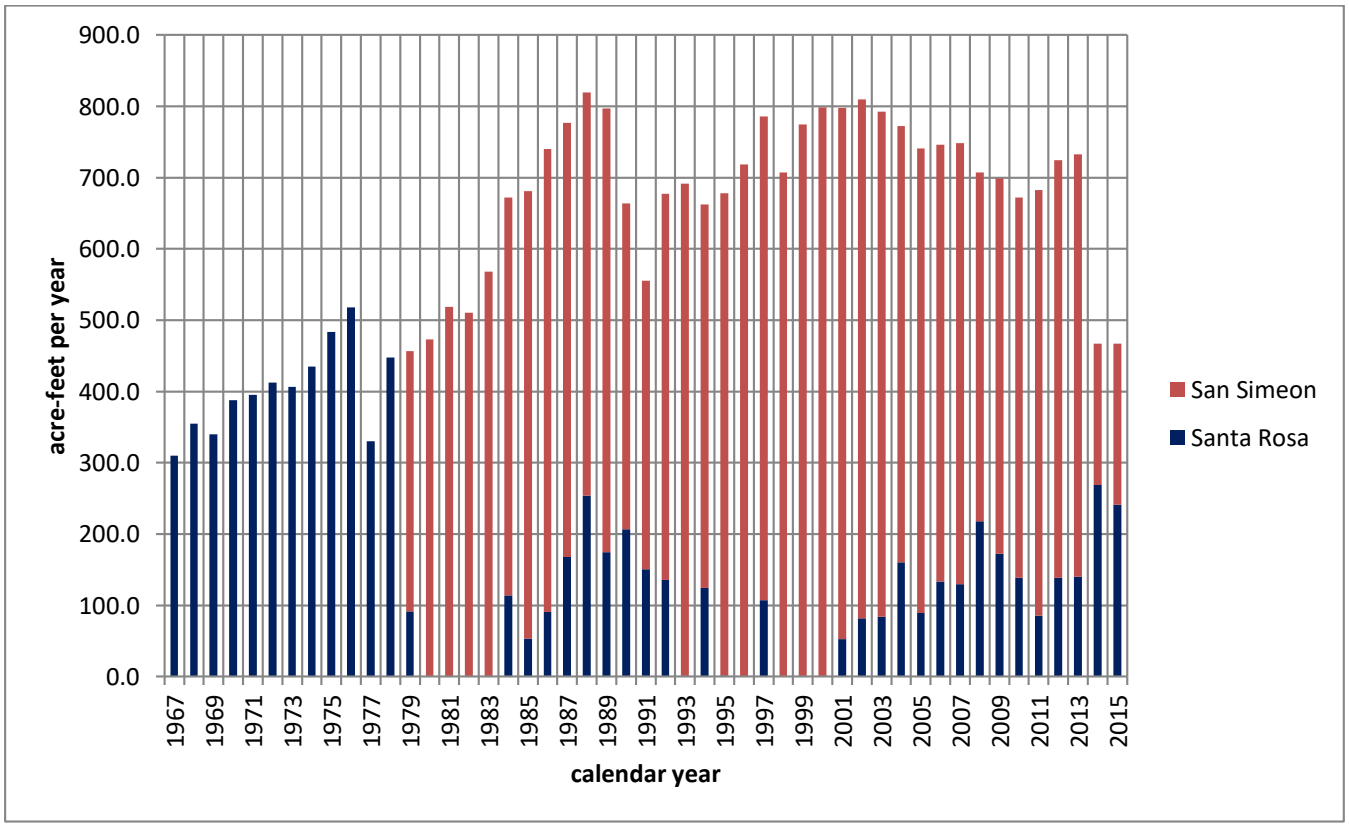
Table 6-1 shows the volume of groundwater pumped by CCSD's aquifer wells. Production dropped substantially during 2014 and 2015 in response to the community's conservation efforts, which included the CCSD Board's emergency drought declaration on January 30, 2014. The 2014 Stage 3 declaration included a prohibition on using potable water for all outdoor irrigation.

Table 6-1. Groundwater Volume Pumped

Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
Alluvial Basin	San Simeon Creek Basin	597.16	585.73	593.701	198.17	225.888
Alluvial Basin	Santa Rosa Creek Basin	85.72	139.01	139.91	268.591	241.127
	TOTAL	683	725	734	467	467

Figure 6-1 shows the annual CCSD pumping from each aquifer for the period of 1967 through 2015. The Santa Rosa well field is the oldest supply source in Cambria; it was reassigned to a back-up and augmentation role after the San Simeon well field became active in 1979. In 1999, the Santa Rosa well field was closed after the discovery of an MTBE plume from a nearby gas station. An emergency well (SR-4) and associated treatment plant were subsequently installed further upstream from the existing Santa Rosa well field and placed into operation in August 2001. In response to the emergency situation brought about by the 2014 drought, CCSD separated the Santa Rosa Well SR-1 from the potable system and converted it to non-potable use. This coincided with rebuilding the well head treatment facility and bringing Well SR-3 back online during mid-summer of 2014. Additionally, CCSD completed its Sustainable Water Facility on the lower San Simeon Creek aquifer, which went into operation during January 2015.

Figure 6-1. Groundwater Volume Pumped



6.2.1 Basin Description

In addition to the following summary, CCSD's Groundwater Management Plan (see Appendix H), adopted on November 19, 2015, describes groundwater planning for the area's San Simeon Creek and Santa Rosa Creek groundwater basins. Each of these basins are within the north coast area of San Luis Obispo County. Figure 6-2 shows these two basins, which is from an earlier US Geological Survey report (98-4061). Additionally, USGS Report 98-4061 provides a more detailed discussion on the hydrogeology, water quality, and water budgets of these two basins.

Figure 6-2. San Simeon Creek and Santa Rosa Creek Groundwater Basins

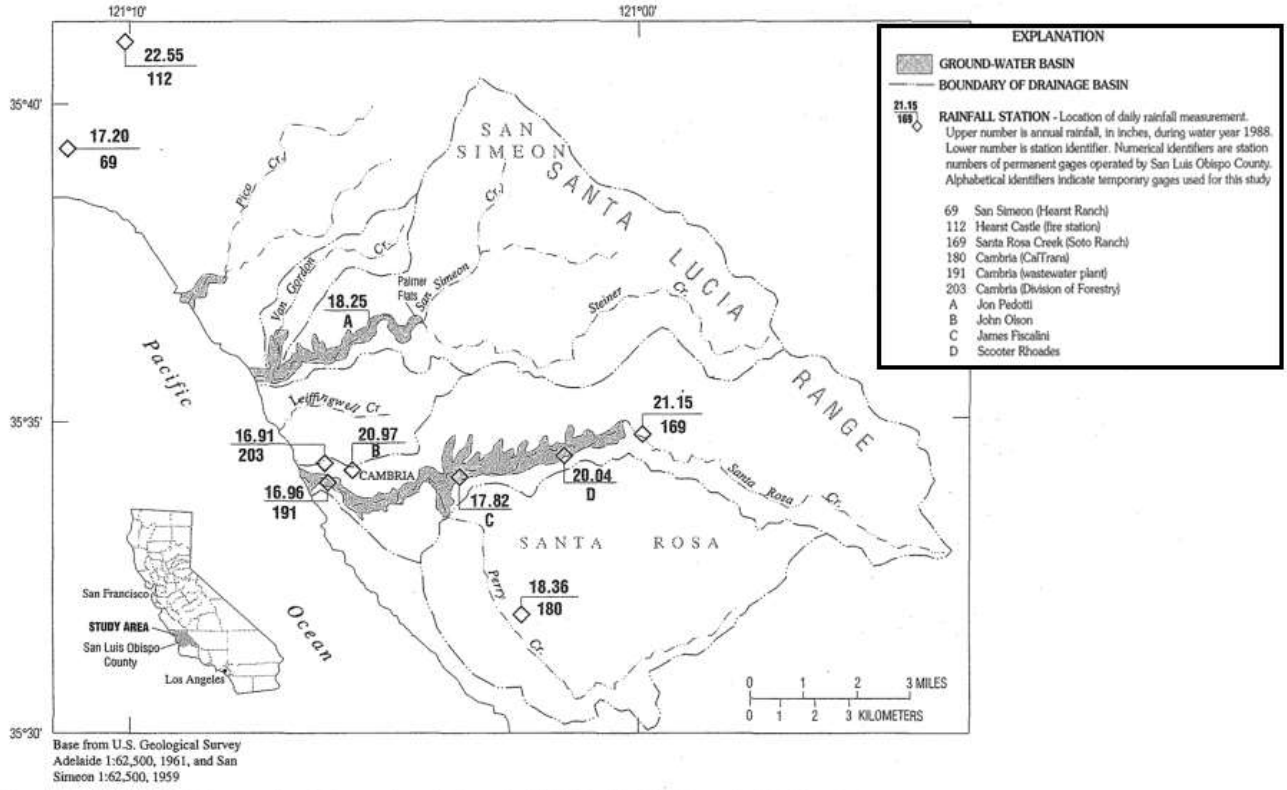


Figure 1. Locations of creeks, drainage-area boundaries, ground-water basins, and rainfall stations in the Cambria area, San Luis Obispo County, California—Continued.

From USGS Report 98-4061, "Hydrogeology, Water Quality, Water Budgets, and Simulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basin, Yates & Van Konyenberg

6.2.2 Groundwater Management

CCSD obtains its water from groundwater wells within the lower reaches of the San Simeon Creek and Santa Rosa Creek groundwater basins (State Groundwater Basin ID Numbers 3-35 and 3-36, respectively). The San Simeon Creek aquifer wells have been CCSD's primary water supply since they were installed in 1979. The San Simeon aquifer groundwater is also of better quality than the Santa Rosa aquifer primarily due the San Simeon aquifer having lower hardness, and iron and manganese concentrations. The Santa Rosa Creek aquifer was the community's sole water source prior to installation of the San Simeon creek aquifer wells and prior to CCSD becoming the community's local water purveyor. During the mid-1970s and prior to the operation of CCSD's San Simeon well field, localized areas along the lower Santa Rosa Creek channel experienced some land subsidence as well as seawater intrusion. The establishment of the San Simeon wells as the primary water source has lessened the municipal demand on the Santa Rosa Creek aquifer, which has helped mitigate and avoid seawater intrusion and subsidence.

CCSD also provides wastewater collection and treatment, with treated secondary wastewater effluent being pumped approximately 2.5 miles north of town to CCSD's property located down gradient from its San Simeon Creek aquifer potable wells. During the late 1970s to 1994, treated secondary wastewater effluent was surface applied with sprayers onto the ground surface. This past practice was changed to using four percolation basins, which were completed during

1994. The percolated wastewater effluent in this area forms a groundwater mound, which helps slow freshwater flow towards the ocean while also preventing seawater from intruding inland. The percolation ponds are still used today for wastewater effluent discharge, with only one of the four ponds typically needing to be operated at any given time.

CCSD originally operated its three *S*anta Rosa wells (SR-1, SR-2, and SR-3) along the lower portion of the Santa Rosa creek aquifer. Flood damage during 1995 resulted in the loss of Well SR-2, leaving CCSD with Santa Rosa Wells SR-1 and SR-3, which CCSD later shut down in 2000 in response to the discovery of an MTBE contamination plume. In response, CCSD completed a new well (SR-4) and wellhead treatment facility behind the Coast Union High School athletic fields, which are farther up-gradient from the MTBE plume.

In response to exceptional drought conditions and an emergency water shortage in 2014, CCSD restored operation of Santa Rosa Well SR-3, converted Well SR-1 to a non-potable irrigation supply well, and completed its Sustainable Water Facility project on CCSD's lower San Simeon Creek property. The restoration of Well SR-3 allowed CCSD to access deeper aquifer water, which Well SR-4 could not pump. The Well SR-3 efforts included installing a new submersible well pump and rebuilding an iron and manganese removal filter plant, which had been inoperable since 2000. Well SR-1 was separated from CCSD potable water distribution system and was provided with a new submersible pump that discharges into non-potable water storage tanks, which are connected to filling stations located off of Rodeo Grounds Road in Cambria. The Well SR-1 water is used by local residents and landscapers to haul for irrigation.

The Sustainable Water Facility on CCSD's lower San Simeon Creek property extracts water from an existing well (State Well Number 27S/8E-9P7 or Well 9P7) at CCSD's treated wastewater effluent percolation ponds, treats the extracted water using a new advanced water treatment plant, and re-injects the treated water at CCSD's San Simeon Creek aquifer's potable well field. The emergency water supply project was designed to meet the State's requirements for indirect potable reuse of recycled water. Its source water will vary depending upon the amount and timing of seasonal rainfall and time of year. Typically, it will be a combination of percolated treated wastewater effluent, fresh groundwater, and dilute saltwater, with the latter coming from a deeper saltwater wedge of seawater. Figure 6-3 provides an overview of the Sustainable Water Facility that was completed on CCSD's lower San Simeon Creek Road property.

Figure 6-3. Overview of CCSD's San Simeon Creek Sustainable Water Facility

From Cambria Emergency Water Supply Project, Title 27 Report of Waste Discharge, Final, by CDM Smith, October 20, 2014.

6.2.3 Overdraft Conditions

The local groundwater aquifers are not adjudicated and are not in an over-drafted condition per the California Department of Water Resources.

6.2.4 Historical Groundwater Pumping

The local groundwater aquifers are narrow and thin with relatively small storage, which results in late dry season drawdown and relatively rapid recharge after adequate seasonal rainfall occurs. During the beginning of the dry season, well levels drop gradually. Towards the later summer months and early fall months, the amount of storage per foot of drawdown decreases, which accelerates the rate of groundwater decline.

Besides the physical characteristics of the aquifers, there are key permitting conditions that effect how CCSD may operate its well fields. A primary concern on the San Simeon Creek aquifer is the hydraulic gradient between the percolated mound of treated wastewater at its percolation ponds and the up-gradient potable wells. During the late dry season, and to avoid a negative gradient, which would allow percolated secondary wastewater effluent to flow towards the potable wells, CCSD would use a gradient control well (Well 9P7). The gradient control well would pump mounded groundwater from below the percolation ponds into the Van Gordon Creek, which would lower the groundwater table. Although effective at controlling the hydraulic gradient, this practice would essentially waste water as it is pumped into the creek then lost to the ocean. It would also lower the groundwater elevation at the San Simeon Creek production wells, reducing remaining freshwater storage during the late dry season. The 2014 Sustainable Water Facility project addresses these inefficiencies by capturing and restoring the water extracted from the percolation pond area to reuse it while maximizing groundwater

elevation and storage at the up-gradient potable well field. To ensure protection of riparian habitat during its operation, the emergency water supply project includes a discharge of approximately 100 gallons per minute to the head of the San Simeon Creek lagoon to maintain surface water levels. This protective feature is further backed up and the process refined by an adaptive management plan with biological monitoring to ensure favorable conditions are maintained.

Environmental protection is also a key operating concern associated with the Santa Rosa Creek aquifer wells. To address this concern, a key permit condition requires maintaining a minimum groundwater elevation of 3 feet above mean sea level at a monitoring well located southwest from the intersection of Santa Rosa Creek and the Windsor Boulevard Bridge (Monitoring Well WBE). During August to September of dry years, this monitoring well may approach the three-foot minimum elevation. It was also found that operation of the nearby Shamel Park irrigation well and tides impact this monitoring well. When the three-foot elevation condition occurs, CCSD stops use of its Santa Rosa Creek aquifer wells (SR-1, SR-3, and SR-4), and shifts all of its production to its San Simeon Creek wells.

CCSD is also subject to meeting the State's surface water treatment rule (SWTR) due to its groundwater sources being under the influence of surface water. To meet these requirements, CCSD does not operate its San Simeon Well SS-1 whenever surface flow within the San Simeon Creek occurs within 150 feet of the well. San Simeon Wells SS-2 and SS-3 are outside the SWTR's 150-foot boundary and can continue to operate when there is flow in the creek. The Santa Rosa Wells SR-3 and SR-4 have well head treatment facilities, which allow them to operate while within the SWTR's 150-foot limit.

Table 6-1 (above in Section 6.2) provides a further breakdown on the volumes pumped by each source for the years 2011 through 2015. Table 6-9 provides projected groundwater pumping in 5-year increments from 2020 through 2040. To err on the conservative side, and in conjunction with the DSS Modeling conducted and the aforementioned figure demand forecasting, it is assumed that CCSD may complete licensing of its existing SWRCB permits based on the historical maximum pumped from each of its aquifers under these permits. This amounts to 1,017 acre-feet per year (rounded from 1,016.74), based upon 217.92 AFY from CCSD's Santa Rosa Creek aquifer wells (from 2008 production) and 798.82 AFY from CCSD's San Simeon Creek aquifer wells (based on calendar year 2000 production). Therefore, 1,017 AFY is used in the Table 6-9 projections as the Total Right in each of the 5-year projections.

6.3 Surface Water

CCSD does not withdraw water from streams, lakes, and reservoirs as part of its water supply.

6.4 Stormwater

CCSD does not regulate stormwater within its service area, as that responsibility rests with San Luis Obispo County and the Regional Water Quality Control Board. However, CCSD is a signatory member agency of the County's Integrated Regional Water Management Planning Memorandum of Understanding. This relationship allows for the potential development of future projects that could conceivably integrate storm water projects with improvements towards water supply.

6.5 Wastewater and Recycled Water

CCSD does not have an ocean outfall, but rather discharges all of its treated wastewater treatment plant effluent into percolation basins located along the lower reach of the San Simeon Creek aquifer. Essentially, all of CCSD's percolated wastewater is used for creating a seawater intrusion barrier and as a source of water for CCSD's Sustainable Water Facility (designed to meet indirect potable reuse requirements). In addition, an earlier 2004 recycled water master plan[9]

[9] CCSD. *Final Report Task 3: Recycled Water Distribution System Master Plan*, prepared by Kennedy/Jenks Consultants, July 2004.

developed a recycled water distribution system backbone for future use of treated wastewater effluent for outdoor, non-potable irrigation.

Municipal recycled water is municipal wastewater that has been treated to a specified quality to enable it to be used again for a beneficial purpose. The term "recycled water" is defined in the California Water Code (CWC) more broadly than "municipal recycled water." For purposes of the UWMPs, "recycled water" means only municipal recycled water, that is, water that has been treated and discharged from a municipal wastewater facility.

There are two requirements treated municipal wastewater must meet to be classified as recycled water. It must be:

- Reused beneficially, in a manner consistent with Title 22; and
- Reused in accordance with a Regional Water Quality Control Board permit such as National Pollutant Discharge Elimination System (NPDES), waste discharge requirement (WDR), or water recycling requirement (WRR).

6.5.1 Recycled Water Coordination

CCSD owns and operates a one-million gallons per day (average dry weather flow) capacity wastewater treatment plant (WWTP), which is located southwesterly from the intersection of Santa Rosa Creek and Windsor Boulevard in Cambria. The WWTP provides secondary level treatment using an extended aeration, activated sludge process. Treated effluent from the WWTP is pumped approximately 2.5 miles north to percolation ponds near the base of the San Simeon Creek aquifer. CCSD's treated wastewater effluent percolation ponds are approximately one-third of a mile downstream from the San Simeon Creek aquifer potable well field. The percolated wastewater effluent serves as a barrier to slow the seaward migration of subterranean freshwater, while also preventing saltwater intrusion towards the up-gradient San Simeon Creek aquifer wells. Treated effluent is subject to meeting conditions required by the RWQCB waste discharge requirements order 01-100.

CCSD water master planning[10] included the future completion of a recycled water distribution system, which estimated 50 acre-feet of existing potable water demands that could be replaced by recycled water for irrigation purposes. This 2004 report further identified another 50 acre-feet in future recycled water irrigation demands that would need further environmental analyses to determine whether such future irrigation demands could be diverted away from the effluent percolation ponds. A full copy of CCSD's 2004 Recycled Water Master Plan is included as Appendix I.

Since completion of the 2004 Recycled Water Master Plan, and in response to the area's drought, CCSD completed a Sustainable Water Facility (SWF) in 2014. The SWF uses percolated wastewater effluent within its brackish source water, which is provided from a well located within CCSD's percolation pond area (Well 9P7). This brackish water is highly treated before being re-injected near CCSD's San Simeon Creek aquifer wells. The SWF project was designed and constructed to meet the State's Title 22 requirements for indirect potable reuse of recycled water and first went into production during 2015.

The SWF has a variable production capacity, which is dependent upon how long the facility is operated each day and how many days it operates each year. To maintain a minimum 60-day underground travel time, the SWF is currently permitted to allow re-injection and pumping by CCSD San Simeon potable wells at 400 gallons per minute (gpm), which would be about 1.8 acre-feet per day if operated 24 hours per day. During 2015, the SWF produced 69 acre-feet of product water that was re-injected into the San Simeon Creek aquifer near the production wells. Based on hydro-geological modeling, the SWF project hydrogeologist has estimated that approximately 60% of the re-injected water will enter CCSD potable wells, with the remaining 40% either entering the subterranean creek channel as underflow or as subterranean recycle

[10] Ibid.

flow back to the extraction well. Thus, for 2015, it was estimated that 60% of the 69 acre-feet re-injected as product water resulted in 41 acre-feet entering CCSD production wells.

CCSD is still gaining experience with the SWF, so its projected period of use is approximated within this UWMP Update. It is assumed that in normal years, the SWF would be operated primarily during the late dry season to most efficiently control the hydraulic gradient between the percolation ponds and the up-gradient potable wells. This assumption used 8 hours per day operation for 12 weeks, or approximately 35 acre-feet annual production with a net amount of 21 acre-feet entering CCSD potable wells. In a more severe, multiple-year drought condition, the facility was assumed to have a maximum output of 1.8 acre-feet per day based on a 24-hour per day operation. For an average dry season duration of 184 days, this would result in 325 acre-feet being produced and re-injected with a net of 195 acre-feet entering CCSD San Simeon Creek production wells. This output range is summarized later in Table 6-7.

In conformance with recommendations made within the March 2011 DWR Guidebook, Table 6-2 has been provided as a summary of CCSD wastewater collected and treated by CCSD. Future years include estimates for recycled water that would be treated to meet Title 22 requirements for non-potable irrigation. Similarly, Table 6-3 has been provided to further detail the methods of disposal for treated wastewater effluent.

6.5.2 Wastewater Collection, Treatment, and Disposal

Wastewater Collected Within Service Area

CCSD is responsible for collecting and treating wastewater within its urban services boundary as well as through a contract with State Parks for the Hearst San Simeon Creek campground. This core function of CCSD maintains approximately 59 miles of sanitary sewers and force mains, 10 lift stations, a wastewater treatment plant, a 2.5-mile long effluent discharge pipeline, and four effluent percolation ponds. CCSD's wastewater treatment plant provides a secondary level of treatment using an activated sludge process. In recent years, plant operators have modified the secondary process to simulate a modified Ludzak-Ettinger process to further reduce nitrate concentration in the effluent. The operator-installed modifications will be followed with more permanent updates in the future.

Table 6-2 lists the volume of wastewater collected within the service area.

Table 6-2. Wastewater Collected Within Service Area in 2015

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015 (AFY)	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party? *(optional)*
Cambria Community Services District	Metered	420	Cambria Community Services District Wastewater Treatment Plant	Cambria Community Services District Wastewater Treatment Plant	Yes	No
Total Wastewater Collected from Service Area in 2015:		420				
NOTES: The volume of wastewater collected from the service area is from the metered effluent reported in the CCSD's 2015 WWTP annual self-monitoring report to the Water Board. Besides indoor metered water use, this value also includes any infiltration and inflow into the collection system.						

Wastewater Treatment and Discharge Within Service Area

Table 6-3 identifies the volume of treated wastewater either recycled or disposed of within the service area.

Table 6-3. Wastewater Treatment and Discharge Within Service Area in 2015

Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2015										
☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number (*optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Cambria Community Services District Wastewater Treatment Plant	Percolation ponds	CCSD Property south of San Simeon Creek Rd.	3 400 102001	Percolation ponds	No	Secondary, Undisinfected	420	0	420	0
						Total	420	0	420	0
NOTES: The volume of wastewater collected from the service area is from the sum of metered monthly effluent values, which are provided in the CCSD's 2015 Annual WWTP self-monitoring report to the Water Board. Besides indoor metered water use, this value also includes any infiltration and inflow into the collection system. With regard to treatment level, CCSD operations staff have modified its secondary wastewater plant to simulate a modified Ludzak-Ettinger process to reduce nitrate concentration in its effluent.										

6.5.3 Recycled Water System

The following sections summarize CCSD's recycled water system, which includes the 2004 Recycled Water Distribution System Master Plan.

6.5.4 Recycled Water Beneficial Uses

This section details CCSD's recycled water beneficial uses.

Current and Planned Uses of Recycled Water

Table 6-4 provides a summary of potential recycled water use by user categories suggested within the March 2016 DWR Guidebook. Essentially, CCSD installed percolation ponds for its treated wastewater effluent during 1994, which serves as a seawater barrier between the ocean and up-gradient San Simeon Creek potable wells. The 2004 Recycled Water Distribution System Master Plan commissioned by CCSD developed a backbone distribution system, which was laid out to be reasonably close to the most significant outdoor irrigation customers. These included a planned community park on the east Fiscalini Ranch property, an existing commercial nursery, and the middle and elementary schools. As of 2014, CCSD has completed their Sustainable Water Facility project, which includes indirect potable reuse of the percolated wastewater effluent, as discussed throughout Section 6.5.

Table 6-4. Current and Projected Recycled Water Direct Beneficial Uses Within Service Area

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area								
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:		Cambria Community Services District						
Name of Agency Operating the Recycled Water Distribution System:		Cambria Community Services District Wastewater Treatment Plant						
Supplemental Water Added in 2015		0						
Source of 2015 Supplemental Water		N/A						
Beneficial Use Type	General Description of 2015 Uses	Level of Treatment	2015	2020	2025	2030	2035	2040 (opt)
Landscape irrigation (excludes golf courses)	Year 2020 includes the conversion of existing potable water irrigation customers to non-potable recycled water. 2025-2040 represents future non-potable irrigation demands.	Tertiary	0	0	50	100	100	100
Seawater intrusion barrier	Use of existing percolation pond operation	Secondary, Disinfected - 23	420	598	556	516	533	531
Groundwater recharge (IPR)*	Included with seawater barrier							
		Total:	420	598	606	616	633	631
**IPR - Indirect Potable Reuse*								

NOTES: For 2015, the volume of wastewater collected from the service are (420 AFY) is from metered effluent data, which was reported to the Water Board within the CCSD's annual self-monitoring report. Besides indoor metered water use, this 2015 value also includes any infiltration and inflow into the collection system. For subsequent years, the volume of wastewater collected from the service area is conservatively low, and was estimated based upon a 1998 USGS Report 98-4061 finding, which had developed an interior potable water use for Cambria at approximately 80% of total water production. All wastewater collected is used as a seawater intrusion barrier; for the CCSD's Sustainable Water Facility (an indirect potable reuse project constructed during 2014); or, as landscape irrigation. During 2015, the CCSD's Sustainable Water Facility (SWF) produced a total of 69 AFY, which was reinjected back into the San Simeon Creek aquifer at the CCSD's potable well field. An additional 7 AFY was also treated by the SWF during 2015, which discharged into the upper San Simeon Creek lagoon as surface water to further enhance and protect the lagoon habitat. Beginning in year 2020, approximately 50 acre-feet per year of no-net-increase in diversion from aquifer recycled water use is anticipated by converting existing CCSD customers from potable, groundwater-source-based use to non-potable outdoor irrigation using recycled water. For 2025, 2030, 2035, and 2040 an additional 50 acre-feet of outdoor irrigation with recycled water is estimated for future project demands. Landscape irrigation feasibility is based on an earlier 2004 Recycled Water Master Plan, and will be driven by available funding and potential downstream habitat concerns. Because of potential downstream habitat concerns, the 2004 recycled water master plan bifurcated recycled water demands between the conversion of existing groundwater-based customer uses (50 acre-feet estimated starting in 2020); and, potential future project demands (an additional 50 acre-feet in recycled water use during 2025,2030, and 2035.)

Planned versus Actual Use of Recycled Water

In accordance with methodology recommended within the March 2016 DWR Guidebook, Table 6-5 compares recycled water use from the 2010 UWMP estimate with actual 2015 use. This shows that the treated wastewater percolated into the groundwater basin at the lower reach of the San Simeon Creek aquifer continues to be the most significant use. The volume of wastewater effluent decreased substantially after potable water conservation measures were adopted in January of 2014 in response to the drought and water shortage emergency. Other reduction measures included the State Parks campground closing its restrooms and showers and replacing them with portable restrooms.

Table 6-5. 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual		
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.	
Use Type	**2010 Projection for 2015 (AF)**	**2015 Actual Use (AF)**
Seawater intrusion barrier	643	420
Groundwater recharge (IPR)	Included with seawater barrier	Included with seawater barrier
Total	643	420
NOTES: The difference in the 2010 projection for year 2015 and actual 2015 recycled water use is due to the significant reduction in water use in the service area due to the state mandated drought, related restrictions, recession, conservation efforts and building moratorium. ALL available treated wastewater (estimated to be 80% of total production) is used as part of the seawater intrusion barrier system.		

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

Table 6-6 summarizes potential methods to encourage future recycled water use. The actions listed provide a summary of potential measures to consider as a means to encourage future end use of recycled water. In addition to the distributed recycled water system planned in 2004, CCSD is also considering point of use recycled (POUR) water systems for future homes. Such POUR systems might include treatment of greywater for use in toilet flushing. The DSS Model described in Appendix G includes POUR for future connections within the recommended conservation program (Program B). To date, none of these actions have been adopted as policy. Regardless, they are memorialized here for future reference and discussion.

Table 6-6. Methods to Expand Future Recycled Water Use

Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
☐	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.5.5	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional rows as needed			
Mandatory use ordinance/project conditions of approval	None of these actions have been adopted as policy. Regardless, they are memorialized here for future reference and discussion.	2025	50
Mandatory use ordinance/project conditions of approval	None of these actions have been adopted as policy. Regardless, they are memorialized here for future reference and discussion.	2030	50
Rate discount for end user			
Low interest loan program for on-site conversions			
Outside grant funding			
Water conservation retrofit program			
Point of use recycled water systems		2017	0
CCSD capital improvement program funded projects			
		Total	100

NOTES: The blanks shown in this table may be construed as being “unknown,” or “to be determined (TBD)." The point of use recycled system would be proposed for new home construction to maximize water use efficiency, as opposed to producing system-wide recycled water. The estimated start date of 2017 for point of use recycle is subject to eliminating the current CCSD moratorium for new water connections within the CCSD service area. Such point of use systems would include the treatment of greywater for reuse in flushing of toilets.

6.6 Desalinated Water Opportunities

CCSD has a project cooperation agreement in place with the Army Corps of Engineers to complete a water supply project, which was authorized under Section 219 of the Federal Water Resources Development Act (WRDA). This effort lost momentum following the federal ban on earmarking of project funds. Regardless, the Corps did complete a study identifying various long term water supply alternatives during 2013. This study found the treatment of brackish water off of San Simeon Creek Road to be the most technically feasible alternative. The Sustainable Water Facility built in 2014 was substantially reduced in scope and simplified when compared to the brackish water alternative described by the 2013 Army Corps study. To date of this UWMP, federal funding and subsequent environmental analyses remain to be completed to rekindle the earlier Army Corps efforts. This would likely require the Army Corps to redefine its project by incorporating the SWF. Use of federal funds could conceivably be used to fund a reverse osmosis reject water disposal pipeline, solar arrays, and a subterranean cut off wall downstream from the reinjection well (to increase the percentage of re-injected water that would make its way to the potable wells).

6.7 Exchanges or Transfers

This section details information regarding CCSD's transfers and/or exchanges.

6.7.1 Exchanges

CCSD does not have any existing water transfer agreements in place with other agencies. A major factor is the remote location of Cambria in comparison to the State Water Project aquifer and Nacimiento reservoir pipeline, which are along routes located further inland and east of the Santa Lucia mountain range from Cambria. However, earlier water master planning had investigated the potential for a water transfer agreement with certain member agencies of the Whale Rock Commission, which use the Whale Rock Reservoir located approximately 13 miles south of Cambria near Cayucos. The Whale Rock Reservoir exchange alternative would involve CCSD reaching an agreement with certain Whale Rock Commission member agencies that have entitlements to Nacimiento Reservoir water in exchange for the use of an equivalent allocation from the Whale Rock Reservoir[11].

6.7.2 Transfers

A water transfer can be a temporary or permanent sale of water or a water right by the water right holder, a lease of the right to use water from the water right holder, or a sale or lease of a contractual right to water supply. Water transfers can also take the form of long-term contracts for the purpose of improving long-term supply reliability. The potential exists for the formation of voluntary exchange agreements with local agricultural interests. Such agreements may include fallowing certain irrigated areas during drought periods in exchange for compensation resulting from the loss of income-producing crops. Currently, CCSD has no transfer or exchange agreements in place.

6.7.3 Emergency Interties

Emergency interties are addressed in Chapter 7, Water Supply Reliability.

6.8 Future Water Projects

Past CCSD water master planning recommended a three-pronged approach towards achieving a long-term reliable water supply, which consists of water conservation, recycled water for non-potable irrigation, and seawater desalination. This

[11] The Whale Rock Commission member agencies consist of the City of San Luis Obispo, California Men's Colony, and California Polytechnic State University.

supply approach, along with distribution system enhancements for improving fire flow and fire storage, were incorporated into a Water Master Plan Program Environmental Impact Report (WMP PEIR), which was certified by CCSD on August 21, 2008. The California Environmental Quality Act (CEQA) allows tiering from such program EIRs to further address project-specific environmental concerns. Therefore, subsequent supply projects may incorporate the earlier WMP PEIR while addressing project-specific environmental concerns within project-specific environmental clearances.

Table 6-7. Expected Future Water Supply Projects or Programs

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☐	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Sections 6.3-6.8	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
Recycled Water	No			2025	All Year Types	50-100
Sustainable Water Facility (SWF)	No		Indirect Potable Reuse	2015	All Year Types	21-195
NOTES: An estimated 35 acre-feet of SWF production is estimated to occur during a normal year, which is based on approximately twelve, 5-day working weeks per year of operation during a normal 40 hours per week staffing period. Should the IPR system operate continuously over a 184-day dry season, its total production would be 325 AFY. Of this re-injected volume, approximately 60% may be pumped by potable wells SS-1 and SS-2 into the distribution system for consumption. The balance would flow into the creek channel as underflow or recycled back to the SWF extraction well.						

6.9 Summary of Existing and Planned Sources of Water

Tables 6-8 and 6-9 summarize CCSD potable water supplies from 2015 through 2040, which include existing groundwater supplies; planned potable water augmentation projects to improve potable supply reliability during dry periods and droughts; and the planned future use of recycled water for non-potable irrigation. The totals shown here are not intended to reflect the proposed demand, as the supplies may exceed demand to meet reliability needs.

Table 6-8 lists the actual volume of purchased or imported water for the CCSD service area.

Table 6-8. Water Supplies – Actual

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume (AFY)	Water Quality	Total Right or Safe Yield (AFY)
Groundwater	San Simeon Creek Basin and Santa Rosa Creek Basin	467	Raw Water	1,017
Other	Sustainable Water Facility (see note)		Recycled Water	
	Total	467		1,017

NOTES: California Coastal Commission Coastal Development Permit 428-10 limits the annual diversion from both basins to 1,230 AFY. Should the complete licensing of its existing SWRCB diversion permits, the allowable diversions would be limited to 217.92 AFY from the CCSD's Santa Rosa Creek aquifer wells (based on calendar year 2008 pumpage); and, 798.82 AFY from the CCSD's San Simeon Creek aquifer wells (based on calendar year 2000 pumpage). These amounts total 1,016.74 AFY (rounded to 1,017 AFY in table 6-8), and may be exclusive of riparian water use. During 2015, 69 acre-feet of product water was re-injected into the San Simeon Creek aquifer by the CCSD's Sustainable Water Facility (SWF). Based on modeling estimates by the SWF's geo-hydrologist, approximately 60% of the re-injected water would enter the District's San Simeon Creek aquifer potable water wells, which equates to a net amount of 41 acre-feet. This 41 acre-feet volume is within the 467 acre-feet groundwater total shown in the above table. Also included within the 467 acre-feet groundwater total during 2015 was approximately 45 acre-feet of riparian-use agriculture water provided to the Warren Ranch property. This agriculture water use was metered from a potable water service connection downstream from the San Simeon aquifer production well meters, and is being provided as part of 2006 water rights settlement agreement between the CCSD and Warren.

Table 6-9 lists the projected volume of water supplies for the CCSD service area.

Table 6-9. Water Supplies – Projected

Table 6-9 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	Projected Water Supply (AFY) *Report To the Extent Practicable*									
		2020		**2025**		**2030**		**2035**		**2040** *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Ground-water	San Simeon Creek Basin and Santa Rosa Creek Basin	747	1,017	757	1,017	770	1,017	791	1,017	789	1,017
Recycled Water	Seawater intrusion barrier	598		556		516		533		531	
Recycled Water	Landscape irrigation (excludes golf courses)	0		50		100		100		100	
Total		1,345	1,017	1,363	1,017	1,386	1,017	1,424	1,017	1,420	1,017

NOTES: California Coastal Commission Coastal Development Permit 428-10 limits the annual diversion from both groundwater basins to 1,230 AFY. Should the CCSD complete licensing of its existing SWRCB diversion permits, the allowable diversions would be limited to 217.92 AFY from the CCSD's Santa Rosa Creek aquifer wells (based on calendar year 2008 pumpage); and 798.82 AFY from the CCSD's San Simeon Creek aquifer wells (based on calendar year 2000 pumpage). These amounts total 1,016.74 AFY (rounded to 1,017 AFY in table 6-9.) The volume of wastewater collection from the service area is estimated from 1998 USGS Report 98-4061, (which had developed an interior potable water use for Cambria at approximately 80% of total water production). These values may be conservatively low due to their not including any infiltration or inflow into the collection system. All wastewater collected is used as a seawater intrusion barrier, for indirect potable reuse (via the CCSD's Sustainable Water Facility), or for landscape irrigation. Beginning in year 2025, approximately 50 AFY of no-net-increase in diversion from aquifer recycled water use is anticipated by converting existing CCSD customers from potable, groundwater-source-based use to non-potable outdoor irrigation using recycled water. For 2030, 2035, and 2040 an additional 50 acre-feet of outdoor irrigation with recycled water is estimated for future project demands.

6.10 Climate Change Impacts to Supply

Section 3.3 presents a brief summary of climate change impacts of CCSD service area.

7. WATER SUPPLY RELIABILITY ASSESSMENT

The water supply for Cambria is vulnerable to drought because of the limited amount of groundwater storage capacity in the Santa Rosa and San Simeon basins. Storage is small relative to average annual groundwater pumping and storage is consequently incapable of sustaining current pumping rates through one or more years of substantially decreased recharge. The 2014 drought underscored this vulnerability when projected supplies were less than demands, which led to a drought emergency declaration by the CCSD Board. The 2014 emergency declaration led to swift action by CCSD, which included mandatory conservation measures, restoration of CCSD's lower Santa Rosa Well SR3 and its iron and manganese removal treatment filter, as well as completion of a Sustainable Water Facility on the lower San Simeon Creek aquifer that used brackish water extracted from an existed well located at CCSD's effluent percolation ponds. With this background in mind, the following sections describe CCSD's water supply reliability and drought planning, groundwater supply reliability, and related drought analyses and actions.

7.1 Constraints on Water Sources

CCSD has historically relied upon its two local coastal stream groundwater aquifers for its water supply. The relatively small storage in these aquifers make them dependent upon seasonal rains to recharge. When such rainfall arrives late or in low amounts, the aquifers dip in elevation to where the threat of seawater intrusion, subsidence, and a reversal in hydraulic gradient between percolated wastewater and potable wells become key concerns. This was the case in 2013-2014 when weather patterns steered the storm track away from and around the central coast.

As with many areas throughout the state, Cambria's water is a limited and shared resource between municipal, agricultural, and environmental needs. The area's two creeks have been inhabited by listed species, such as the south-central coast steelhead, tidewater goby, southwestern pond turtle, and red-legged frog. Therefore, compliance with the Endangered Species Act is a key driver in decision making related to use of the coastal streams as a water resource. Off-shore concerns include the area being in common with the southern extent of the federal, Monterey Bay National Marine Sanctuary, as well as State Marine Parks. Agricultural operations along the two coastal valleys include cattle ranching, truck crops, avocado orchards, and vineyards. Municipal water needs include providing service to visitor-serving uses (i.e., hotels, motels, and campgrounds) as well as residential needs.

The community's isolated location along the coast has made it difficult to connect to distant supply aquifers, such as the state coastal aquifer and Nacimiento Reservoir transmission pipelines. For many years CCSD pursued seawater desalination as a means to diversify and secure a more reliable supply source. However, the regulatory climate, environmental sensitivity of the area, and growth inducement concerns associated with seawater desalination have proven to be a formidable deterrent toward completing a seawater desalination project. When hard pressed during the 2014 drought emergency, CCSD resorted to using a brackish water well at its wastewater effluent percolation ponds. This resulted in the completion of its Sustainable Water Facility, which met indirect potable reuse regulations for recycled water that allowed re-injecting the highly treated brackish water back into the San Simeon Creek aquifer near CCSD's potable well field. In addition to the SWF, CCSD also restored a well along the lower reach of Santa Rosa Creek (Well SR3), which allowed access to deeper groundwater in this portion of the aquifer.

7.2 Reliability by Type of Year

Scenarios for analysis of supply reliability are based on deliveries in historic water years characterized as "normal" or "average" water years and "single dry" water years and combinations of these into "multiple dry water years." See Section 7.2.1 below for description of these types of years and the reliability during them.

7.2.1 Types of Years

Recharge into CCSD's local groundwater aquifers is dominated by net stream percolation. In most years, the availability of stream flow far exceeds the amount required to replenish the aquifer storage depleted during the previous dry season (both streams are intermittent and cease flowing for a number of months in summer and fall). Wet years provide no added

storage reserve because once the basins are full; any additional stream recharge is rejected. As a result, the amount of groundwater in storage at the beginning of the dry season is essentially the same over a broad range of hydrologic year types ranging from slightly dry to wet.

Droughts in the two stream aquifer systems are very threshold dependent. For progressively smaller amounts of annual rainfall and stream flow, the annual amount of available groundwater remains about the same until the point at which winter stream flow is inadequate to fully replenish the basins. Statistical analysis of San Luis Obispo rainfall and local stream discharge was combined with groundwater modeling to determine that incomplete recharge occurs when annual rainfall is less than 10.31-10.95 inches, as shown in Table 7-0a, and the average recurrence interval of rainfall less than that amount is approximately 18-25 years (Yates and Van Konynenburg, 1998). For even smaller amounts of annual rainfall, water supply conditions worsen up to the point at which there is no stream flow (and no recharge) at all. Beyond that point, further decreases in rainfall do not make water supply conditions any worse. Zero stream flow occurs with 9.78-9.85 inches of annual rainfall (slightly different for the two basins), corresponding to an average recurrence interval of 31-32 years.

Table 7-0a. Recurrence Intervals of Low Annual Rainfall and Discharges

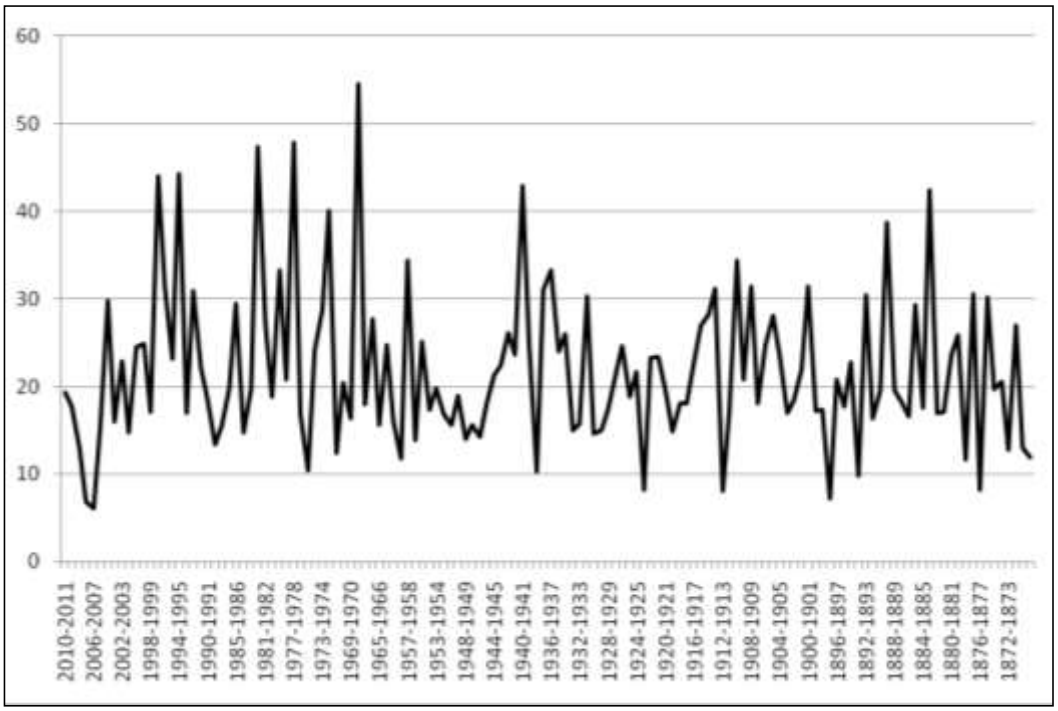
Item	Recurrence Interval (years)	Annual rainfall at San Luis Obispo (inches)	Annual discharge at upstream gauging station (acre-feet)	
			Santa Rosa Creek	San Simeon Creek
Minimum amount likely to occur once in				
100 years	100	8.20	0	0
50 years	50	9.15	0	0
20 years	20	10.80	580	1,040
10 years	10	12.41	1,490	2,810
Zero discharge in				
Santa Rosa Creek	32	9.78	0	0
San Simeon Creek	31	9.85	40	0
Minimum discharge for complete basin recharge in				
Santa Rosa basin	18	10.95	660	1,200
San Simeon basin	25	10.31	300	500
Minimum recorded stream discharge				
Santa Rosa (1977)	26	10.21	240	n/a
San Simeon (1976)	25	10.29	n/a	480

Notes:
1. Source: 1998 USGS Report 98-4061
2. n/a = not applicable

The most extensive rainfall history for the area is from the Cal Poly weather station, which has records dating from the 1872-1873 water year to the present. This weather station is also within proximity of the rainfall isohyetal precipitation contour line that crosses Cambria, which indicates a reasonable correlation would be expected between the two locations. Figure 7-1 provides a plot of the Cal Poly annual rainfall totals, while Figure 7-2 provides a map showing the isohyetal precipitation contours for San Luis Obispo County. Figure 7-2 shows that the amount of rainfall increases substantially within the San Simeon and Santa Rosa watersheds with increasing elevation. This is due to the Santa Lucia mountain range being east of Cambria, and the predominantly inland, west to east direction of storm paths off the Pacific. (Because storm clouds hold less moisture as they increase in elevation, precipitation totals will typically increase with rising elevation along the area's western facing mountain slopes.) To further check the correlation of rainfall totals for the two areas, Figure 5-3 was developed using the more limited historical record from the California Department of Fire and Forestry

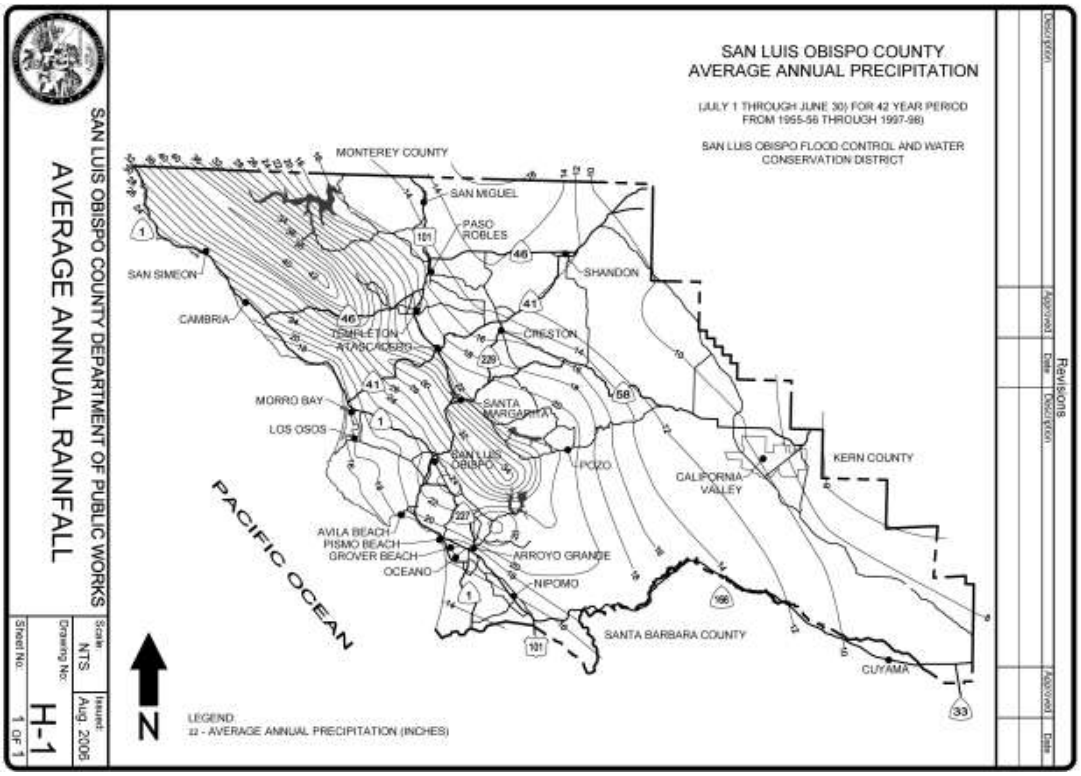
(CalFIRE) Cambria weather station and overlaying that data with the Cal Poly station data. This showed that there actually were some significant differences for the four-year multiple dry period of July 1, 2005 through June 30, 2009, which occurred at the Cal Poly station, versus the more local CalFIRE fire station, which had a minimum four-year low occurring from July 1, 1989 to June 30, 1993. Because it was more local to Cambria, and also within the more recent historical record for both locations, the Cambria CalFIRE data was used for the multiple dry-year basis.

Figure 7-1. Rainfall Totals from Cal Poly Station



Source: Cal Poly Weather Station

Figure 7-2. San Luis Obispo County Average Annual Precipitation



Source: Cal Poly Weather Station

From review of the Cal Poly rainfall data, the 1953-1954 water year was chosen as being a normal water year. The 19.77 inch total for 1953-1954 was closest to the Cal Poly historic median of 19.73 inches. The single dry year chosen was from 1897-1898, which totaled 7.2 inches, and was not associated with adjacent dry years either before or after this year. The multiple dry year period varied between the local Cambria CalFIRE precipitation records and the Cal Poly weather station data during a relatively recent period when records were available from each location.

Figure 7-3 shows the variation in data records between the more local Cambria CalFIRE weather station and the Cal Poly station data. Because of the data being more local to Cambria, the Cambria CalFIRE data was used to determine the multiple three- and four-year dry periods as being between July 1, 1989 through June 30, 1993, which is used in subsequent analyses.

Figure 7-3. Rainfall Totals for Cambria CalFIRE and Cal Poly Weather Stations, 1979-2010

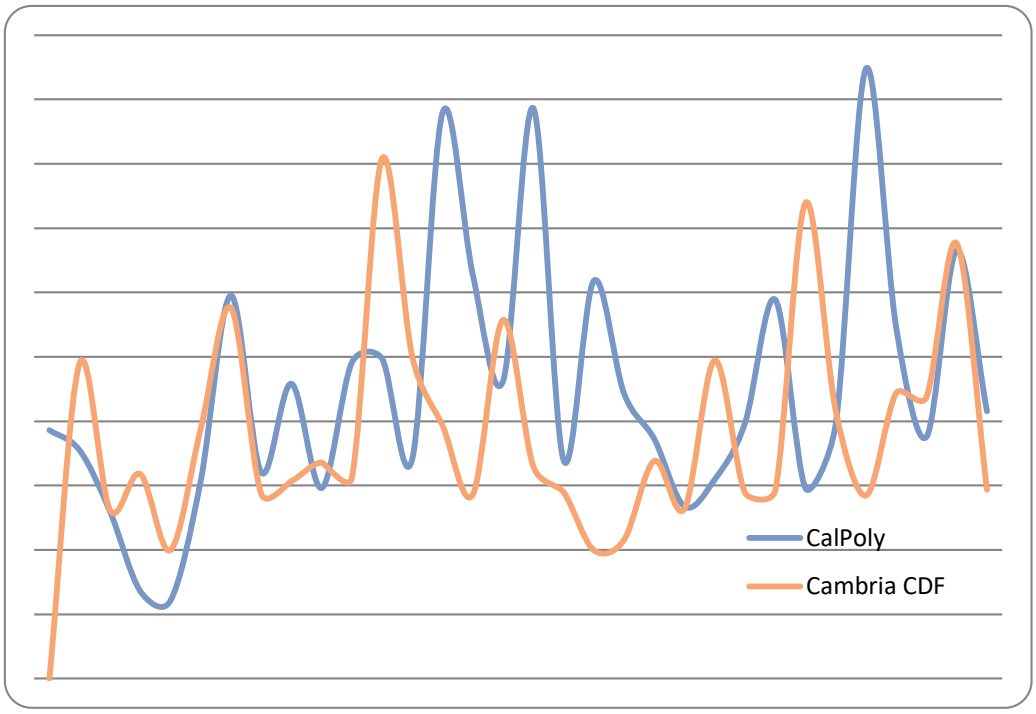


Table 7-0b summarizes the water year basis, while also integrating the associated rainfall and creek discharges that would be estimated using the rainfall-discharge relationships developed as part of the earlier 1998 USGS study.

Table 7-0b. Basis of Water Year Data

Water Year Type	Base Years and corresponding rainfall total and creek discharge							
Normal Water Year[1]	1953-1954							
	Annual precipitation: 19.77 inches							
	Estimated annual creek discharge, acre-feet							
	San Simeon (SS) 10,916				Santa Rosa (SR) 5,674			
Single Dry Water Year[1]	1897-1898							
	Annual precipitation: 7.2 inches							
	Estimated annual creek discharge, acre-feet							
	San Simeon 0				Santa Rosa 0			
Multiple-Dry Water Years[2]	1989-1990		1990-1991		1991-1992		1992-1993	
Annual Precipitation:	13.21”		16.91”		10.78”		9.98”	
	Estimated annual creek discharge, acre-feet							
	SS 3,694	SR 1,948	SS 7,768	SR 4,050	SS 1,018	SR 568	SS 140	SR 114

(1) From Cal Poly weather station data
(2) From Cambria CalFIRE weather station data

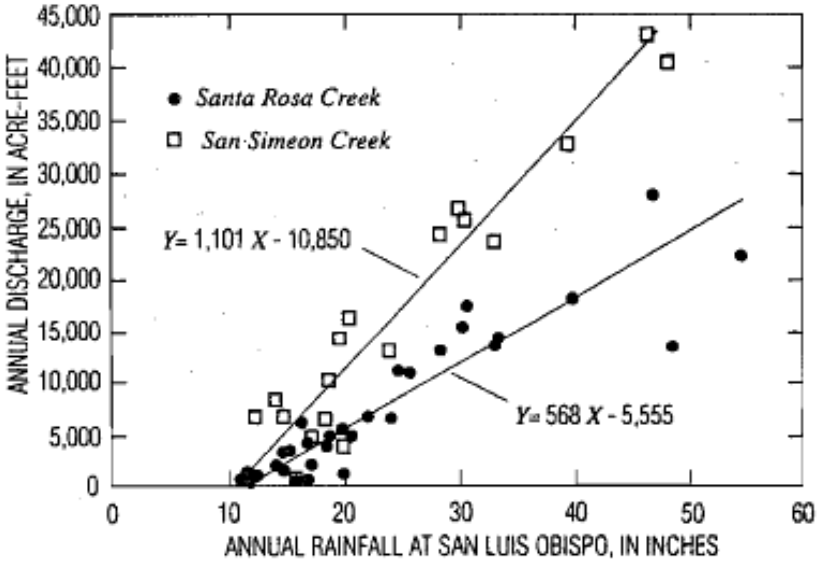
Notes:

a. Estimated annual creek discharges are from formulas shown on Figure 5-5.
b. Format based on March 2011 DWR Guidebook Table 27 with additional information added on estimated rainfall totals and associated annual creek discharges.

The severity of drought to be used for the “single dry year” analysis in Urban Water Management Plans is specified by the California Department of Water Resources (2011) as the year of least recorded stream flow since 1903. This corresponds to a drought event with an average recurrence interval of approximately 100 years. For San Simeon and Santa Rosa Creeks, that would clearly be a year of zero stream recharge. Based on the correlations with San Luis Obispo rainfall, two such years have occurred since 1903: one in 1913 and one in 1924. An additional two occurred in 1877 and 1898.

To confirm whether creek flows were occurring relative to the annual rainfall amounts, the following Figure 5-4 was used from the 1998 USGS study, which had developed the mathematical relationships shown between annual rainfall and annual discharge in each creek. This confirmed that the amounts of rainfall in 1913, 1914, or 1898 would have resulted in no creek discharge from either the San Simeon or Santa Rosa Creeks, and would not have recharged the aquifers. Under such a scenario, and short of any other alternative supply source, water stored within the aquifers from the prior rain year would likely be relied upon in meeting demands. In analyzing the multiple dry year period, the aquifers would likely recharge each year, with the fourth dry year having close to zero discharge from each creek.

Figure 7-4. Annual Discharge and Precipitation Plots for San Simeon Creek and Santa Rosa Creek from 1998 USGS Report



The hydrologic consequences of a year with zero stream recharge were simulated by the U.S. Geological Survey (USGS) using groundwater flow models of the two creek basins (Yates and Van Konynenburg, 1998). Groundwater levels did not recover at all during the winter without stream flow because rainfall recharge was also zero under those circumstances. Municipal and agricultural pumping were assumed to continue as usual during the second dry season, and groundwater levels continued to decline. In both basins, declines in water levels and storage during the second dry season were greatest near the upper ends of the valleys because groundwater is continually draining down-valley, with or without municipal pumping. During the second dry season, groundwater levels declined an additional 20 feet near the upstream end of the valley, an additional 15 feet near the municipal well field (to 13 feet below sea level), and an additional 6 feet near the State Park campground (to 3 feet below sea level).

The two groundwater basins differ with respect to the three major impacts of excessive water-level declines: seawater intrusion, subsidence and depletion of base flow and the coastal lagoons. Simulation results indicated that there would be seawater intrusion in the San Simeon basin, but not the Santa Rosa basin. During the year prior to the winter without recharge, there was 320 AFY of groundwater outflow to the ocean. During the subsequent year, this reversed to become 48 AFY of seawater intrusion. Although seawater intrusion during the second dry season amounted to only 9% of municipal pumping in the San Simeon basin, pumping would have to be decreased by more than 9% to eliminate intrusion. This is because other head-dependent terms in the water balance—specifically, storage and phreatophyte ET—also respond to changes in pumping. Additional simulations were not completed to estimate the pumping reduction needed to eliminate seawater intrusion. However, assuming the shift from groundwater outflow during the first year to seawater intrusion the second year was proportional to pumping, then pumping would need to be reduced by approximately 13% to eliminate intrusion.

Subsidence would probably occur in the Santa Rosa basin during the dry season following a winter without recharge, but the risk is probably smaller in the San Simeon basin. Subsidence occurred in the Santa Rosa basin during the 1976-1977 drought, when groundwater levels in Cambria dropped to 14-20 feet below sea level (Cleveland, 1980). If a basin contains compressible sediments, subsidence typically occurs when groundwater levels fall substantially below their historical minimum levels; simulated groundwater levels in Cambria were 25 feet below sea level by the end of the second dry season. Dry season water level declines are approximately proportional to the total amount of dry season pumping. This suggests that minimum water levels in Cambria during the second dry season would have remained higher than 14 feet

below sea level if pumping had been reduced from 238 to 170 AF. This latter amount of pumping represents a 15% decrease from average-year CCSD production in the Santa Rosa basin (Table 4-4).

7.2.2 Agencies with Multiple Sources of Water

A basis for the water year data for CCSD's water sources is presented in Tables 7-1a, 7-1b and 7-1c. Base years were selected by identifying the year of each Water Year Type based on the discussion in Section 7.2.1, For purposes of completing the analyses associated with these tables, the aquifer water balance values described in Section 6 and related Table 6-0 were used to assign 610 AFY to the San Simeon aquifer production and 200 AFY to the Santa Rosa aquifer production during an average year. These values error on the conservative side, as they do not consider savings developed within the DSS Model, which is provided in Appendix G, and summarized in Section 4.4 (See Figure 4-1), nor any recharge to the San Simeon aquifer from operation of the Sustainable Water Facility (see Table 7-1d).

Table 7-1a. Basis of San Simeon Creek Basin Groundwater Water Year Data

Table 7-1a Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	1953-1954	610	100%
Single-Dry Year	1897-1898	519	85%
Multiple-Dry Years 1st Year	1989	610	100%
Multiple-Dry Years 2nd Year	1990	610	100%
Multiple-Dry Years 3rd Year	1991	519	85%
NOTES: **San Simeon Creek Basin Groundwater.** It was estimated that groundwater production was reduced by 15% during a single-dry year period and years 3 and 4 of the multiple dry-year period.			

Table 7-1b. Basis of Santa Rosa Creek Basin Groundwater Water Year Data

Table 7-1b Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	1953-1954	200	100%
Single-Dry Year	1898	170	85%
Multiple-Dry Years 1st Year	1989	200	100%
Multiple-Dry Years 2nd Year	1990	200	100%
Multiple-Dry Years 3rd Year	1991	170	85%

NOTES: **Santa Rosa Creek Basin Groundwater.** It was estimated that groundwater production was reduced by 15% during a single-dry year period and year 3 of the multiple dry-year period.
(1) Data was based on fiscal year periods beginning on July 1 and ending on June 30th. Therefore, the 1898 year shown for Single-Dry Year is for the period of July 1, 1897 to June 30, 1898.

Table 7-1c. Basis of Recycled Water Supplies for Landscape Irrigation Water Year Data

Table 7-1c Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	2025	50	100%
Single-Dry Year	2025	50	100%
Multiple-Dry Years 1st Year	2025	50	100%
Multiple-Dry Years 2nd Year	2030	50	100%
Multiple-Dry Years 3rd Year	2025	50	100%
NOTES: **Recycled water supplies – landscape irrigation.** Recycled water supplies for landscape irrigation will NOT be available till year 2025 (50 AF) and 2030 (100 AFY). They are predicted to be 100% reliable.			

Table 7-1d. Basis of Sustainable Water Facility Water Year Data

Table 7-1d Retail: Basis of Water Year Data			
Year Type	**Base Year** *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year		21	100%
Single-Dry Year		195	390%
Multiple-Dry Years 1st Year		195	390%
Multiple-Dry Years 2nd Year		195	390%
Multiple-Dry Years 3rd Year		195	390%
NOTES: **Sustainable Water Facility (indirect potable reuse).** The values shown are estimated net amounts entering the San Simeon Creek aquifer potable wells, which is approximately 60% of the re-injected product water from the SWF. The remaining 40% enters the subterranean creek channel as underflow, and/or as recycle back to the SWF brackish water extraction well.			

7.3 Supply and Demand Assessment

This section describes the supply and demand projections for normal, single dry, and multiple dry water years. The supply totals are from Section 6, Table 6-9, including production from CCSD potable wells, treated wastewater effluent, which is used for seawater and includes water that may be used by the SWF facility as well as future recycled water that may be used for outdoor irrigation. The demand totals conservatively assume the current drought-reduced production will increase to pre-drought levels, while also using the DSS Model's projection with minimal conservation efforts (i.e., no pro-active conservation program by CCSD and relying only upon water efficiency improvements from plumbing code updates). Demand totals include CCSD customer demands plus all of the treated wastewater effluent, which is discharged into CCSD's percolated ponds (and used for a seawater intrusion barrier and by the SWF). The supply totals include the groundwater and recycled water amounts shown in Tables 7-1a, 7-1b, and 7-1c, and conservatively assumes an estimated 80% of the water supplied by CCSD would result in the amount of treated wastewater effluent being discharged into the percolation basins. This 80% value is based on an estimate of indoor water use that came from the earlier 1998 USGS study. This approach is conservatively low in estimating the supply of wastewater effluent that may be available because it does not include any infiltration and inflow that could enter the collection system throughout the year. To avoid double counting, the SWF is considered to be included within the supply shown for recycled water (intrusion barrier) in Table 6-9.

Table 7-2. Normal Year Supply and Demand Comparison

Table 7-2 Retail: Normal Year Supply and Demand Comparison (AFY)					
	2020	2025	2030	2035	2040
Supply totals (*autofill from Table 6-9)*	1,345	1,363	1,386	1,424	1,420
Demand totals *(autofill from Table 4-3)*	1,345	1,363	1,386	1,424	1,420
Difference	0	0	0	0	0
Notes: See note in Table 6-9 for further explanation.					

Single Dry Water Years

Comparison of the projected single-dry year water supply to the projected single-dry year water use over the next 20 years, in 5-year increments, is shown in Table 7-3 below. The demand totals assume there would be no reduction in customer demands during a single-dry year condition.

Table 7-3. Single Dry Year Supply and Demand Comparison

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison (AFY)					
	2020	2025	2030	2035	2040
Supply totals	1,765	1,829	1,897	1,928	1,925
Demand totals	1,345	1,363	1,386	1,424	1,420
Difference	420	466	512	504	505
NOTES: **Supplies** equal single-dry year groundwater basin supplies as reported in Table 7-1 plus recycled water landscape irrigation supplies as reported in Table 6-9 (and 100% reliable as reported in Table 7-1) PLUS projected wastewater supplies used for the saline barrier that are estimated to be 80% of projected demand. **Demand** is based on Table 4-3 values and conservatively assumes NO reduction in a single-dry year.					

Multiple Dry Water Years

Comparison of the projected multiple dry year water supplies to the projected multiple dry year water use over the next 20 years, in 5-year increments, is shown in Table 7-4 below. The supply totals are based upon the values shown in Tables 7-1a, 7-1b, and 7-1c. During the third year of a multiple year drought, it was assumed that there would be a 15% reduction in groundwater supply production due to conservation efforts.

Table 7-4. Multiple Dry Years Supply and Demand Comparison

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison (AFY)						
		2020	2025	2030	2035	2040
First year	Supply totals	1,856	1,870	1,888	1,919	1,916
	Demand totals	1,345	1,363	1,386	1,424	1,420
	Difference	511	507	503	495	496
Second year	Supply totals	1,458	1,458	1,458	1,458	1,458
	Demand totals	1,345	1,363	1,386	1,424	1,420
	Difference	113	95	72	34	38
Third year	Supply totals	1,240	1,240	1,240	1,240	1,240
	Demand totals	1,143	1,159	1,178	1,210	1,207
	Difference	97	82	63	30	34
NOTES: Demand is reduced 15% in the Third year in response to a multi-year drought.						

Based on projected water supply and demands over the next 25 years, CCSD has supply capabilities that would be sufficient to meet expected demands through 2040 under single-dry year and multiple-dry year conditions. This reliability will be further established when CCSD completes the already-in-progress regular coastal development permitting process for its recently completed Sustainable Water Facility. Additionally, the conservation measures modeled in the DSS Model forecast (see Section 4.4 and Appendix G) will further enhance reliability by providing an additional reduction in future demands beyond those that were used in this section's conservative analysis. For example, conservation Programs B and C reduce future demands to approximately 700 AFY versus the 791 AFY maximum carried forward from Table 4-3.

7.4 Regional Supply Reliability

CCSD is not part of a regional water supply system and does not receive State or Federal project water. It is not a water wholesaler, nor does it receive water from a water wholesaler. See Section 7.3 for additional discussion on reliability.

8. WATER SHORTAGE CONTINGENCY PLANNING

CCSD has adopted several ordinances that established its water shortage contingency planning, which have since been incorporated into the CCSD Municipal Code. These include the following criteria:

- Mandatory prohibitions against water waste at all times
- Water shortage stages with associated actions to be taken, consumption limitations, and overall conservation goals for each stage
- Penalties for excessive water use during declared water shortages

8.1 Stages of Action

CCSD Municipal Code Chapter 4.08 entitled "Waste of Water," prohibits water waste at all times, regardless of whether there may a particular water conservation stage in place. This approach was originally adopted by the CCSD Board during 2000 as Ordinance 4-2000, which has since been codified within the CCSD Municipal Code.

CCSD Municipal Code Chapter 4.12 entitled "Emergency Water Conservation Program," establishes a three-stage conservation program, which is summarized in Table 8-1. A Stage 1 drought declaration sets a "drought watch" condition and allocates three units (three hundred cubic feet) per person per month as a maximum for its residential customers. Commercial customers are limited to the lower of five units per month per equivalent dwelling unit of capacity that is established by CCSD for each customer, or the average use over the 12 months preceding the Stage 1 declaration. The purpose of the Stage 1 condition is to reduce demand by about 7%. A Stage 2 declaration sets a "water shortage condition" and places financial surcharges into effect for those exceeding their base use and also allows for shutting off service in some circumstances. The purpose of the stage 2 condition is to reduce overall demand by 15%.

The Stage 3, "drought emergency" condition lowers the maximum allowable use to two units (two hundred cubic feet) per resident per month. Commercial customers are limited to the lower of three units per equivalent dwelling unit established by CCSD for each customer, or the average use over the 12-month period preceding the Stage 3 declaration. Stage 3 also prohibits any outdoor irrigation watering with potable water and includes surcharges and fines for overuse. The trigger points for each stage is determined from a hydrologic model developed as part of the December 8, 2000 Baseline Water Supply Analysis by Kennedy/Jenks Engineers. The model predicts available supply based on an October Southern Oscillation Index (SOI) value, estimated dry season duration, existing plus estimated demands for the coming dry season, and aquifer well level.

Table 8-1. Stages of WSCP

Table 8-1 Retail: Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description*)
1	7%	Drought Watch - voluntary Residential Use ≤ 3 units/person/month Comm. Use ≤ 5 units/EDU/month
2	15%	Water Shortage - mandatory Residential Use ≤ 3 units/person/month Comm. Use ≤ 5 units/EDU/month Surcharges applied for exceeding limits
3	50%	Emergency Condition - Mandatory Residential Use ≤ 2 units/person/month Comm. Use ≤ 3 units/EDU/month Surcharges applied for exceeding limits
NOTES: CCSD's three stages of water conservation. Further described within CCSD Municipal Code Chapter 4.12 (see Appendix J).		

8.2 Prohibitions on End Uses

Table 8-2 summarizes the mandatory prohibitions associated with each drought rationing stage. It should be noted that CCSD's prohibition on water waste is in place at all times, regardless of whether a drought stage has been declared. Therefore, the phrasing "at all times" is used to indicate this is required regardless of a particular stage. Section 4.08.050 of the CCSD municipal code allows for increasing levels of fines for any waste of water, which could also lead to shutting off service.

Table 8-2. Restrictions and Prohibitions on End Uses

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
At all times, including Stages 1, 2, & 3	Landscape - Restrict or prohibit runoff from landscape irrigation	Watering of landscaping, which allows excess water runoff [CCSD Municipal Code 4.08.030 (1)]	Yes
At all times, including Stages 1, 2, & 3	Other - Prohibit use of potable water for washing hard surfaces	Washing of sidewalks, driveways, and other hard-surfaced areas by direct hosing. [CCSD Municipal Code 4.08.030 (2)]	Yes
At all times, including Stages 1, 2, & 3	CII - Restaurants may only serve water upon request	Serving of water to customers by any eating establishment except when specifically requested [CCSD Municipal Code 4.08.030 (5)]	Yes
At all times, including Stages 1, 2, & 3	Other - Require automatic shut of hoses	Washing vehicles by use of an unrestrained hose. [CCSD Municipal Code 4.08.030 (7)]	Yes
At all times, including Stages 1, 2, & 3	Other - Prohibit use of potable water for construction and dust control	Use of potable water from the district's water supply system for compacting or dust control purposes. [CCSD Municipal Code 4.08.030 (8)]	Yes
At all times, including Stages 1, 2, & 3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	[CCSD Municipal Code 4.08.030 (4)]	Yes
Stage 3	Landscape - Prohibit all landscape irrigation	Irrigation of gardens and landscaping with potable water [CCSD Municipal Code 4.12C (2)]	Yes
Stage 3	Other	Use of potable water for fire drills [CCSD Municipal Code 4.12C (1)]	No
At all times, including Stages 1, 2, & 3	Landscape - Limit landscape irrigation to specific times	[CCSD Municipal Code 4.08.030 2.b]	Yes
Stages 2 & 3	Water Features - Restrict water use for decorative water features, such as fountains	[CCSD Municipal Code Chapter 4.12C.A.1]	Yes

NOTES: Stage 2 penalty includes – 500% surcharge applies to all use beyond the customer's maximum based on the following:
Residential Use ≤ 3 units/person/month
Comm. Use ≤ 5 units/EDU/month
Any subsequent use excesses subject to a 1,000% surcharge.
Stage 3 penalty includes – 500% surcharge applies to all use beyond the customer's maximum based on the following:
Residential Use ≤ 2 units/person/month
Comm. Use ≤ 3 units/EDU/month
Any subsequent use excesses subject to a 1,000% surcharge.
The CCSD Board may further refine the above subject restrictions and prohibitions.

8.3 Penalties, Charges, Other Enforcement of Prohibitions

Besides prohibitions and reduction goals, CCSD has a steeply tiered water rate structure, which is further accelerated by drought surcharges. Table 8-2 summarizes the CCSD drought surcharges. CCSD also has enforcement capabilities (CCSD Municipal Code Sections 4.08.040 through 4.08.070, 4.12B.3.E, and 4.12C [F]), which include fines as well as shutting off a customer's water service.

8.4 Consumption Reduction Methods

Table 8-3 further summarizes CCSD's water shortage contingency reduction methods as suggested within the March 2016 DWR guidebook.

Table 8-3. Stages of WSCP – Consumption Reduction Methods

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference *(optional)*
1	Expand Public Information Campaign	Voluntary drought watch conservation efforts
All times	Offer Water Use Surveys	
All times	Provide Rebates on Plumbing Fixtures and Devices	Subject to available funding, which is established as part of annual budget.
All times	Moratorium or Net Zero Demand Increase on New Connections	CCSD has a demand offset points bank in place that requires no-net increase in demand from any new water connection within its service area.
2 & 3	Implement or Modify Drought Rate Structure or Surcharge	Surcharges for Excess Use [CCSD Municipal Code 4.12B3.E.1 and 4.12C4.F.1]
2 & 3	Implement or Modify Drought Rate Structure or Surcharge	Mandatory Reductions in Use [CCSD Municipal Code Chapters 4.12B and 4.12C]
2 &3	Increase Frequency of Meter Reading	Monthly versus bi-monthly meter reading [CCSD Municipal Code 4.12B3.C and 4.12C4.D]

8.5 Determining Water Shortage Reductions

CCSD uses a supply and demand model to help guide the determination on whether a Stage 1, 2, or 3 condition is necessary. This model is described further within Appendix J, section 4-12D of the CCSD Municipal Code.

8.6 Revenue and Expenditure Impacts

Revenue reductions from water conservation pose a significant challenge to CCSD. To a certain extent, lost revenues for the reduced sale of water can be offset by surcharges. To offset potential lost revenues from future droughts, CCSD will continue with its efforts to establish a reserve water fund. Other adaptive measures could include delaying capital improvement expenditures as well as developing an internal loan from the CCSD General Fund.

8.7 Resolution or Ordinance

Drought ordinances have been codified into the CCSD Municipal Code, which is further described in Sections 8.1 and 8.2.

8.8 Catastrophic Supply Interruption

The CCSD service area has overhead power and communications lines, which co-exist with a heavily forested area of Monterey Pines. This has resulted in a history of power and communication outages during storm events, which often results from trees falling onto overhead lines. Therefore, CCSD relies upon emergency generators to operate its water system during such major power outages. In addition, CCSD is in the process of completing a Supervisory Control and Data Acquisition (SCADA) upgrade, which will allow for the use of radio communications as opposed to overhead phone lines.

Other catastrophic events, such as earthquakes, can coincide with structural damage, pipeline failures, fires, as well as power and communications interruptions. An emergency response command and control center has been established at the CCSD fire station, which is structurally designed to withstand earthquake events, has an emergency power supply, and includes a SCADA control center for water system operations. Emergency response planning by CCSD includes action plans for various emergency scenarios. The overall emergency response framework is based on the State of California's Standardized Emergency Management System (SEMS). More recently, CCSD has begun the process of developing a Local Hazard Mitigation Plan (LHMP). The LHMP will include goals and objectives that will further guide responding to catastrophic events. CCSD also completed a Sustainable Water Facility (SWF) as well as improvements to Well SR-4 during 2014, which improves the reliability of the water supply system and its ability to serve customers during drought conditions. Currently, CCSD is in the process of securing a regular Coastal Development Permit for its SWF. See Section 6 for additional discussion on the SWF.

8.9 Minimum Supply Next Three Years

Water Code Section 10632(b) requires that the UWMP estimate the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for CCSD's water supply.

Table 8-4 provides CCSD's minimum available water supply numbers for the next three years.

Table 8-4. Minimum Supply Next Three Years

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	1,228	1,273	1,197
NOTES: Includes groundwater basin multiple dry year supplies from the San Simeon and Santa Rosa creek groundwater aquifers as shown in Table 7-1, plus the percolated treated wastewater effluent, which is used for a saline barrier and indirect potable reuse by the SWF. Percolated wastewater effluent is based on indoor water use, which is conservatively low due to it not including any infiltration or inflow into the collection system. The volume of percolated wastewater was interpolated between actual 2015 metered wastewater plant effluent volume and projected 2020 indoor water use (estimated at 80% of demand based on an earlier 1998 USGS study (98-4061).			

9. DEMAND MANAGEMENT MEASURES

As a retail supplier of the Cambria area's potable water, CCSD continues to aggressively promote water conservation to make the most efficient use of existing local groundwater supplies. This section describes the CCSD's retail Demand Management Measures (DMMs), their implementation over the past five years, and future planned conservation measures that will ensure CCSD continues to meet or exceed water use reduction goals.

9.1 Demand Management Measures for Wholesale Agencies

CCSD is not a wholesale supplier of water. Therefore, this section of the State's recommended reporting format does not apply.

9.2 Demand Management Measures for Retail Agencies

9.2.1 Water Waste Prevention Ordinance

CCSD prohibits water waste through enforcement of Chapter 4.08 of its Municipal Code, which is further described within Section 8. The prohibition of water waste is an ongoing requirement, which applies during drought and non-drought conditions. Enforcement is achieved through coordinated efforts of CCSD's water and billing departments.

9.2.2 Metering

All potable water customers served by CCSD are metered. CCSD currently uses AMR meters, which include an electronic flagging feature when leaks are suspected on the downstream, customer-side of the meter. CCSD billing department coordinates with the water department in notifying customers of suspected leaks. Depending upon specific circumstances, such noticing may be followed up with an on-site inspection to assist customers in determining the cause of their leak and facilitate repair. Long term planning calls for replacing the existing AMR meters and installing meters based on an advanced metering infrastructure (AMI) system.

9.2.3 Conservation Pricing

CCSD has a tiered water rate structure, which encourages water conservation (unit rates increase with increased use). In addition, there are surcharges that apply during Stage 2 or Stage 3 levels of water conservation when use exceeds established limits (see Section 8 for further details).

9.2.4 Public Education and Outreach

CCSD routinely provides public information on water conservation on its website, billing inserts, billing notices, public announcements, and coordination with the local media. Tent cards on water conservation are also provided to restaurants and motels. CCSD is also a signatory agency to the California Urban Water Conservation Council (CUWCC), which allows benefits such as including the interactive H2OHouse website link directly on CCSD's website. The H2OHouse link allows visitors to tour a typical house and receive valuable water saving tips and information. Additionally, the CCSD website contains "how-to" information on reading meters and checking for leaks. CCSD water bills also remind customers of their past use to allow them to quickly assess their current water use. CCSD also places an added emphasis on testing pressure-regulating valves based on experience from residential home surveys. CCSD's website contains information explaining pressure-regulating valve testing and, to facilitate testing, pressure gauges are loaned to customers free of charge for testing incoming household pressures downstream from their pressure-regulating valve.

9.2.5 Programs to assess and manage distribution system real loss

CCSD routinely monitors its water production and consumption and investigates unaccounted water to determine water loss. Staff have also attended the first wave of training offered by the California-Nevada Section of the AWWA on water loss auditing, which is in response to SB 555 that was passed by the State during 2015 (a total of four training waves are

planned). Appendix K provides a copy of the FY2013-2014 Water Audit completed as part of this 2015 UWMP; the water audit is described further in Section 4.3. CCSD plans to conduct annual water loss auditing per SB 555 requirements. As part of this effort, it will continuously improve metering and documentation for authorized non-metered water use (e.g., assigning construction hydrants to fire trucks for use in non-emergency tasks such as hydrant testing) as well as estimating and documenting losses from leak repairs. CCSD field staff routinely check and respond to water leaks and are on-call 24/7 to immediately respond and take corrective action.

9.2.6 Water conservation program coordination and staffing support

CCSD's Utility Manager/District Engineer administers its water conservation program with assistance from billing and water department staff. The Administrative Technician II Assistant to the Utility Manager/District Engineer will serve as water conservation coordinator following the completion of training in water conservation and related programs. This training is to include water conservation auditing and administration of CCSD's demand offset program. Future training of the staff sharing these duties will be sought out from the CUWCC and other sources. Funding for this effort includes the CCSD points bank, which has been in existence for several decades. Essentially, any new water connection is required to offset estimated demands by purchasing demand offset points from the CCSD points bank. Points are added into the bank by documenting savings from water conservation efforts. For example, older homes are required to retrofit their fixtures to current water efficiency standards upon resale and certain remodeling efforts. Such efforts are documented by pre- and post-inspections with the savings converted into points.

9.2.7 Other demand management measures

CCSD is currently in the planning stages for requiring point-of-use recycling systems on future homes that are currently on CCSD's wait list. This may include separate black and greywater sewers to allow piping greywater to the point of use recycled treatment process, which would then treat the greywater to a level where it could be used for toilet flushing and outdoor uses. Separate purple piping would connect to the point of use treatment system, which would be connected to the toilets and other non-potable uses.

9.3 Implementation over the Past Five Years

Water conservation implementation over the past five years has included CCSD's continuing efforts on its retrofit on resale program and existing points bank conservation program, rebates for water-efficient washing machines, rebates on ultra-low flush toilets, as well as free low flow showerhead and aerators. CCSD uses a points bank to track conservation measures used to offset demands from any future water connections within its service area. Essentially, this program determines the number of retrofit-in-lieu points based on the proposed development, which are purchased and withdrawn from the bank. As conservation measures occur (e.g., retrofit on resale), points are added back into the points bank. Previous efforts included CCSD commissioning MWM to complete a Water Use Efficiency Program (WUEP)[12], completed in 2013. This 2013 effort resulted in an update to the number of points required based on the review demands by various sized residential homes and using the 90th percentile of those findings as a basis. The WUEP effort resulted in the CCSD Board adopting Program B in February 2013. The process used to develop the WUEP included analyzing conservation measures and programs using a Least Cost Planning Water Demand Management Decision Support System Model (DSS Model). Table 9-1 summarizes CCSD's 2013 adopted measures. As part of this 2015 UWMP, CCSD has updated the DSS Model, which is further described in Appendix G.

[12] CCSD Water Use Efficiency Plan, Maddaus Water Management, adopted by the CCSD Board on February 28, 2013.

Table 9-1. CCSD Elements of Conservation Program B

Elements of Conservation Program B (The Recommended Plan) Cambria CSD		
General Measures	Residential Measures	Commercial Measures
Public Information	*High Efficiency Toilets Rebates**	*Large Meter Replacement and Leak Monitoring**
Water Loss (NRW) Control Program	Clothes Washer Rebates	Clothes Washer Rebates
*Automated Meter Reading Conservation Benefits (AMR)**	Water Use Efficiency Surveys	Water Use Efficiency Surveys
*Conservation Pricing Update**	*Showerhead Giveaway**	High Efficiency Urinal Rebates
*Prohibit Water Waste and Practices (Ordinance)**	*Require Fixture Replacement by a Deadline**	*Require Fixture Replacement by a Deadline**
	Require Irrigation and Landscape Upgrades	Require Irrigation and Landscape Upgrades
	*Destribute Hot Water Recilulation Pumps**	

* Denotes Continue and/or Expand Current Measure

9.4 Planned Implementation to Achieve Water Use Targets

The following table presents a list and description of CCSD's current and planned conservation measures. These measures were used in the DSS Model described in Appendix G and summarized in Section 4.4.

Table 9-2. Conservation Measure Description

Measure Name	Description
Non-Revenue Water System Loss	Implement AWWA Manual M36 Methodology. (1) Use System Audit to track annually Infrastructure Leakage Index (ILI) Progress. Goal to lower the (ILI) and non-revenue water every year by pre-determined amount based on cost-effectiveness. (2) Analyze and Address Apparent Losses (i.e. data for billing system errors, and address meter testing and repair/replacement to insure more accurate meter reads and revenue collection). (3) Covers current efforts to address Real Losses (i.e. find and repair leaks in the distribution system to reduce real water loss and take other actions. Leak repairs would be handled by existing crews. After completing first system audit set a goal, such as "reduce non-revenue water to 7% of production over 5 years."
AMR Conservation Benefits	Use the AMR capability to identify accounts with continuous flow. Notify those accounts with a monthly usage above a certain level of the possibility of a leak on their side of the meter. Likely only occurs on indoor leaks. Follow up with those customers and help them identify leaks. Provide a penalty charge if leak is not fixed within 30 days. Consider offering an adjustment (reduction) on their water bill if they fix the leak before the next meter reading.
AMI Conservation Benefits	Retrofit AMR system with AMI meters and associated network capable of providing continuous consumption data to Utility offices. Improved identification of system and customer leaks is major conservation benefit. Some of the costs of these systems are offset by operational efficiencies and reduced staffing, as regular meter reading and actions for opening and closing accounts are accomplished without need for physical or drive-by meter reading. Also

Measure Name	Description
	enables enhanced billing options and ability to monitor unauthorized usage (such as use/tampering with closed accounts or irrigation if time of day or days per week are regulated). Customer service is improved as staff can quickly access continuous usage records to address customer inquiries. Optional features include online customer access to their usage, which has been shown to improve accountability and reduce water use. Identify and quickly notify customers of apparent leaks.
Prohibit Water Waste and Practices	Enforce ordinance that prohibits the waste of water with penalties for failure to repair outdoor or internal leaks in a timely manner and should include penalties for not repairing any leaks. Assume that only applies to exterior leakage and over irrigation resulting in runoff onto streets. Water savings estimate will be made based on prior years' enforcement activities. Monthly average is 40-50 on the "leak list" from the meter reads and then also 15 calls per month.
Public Information, Regional Outreach, Media Campaign	Public education used to raise awareness of conservation measures available to customers. Coordinate with other coastal water agencies and use various methods to teach customers about efficiency measures. Include direct customer contact (classes or neighborhood ambassadors program), direct mail/posters around community, speakers to community groups, educational material, conservation website, other media (public service announcements on radio, use PPT Slides announcements via TV during local public meetings), demonstration gardens, etc. Refine and develop media messages, social marketing plan that will use public input to assist in changing attitudes. Include information about rain barrels and cisterns in public educational resources.
Single Family Water Surveys	Implement indoor and outdoor water surveys for existing single-family residential customers. Normally those with high water use are targeted and provided customized water saving information, tips and tools. Eligible accounts could be about 1,000 (top 25%) of either single family homes or smaller home vacation rental properties. For conservation assumption on water savings and participation levels, only SF homes are included in the program planning. CCSD recognizes that higher conservation potential may exist in the vacation rental homes.
Multifamily Surveys	Organize and implement water surveys for existing multifamily residential customers (4 units or more). Target those with high water use and provide a customized report to owner. Less than 70 units would be eligible.
High Efficiency Showerhead & Aerators Giveaway	CCSD to buy low flow showerheads (1.5 gpm) in bulk and distribute them with water surveys and community events. Kit would include a 0.5 gpm lavatory faucet aerator and 1.5 gpm non-lavatory/kitchen faucet aerator. Target higher user and older homes (pre-1992) and full-time occupancy. This may be implemented as a targeted door canvassing program to also promote SF Survey program to both single family residences and vacation rental properties.
High Efficiency Toilet (HET) Rebates	Provide a rebate for the high efficiency toilet (HET). HET's are defined as any toilet flushing at 1.28 gpf or less and include dual flush technology. Rebate amounts would be on a sliding scale depending upon what type of toilet was replaced with an HET and would range from $60 to $100 per toilet replaced. Assume would move down to a lower volume use toilet after 2021, however to be conservative, this added savings are not modeled.
School Building Retrofit	School retrofit program would provide a grant to a school to replace fixtures and/or upgrade irrigation systems. Learn from the successful experience of the

Measure Name	Description
	Southern California Generation Water Program (http://www.generationwater.org) that involved support from water supplier, school district and provide on the job training for high school students. Assume one school per year is retrofitted with a grant from CCSD. Consider support by trainees for other support of CCSD Conservation Program activities.
Cambria Net Zero Landscape Ordinance (New Homes)	This measure is an aggressive local landscape ordinance as a step-up from CA's Model Water Efficient Landscape Ordinance (MWELO). Targeting new development only, this measure aims to achieve "net-zero" outdoor water use by any method including the use of native plants, weather-based irrigation controllers, gray water systems, cisterns and rain barrels, etc.
Point of Use Water Reuse (New Homes)	Point of use water recycling will allow for toilet flushing and other possible uses with locally treated greywater. It could be considered for new homes to help shape the demand forecast curve down. Establish an ongoing maintenance and monitoring/follow-up program (back-flow device inspection).
Fixture Retrofit on Resale or Name Change on Water Account	Compliance with CCSD Code where home buyer is required to provide a certificate of compliance/proof of installation be submitted to CCSD that verifies a plumber has inspected the property and efficient fixtures were already there or were installed by the close of escrow; require submittal within certain time frame such as 90 days of the close of escrow. (Consider experience of the Cities of Los Angeles and San Diego or City of Santa Cruz). Coordinate with new CA law SB 407 but require fixture upgrades rather than notifying new owner of the presence of inefficient fixtures.
Require Fixture Replacement Upon Remodel	When pulling a permit with remodel, this ordinance requires homeowners, vacation rental & multi-family properties and businesses to bring fixtures up to efficient standard by a fixed date at their own expense.
Require Multi Family Submetering on New Accounts	Require the metering of individual units in new multi-family, condos, townhouses, mobile-home parks. CCSD would administer meter read and bill program.
Non regenerative Water Softeners Incentives	This would reinstate the program that CCSD used to have as an incentive program. Ion exchange-based softening systems, which perform on-site regeneration of the exchange resin, would be eligible. CCSD to offer $100 rebate to switch out existing water softeners, installation of upgraded version of water softener may be eligible with CCSD pre-approval.
High Efficiency Washer Rebate	Provide a rebate for highly efficient washing machines to single family homes, apartment complexes that have common laundry rooms, and COM accounts. It is assumed that the rebates would remain consistent with relevant state and federal regulations (Department of Energy, Energy Star) and only offer the best available technology. Rebate amounts would reflect the incremental purchase cost. Program will be shorter lived as it is intended to be a market transformation measure and eventually would be stopped as efficient units reach saturation. SF rebate amounts would be $100-150 and coordinated with PG&E. Rebates could be tiered but assumed would be only given on the very efficient machines of less than 4.0 Water Factor (WF) inline CCSD Ordinance adopted in November 2012. PG&E offers a rebate on Tier 3 machines (currently water factor less than 4.5 gal/cu ft./cycle). CCSD may use the link on the cee1.org website for list of qualified machines to assist with administering program. PG&E is providing rebate processing on behalf of other water utilities in Northern California.

Measure Name	Description
CII Surveys and Top 25 Users Program	All CII customers would be offered a free water survey that would evaluate ways for the business to save water and money. The CII surveys would be for large accounts (accounts that use more than a significant amount of water per day) such as hotels, restaurants, stores, laundries, and schools. Emphasis will be on supporting the high water users including an analysis of who the high water users are.
Ultra-High Efficiency Urinal Rebate	Provide a rebate to existing high use CII customers (such as restaurants) for high efficiency urinals using equal to or less than 0.125 gallons per flush as per CCSD Ordinance adopted in November 2012.
Hot Water Recirculator	CCSD will provide one no-cost hot water circulating system to homeowners upon request. Homeowner's assume all responsibility for costs and installation. Unit may be installed under the master bath sink and will reduce wait time for hot water to 20 seconds or less at the retrofitted fixture.
Turf Replacement Program	California Department of Water Resources provides a per square foot incentive for supporting the customers cost to remove turf and replace with low water use plants or permeable hardscape. Rebate based on dollars per square foot removed, and capped at an upper limit. CCSD is not planning to support a turf replacement program at this time. http://www.saveourwaterrebates.com/turf-replacement-rebates-tc.html

9.5 Members of the California Urban Water Conservation Council

CCSD has been a member of the California Urban Water Conservation Council from December 2005 through 2015. At this point, CCSD is not implementing, and therefore not tracking, compliance with the CUWCC's online conservation reporting.

10. PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

This 2015 UWMP was presented to CCSD's Board of Directors for review and adoption. Once adopted, it supersedes the existing plan prepared in 2010. It was filed with the Water Efficiency Office in the Department of Water Resources, the California State Library, and San Luis Obispo County, as required by law, and will be used by CCSD staff during the current five-year planning cycle. As required by Section 10621 (a) of the Water Code, the District will update the UWMP again by December 2020.

10.1 Inclusion of All 2015 Data

All reported supply, demand, and planning data for the year 2015 is based on a complete data record for the 2015 calendar year.

10.2 Notice of Public Hearing

A public hearing before the CCSD Board of Directors to receive comments and consider adoption of the CCSD's 2015 UWMP was held on December 15, 2016. The public hearing was advertised in The Tribune Newspaper at least 60 days prior to the meeting. Additionally, a public hearing notice was posted on CCSD's website www.cambriacsd.org. See Appendix B for a copy of the newspaper notice. The UWMP was made available for public review at the CCSD offices, the Cambria Library, and on the cambriacsd.org website.

A copy of the resolution adopting the UWMP is provided in Appendix L.

Within 30 days of adoption, a copy of the plan was mailed to DWR, the California Library Records Hall (Sacramento), and placed on CCSD's website.

10.2.1 Notice to Cities and Counties

This section describes the notices CCSD distributed to San Luis Obispo County and the SLO County Council of Governments. Table 10-1 lists these specific entities. A copy of this letter is included below in Figure 10-1 and in Appendix B.

Table 10-1. Notification Letter to Cities and Counties

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
SLO County of Council Governments	☐	☑
County Name	60 Day Notice	Notice of Public Hearing
San Luis Obispo County	☑	☑
Notes: Includes San Luis Obispo Co. Planning and Building. In addition to the above County notification, the CCSD published legal notices in the local newspapers.		

Figure 10-1. Notification Letter to Cities and Counties

CAMBRIA COMMUNITY SERVICES DISTRICT

DIRECTORS:
GAIL ROBINETTE, President
MICHAEL THOMPSON, Vice President
JIM BAHRINGER
AMANDA RICE
GREG SANDERS

OFFICERS:
JEROME D. GRUBER, General Manager
MONIQUE MADRID, District Clerk
TIMOTHY J. CARMEL, District Counsel

GREAT PEOPLE, DOING GREAT THINGS FOR A GREAT COMMUNITY

1316 Tamsen Street, Suite 201 • P.O. Box 65 • Cambria CA 93428
Telephone (805) 927-6223 • Facsimile (805) 927-5584

August 18, 2016

Mr. James Caruso
County of San Luis Obispo
Planning Department
976 Osos Street, Room 200
San Luis Obispo CA 93408

Subject: Cambria CSD - 2015 Urban Water Management Plan Update

Dear Mr. Caruso,

The Urban Water Management Planning Act requires that urban water suppliers supplying more than 3,000 acre-feet of water annually or 3,000 customers prepare an Urban Water Management Plan (UWMP) in years ending in 5 and 0. The Act describes in detail the content of the plans to be submitted to the California Department of Water Resources. Realizing we are behind schedule in meeting its July 1, 2016 due date, we are currently expediting completion of our 2015 UWMP update while still meeting the Act's noticing requirements. The Act requires the District notify the County at least 60 days prior to any public hearing on the CCSD's UWMP. Therefore, please note that our District is currently reviewing its old plan and developing its update. Therefore, we may be contacting you to obtain supporting data and information.

Our District will also contact the County of San Luis Obispo in the future regarding public meetings where we will discuss the UWMP Update, as well as consider its adoption by our Board. We will encourage your attendance and input as part of this process. The District will also provide the County with a draft copy of the UWMP for your review and comments. In addition, the District will send out the final UWMP within 30 days of adoption by our District Board.

Should you *have* any additional information that may benefit our update, or have any related questions, please feel free to contact us. I can be reached directly at (805) 927-6119. Thank you.

Sincerely,

Robert C. Gresens

Robert C. Gresens, P.E.
District Engineer

cc: Courtney Howard, SLO County Public Works

10.2.2 Notice to the Public

The public was notified 60 days prior to the adoption meeting through The Tribune Newspaper and by posting the 2015 UWMP on the www.cambriacsd.org website by November 28, 2016.

The notice from the newspaper is shown in Appendix B.

10.3 Public Hearing and Adoption

The plan was adopted on December 15, 2016 at CCSD's Board meeting. The CCSD Board resolution adopting the plan is enclosed as Appendix L.

10.4 Plan Submittal

To satisfy Water Code Section 10635(b) and in accordance with the requirements of CWC §10644, within 30 days after its adoption, the UWMP was submitted to the DWR and the County of San Luis Obispo, and plan copies will be provided to the California State Library System and the San Luis Obispo County Library. The updated plan will also be posted on the CCSD website (www.cambriacsd.org) and made available for public review at the CCSD District office.

Documentation confirming CCSD's 2015 UWMP submittal can be found in Appendix M.

10.5 Public Availability

The 2015 UWMP was made available for public review at the CCSD District office, the public library, and on the www.cambriacsd.org website.

11. REFERENCES

Alliance for Water Efficiency. The Status of Legislation, Regulation, Codes & Standards on Indoor Plumbing Water Efficiency, January 2016. Online: http://www.allianceforwaterefficiency.org/Codes-Standards-White-Paper.aspx

American Water Works Association. *Manual of Water Supply Practice, M36, Water Audits and Loss Control Programs*, (3rd edition). AWWA, 2009. Online: http://www.awwa.org

Association of Bay Area Governments (ABAG). Projections 2002, Forecasts for the Bay Area.

Ibid. Projections 2013.

Boyle Engineering Corporation. 2007 Water Management Plan Update, Cayucos Area Water Organization, February 23, 2009.

California Department of Public Health. *California Code of Regulations*, Title 22, Section 60301.200, revised June 18, 2014. Online: http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/RWregulations_20140618.pdf

California Department of Water Resources (DWR). *2020 Water Conservation Plan*, February 2010.

Ibid. Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan, Final, March 2011.

Ibid. *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use for the Consistent Implementation of the Water Conservation Requirements of 2009*, October 2010. Online: http://www.water.ca.gov/wateruseefficiency/sb7/docs/methodologies-urban-per-capita-water-use-10042010.pdf

Ibid. *State Water Project Final Delivery Capability Report*, July 2015. Online: https://msb.water.ca.gov/documents/86800/144575dd-0be1-4d2d-aeff-8d7a2a7b21e4

Ibid. Urban Water Management Planning Workshop, March 9, 2011, Santa Barbara, California.

California Green Building Standards Code (CALGreen). Online: http://www.usgbc-ncc.org/index.php?option=com_content&view=article&id=401&Itemid=90

California Urban Water Conservation Counsel, Cost-Effectiveness Workshop, San Jose, California, conducted by Bill Maddaus, Maddaus Water Management, December 8, 2011.

California Water Code (CWC) sections 1725 & 1728. Online: http://www.leginfo.ca.gov/cgi-bin/displaycode?section=wat&group=01001-02000&file=1725-1732

Cambria Community Services District. 2005 Urban Water Management Plan, December 2005.

Ibid. Final Report, Assessment of Long-Term Water Supply Alternatives, prepared by Kennedy/Jenks Consultants, June 2004.

Ibid. Final Report, Baseline Water Supply Analysis, prepared by Kennedy/Jenks Consultants, December 8, 2000.

Ibid. Final Water Master Plan Program Environmental Impact Report, prepared by RBF Consulting, July 2008, as certified on August 21, 2008.

Ibid. Settlement Agreement between Clyde Warren/Warren Trust and CCSD, effective November 6, 2006.

Ibid. Water System Emergency Response Plan, December 2004.

Ibid. Water Use Efficiency Plan, prepared by Maddaus Water Management, February 2013.

Cambria Community Services District Board of Directors. Emergency Drought Declaration, January 30, 2014.

Cleveland, George B. "Drought and Ground Deformation, Cambria, San Luis Obispo County, California, California," February 1980.

Consortium for Efficient Energy website: www.cee1.org

County of San Luis Obispo. *Land Use and Circulation Elements of the San Luis Obispo County General Plan, North Coast*, as Revised August 24, 2008.

Ibid. Public Works Department website: http://slocity.org/

DeOreo, W.B., P.W. Mayer, Leslie Martien, Matthew Hayden, Andrew Funk, Michael Kramer-Duffield, Renee Davis, James Henderson, Bob Raucher, Peter Gleick, and Matt Heberger, *California Single-Family Water Use Efficiency Study*. Sacramento, California: Department of Water Resources, 2011. Online: http://www.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water_Appliances_12-AAER-2C/California_IOU_Response_to_CEC_Invitation_to_Participate-Water_Meters_REFERENCE/DeOreo_2011_California_Single-Family_Water_Use_Efficiency_Study.pdf

DeOreo, W.B. *Residential End Uses of Water, Version 2 - 4309.* Denver, Colorado: AWWA Research Foundation, 2016.

Dziegielewski, B., J. C. Kiefer, W. DeOreo, P. Mayer, E. M. Opitz, G. A. Porter, G. L. Lantz, and J. O. Nelson. *Commercial and Institutional End Uses of Water*. Denver, Colorado: AWWA, Research Foundation and American Water Works Association with Cooperation of the U.S. Bureau of Reclamation, 2000. Catalog No.90806. 264 pp. ISBN 1-58321-035-0. Online: http://ufdc.ufl.edu/WC13511002/00001

Energy Star. *Unit Shipment and Market Penetration Report Calendar Year 2011 Summary*. Online: http://www.energystar.gov/ia/partners/downloads/unit_shipment_data/2011_USD_Summary_Report.pdf

Koeller & Company. "High Efficiency Plumbing Fixtures - Toilets and Urinals," 2005.

National Oceanic and Atmospheric Administration (NOAA) website: http://www.ncdc.noaa.gov/cdo-web/

National Weather Service Station 042934 for the City of Fairfield, accessed online December 3, 2015: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca2934

National Weather Service Station 042934 for the City of Fairfield, accessed online December 3, 2015: http://www.wrcc.dri.edu/WRCCWrappers.py?sodxtrmts+042934+por+por+avgt+none+mave+5+01+F

Oak Ridge National Laboratory, Energy Division, "Bern Clothes Washer Study, Final Report," prepared for U.S. Department of Energy, March 1998. Online: http://web.ornl.gov/sci/ees/etsd/btric/eere_research_reports/appliances/other_appliances/laundry_equipment/ornl_m_6382/ornl_m_6382.html

Plumbing Efficiency Research Coalition. Water Consumption by Water-Using Plumbing Products and Appliances – 1980-2012, PERC Phase 1 Report, Table 2-A, November 2012. Online: http://www.map-testing.com/content/info/menu/perc.html

Santa Clara Valley Water District Water Use Efficiency Unit. "SCVWD CII Water Use and Baseline Study," February 2008.

Save Our Water Rebates. Website. http://www.saveourwaterrebates.com/toilet-rebates.html

Stantec Consulting Corporation. *Groundwater Monitoring and Remediation Status Report, Semi-Annual – Second Half 2011*, Chevron Station No. 9-0919, Cambria, California, December 2011.

U.S. Bureau of Reclamation. *West-Wide Climate Risk Assessments: Irrigation Demand and Reservoir Evaporation Projections*, Technical Memorandum No. 86-68210-2014-01, 2015. Online: http://www.usbr.gov/watersmart/wcra/index.html

U.S. Census Bureau. Website, 2010 American Fact Finder Population Finder.

Ibid. Website, 2010 Census Data, accessed December 15, 2015. Online: http://www.census.gov/2010census/

U.S. Environmental Protection Agency. Control and Mitigation of Drinking Water Losses in Distribution Systems, EPA 816-R-10-019, November 2010.

U.S. Geological Survey. *Climate Change and Water Resources Management: A Federal Perspective*, 2009.

University of California at Berkeley, Department of Environmental Science, Policy and Management. *Climate Change and Integrated Regional Water Management in California: A Preliminary Assessment of Regional Perspectives*, June 2012.

Western Regional Climate Center, Station 042934. Online: http://www.wrcc.dri.edu/

Yates, Eugene B. "Droughts in a Stream-Aquifer System, San Simeon Creek, California," US Geological Survey, 1991.

Yates, Eugene B. and Kathryn M. Van Konynenburg. *Hydrogeology, Water Quality, Water Budgets, and Stimulated Responses to Hydrologic Changes in Santa Rosa and San Simeon Creek Ground-Water Basins, San Luis Obispo County, California*, U.S. Geological Survey, Water Resources Investigations Report 98-4061, 1998.

12. APPENDICES

A. UWMP Checklist

B. Public Notice of UWMP Hearing

C. DWR Bulletin 118

D. Groundwater Diversion Permits

E. SB X7-7 Verification Form

F. RWQCB Waste Discharge Order 01-100, December 7, 2001

G. Demand & Passive Savings Methodology

H. CCSD Groundwater Management Plan

I. CCSD Task 3: Recycled Water Distribution System Master Plan

J. CCSD Code Title 4 Water Systems

K. Water Audit Method

L. Adoption Resolution

M. Documentation of 2015 UWMP Submittal

N. Project Contact List