URBAN WATER MANAGEMENT PLAN
2010 UPDATE

CALIFORNIA CITY, CALIFORNIA

MARCH 2013

Prepared by:

Provost & Pritchard Consulting Group
1800 30th Street, Suite 280
Bakersfield, California 93301
www.ppeng.com

EST. 1968
PROVOST& PRITCHARD
CONSULTING GROUP
An Employee Owned Company

City Council

Patrick Bohannon, Mayor

Bill Smith, Mayor Pro-Tem

Ed Fuller

Chuck McGuire

Jennifer Wood

City Staff

Tom Weil, City Manager

Mike Bevins, Public Works Director

TABLE OF CONTENTS

1 Introduction 1
1.1 Purpose 1
1.2 Background 1
1.2.1 Urban Water Management Planning Act 1
1.2.2 Previous Urban Water Management Plan 2
1.3 Resource Maximization/Import Minimization 2
1.3.1 Previous Studies 3
2 Plan Preparation 4
2.1 Coordination 4
2.2 Plan Adoption, Submittal, and Implementation 5
3 System Description 6
3.1 Service Area Physical Description 6
3.1.1 Location 6
3.1.2 Land Use 8
3.1.3 Climate 9
3.2 Service Area Population 11
4 System Demands 13
4.1 Historical Water Use 13
4.2 Baselines and Targets 14
4.2.1 Baseline 14
4.2.2 Targets 16
4.2.3 Summary of Baseline and Targets 18
4.3 Water Demands 19
4.4 Water Demand Projections 20
4.5 Planned Development 22
4.5.1 Low Income Projected Water Demands 22
4.6 Water Use Reduction Plan 23
5 System Supplies 25
5.1 Water Sources 25
5.1.1 Water Supply Facilities 25
5.1.2 Water Storage Facilities & Distribution System 26
5.2 Groundwater 27
5.2.1 Groundwater Description and Management Plan 27
5.2.2 Groundwater Levels and Historical Trends 28

5.2.3 Sources of Recharge 29
5.2.4 Existing and Projected Groundwater Pumping 29
5.3 Transfer or Exchange Opportunities 30
5.4 Desalinated Water Opportunities 31
5.4.1 Brackish Water and/or Groundwater Desalination 31
5.4.2 Seawater Desalination 31
5.5 Recycled Water Opportunities 31
5.6 Future Water Projects 34
6 Water Supply Reliability and Water Shortage Contingency Plan 35
6.1 Water Supply Reliability 35
6.1.1 Frequency and Magnitude of Supply Deficiencies 35
6.1.2 Basis of Water Year Data 36
6.1.3 Supply Reliability 36
6.1.4 Projected Normal Water Year Demands 38
6.1.5 Projected Single Dry Water Year 39
6.1.6 Projected Multiple Dry Water Years 39
Factors Affecting Supply Reliability 40
6.2 Water Shortage Contingency Planning 42
6.2.1 Water Shortage Stages and Reduction Objectives 43
6.2.2 Water Shortage – Health and Safety Requirements 43
6.2.3 Water Shortage Stages and Triggering Mechanisms 44
6.2.4 Water Allotment Methods 45
6.2.5 Prohibitions, Consumption Reduction Methods, and Penalties 46
6.2.6 Revenue and Expenditure Impacts/Measures to Overcome Impacts 47
6.2.7 Actions During a Catastrophic Interruption 48
6.2.8 Reduction Measuring Mechanism 49
6.3 Water Quality 49
6.4 Drought Planning 50
7 Demand Management Measures (DMM) 51
7.1 DMMs 51
7.1.1 Water Survey Programs 53
7.1.2 Residential Plumbing Retrofit 53
7.1.3 Water System Audits 54
7.1.4 Metering and Commodity Rates 55
7.1.5 Landscape and Irrigation Programs 55

7.1.6 Washing Machine Rebate Program 55
7.1.7 Public Information Program 56
7.1.8 School Education Program 56
7.1.9 Commercial, Industrial, and Institutional Conservation Programs 56
7.1.10 Wholesale Agency Programs 57
7.1.11 Conservation Pricing 57
7.1.12 Water Conservation Coordinator 58
7.1.13 Water Waste Prohibition 58
7.1.14 Ultra Low Flush Toilet Replacement 59
8 Completed UWMP Checklist 60
9 References 66

APPENDIX

Appendix A ..... Resolution to Adopt the Urban Water Management Plan
Appendix B ..... Notice of Public Hearings & Notification Letters
Appendix C ..... Groundwater Basin Information
Appendix D ..... Ordinances

LIST OF FIGURES

Page

Figure 3-1: Regional Location Map 7
Figure 3-2: Climate Characteristics 10
Figure 3-3: Population – Historical and Projected 12
Figure 4-1: Historical Water Use 13
Figure 4-2: Water Use – Historical and Projected 24
Figure 5-1: Depth to Groundwater 28
Figure 6-1: Historic Per Capita Demand 37

LIST OF TABLES

Page

Table 2-1: Coordination with Appropriate Agencies 4
Table 3-1: Land Use Categories 8
Table 3-2: Climate Characteristics 9
Table 3-3: Population – Current and Projected 11
Table 4-1: Water Deliveries – 2005 14
Table 4-2: Base Period Ranges 15
Table 4-3: Base Daily Per Capita Water Use –10 Year Range 15
Table 4-4: Base Daily Per Capita Water Use – 5 Year Range 16
Table 4-5: Method 4 Summary 18
Table 4-6: Baseline and Targets Summary 18
Table 4-7: Water Deliveries 2010 – 2030 19
Table 4-8: Additional Water Uses and Losses 21
Table 4-9: Total Water Use 21
Table 4-10: Low-Income Projected Water Demands 23
Table 4-11: Total Water Use Projections with Water Conservation 23
Table 5-1: Water Supplies 26
Table 5-2: Wholesale Supplies 26
Table 5-3: Groundwater – Volume Pumped 29
Table 5-4: Groundwater – Volume Projected to be Pumped 30
Table 5-5: Transfer and Exchange Opportunities 30
Table 5-6: Recycled Water – Wastewater Treatment 32
Table 5-7: Recycled Water – Non-Recycled Wastewater Disposal 32
Table 5-8: Recycled Water – 2005 Use Projection Compared to 2010 Actual 33
Table 5-9: Future Water Supply Projects 34

Table 6-1: Basis of Water Year Data 36
Table 6-2: Supply Reliability – Historic Conditions 38
Table 6-3: Supply Reliability – Current Water Sources 38
Table 6-4: Supply and Demand Comparison – Normal Year 39
Table 6-5: Supply and Demand Comparison – Single Dry Year 39
Table 6-6: Supply & Demand Comparison – Multiple Dry Years 40
Table 6-7: Factors Resulting in Inconsistency of Supply 41
Table 6-8: Water Shortage Stages and Reduction Objectives 43
Table 6-9: Per Capita Health and Safety Water Quantity Calculations 44
Table 6-10: Water Shortage Stages and Triggering Mechanisms 46
Table 6-11: Water Shortage Contingency – Mandatory Prohibitions 47
Table 6-12: Water Shortage Contingency – Consumption Reduction Methods 47
Table 6-13: Water Shortage Contingency – Penalties and Charges 48
Table 6-14: Actions During a Catastrophic Event 48
Table 6-15: Water Quality – Current and Projected Water Supply Impacts 49
Table 7-1: Demand Management Measures 52
Table 7-2: Water Survey Program Implementation 53
Table 7-3: Residential Plumbing Retrofit Implementation 54
Table 7-4: Water System Audits Program Implementation 54
Table 7-5: Washing Machine Rebate Program Implementation 55
Table 7-6: CII Conservation Program Implementation 57
Table 7-7: Conservation Pricing – Base Rate 57
Table 7-8: Conservation Pricing – Tier Structure 58
Table 7-9: Low Flush Toilet Cost/Benefit Analysis 59

ABBREVIATIONS – Entities

AVEK ..... Antelope Valley East Kern Water Agency
CCC ..... California City Correctional Center
CDPH ..... California Department of Public Health
DWR ..... Department of Water Resources
IRWMG ..... Integrated Regional Water Management Group
IRWMP ..... Integrated Regional Water Management Plan
KCWA ..... Kern County Water Agency
MPUD ..... Mojave Public Utilities District
SWRCB ..... State Water Resources Control Board
UWMP ..... Urban Water Management Plan
UWMPA ..... Urban Water Management Plan Act
UWMPGB ..... UWMP 2010 Guidebook
WMP ..... Water Master Plan

ABBREVIATIONS – Terminology & Units

AB ..... State Assembly Bill
ac ..... acre
ADD ..... Average Daily Demand
af ..... acre-feet
afy ..... acre-feet per year
AVGB ..... Antelope Valley Groundwater Basin
bgs ..... below ground surface
CII ..... Commercial, Industrial and Institutional
CWC ..... California Water Code
DMM ..... Demand Management Measures
DU ..... dwelling unit
ET_0 ..... Reference Evapo-transpiration
ft ..... feet
FVGB ..... Fremont Valley Groundwater Basin
gpd ..... gallons per day
gpcd ..... gallons per capita per day
MCL ..... Maximum Contaminant Level
MDD ..... Maximum Day Demand
mgd ..... million gallons per day

mgy .....million gallons per year
mg/L ..... milligrams per liter
PHG .....Public Health Goal
PHD.....Peak Hour Demand
psi.....pounds per square inch
SB .....State Senate Bill
ULF .....Ultra-Low Flush toilet

1 INTRODUCTION

1.1 Purpose

The Urban Water Management Plan (UWMP) is a requirement of the Urban Water Management Planning Act (UWMPA) (Division 6, Part 2.6 of the California Water Code (CWC) §10610-10656). The UWMPs must be prepared every five years and submitted to the Department of Water Resources (DWR). The submittal is required to meet the requirements of the UWMPA, including the most current amendments. The UWMPA applies to urban water suppliers with 3,000 or more connections or supplying more than 3,000 acre-feet (af) of water annually.

UWMPs are required of the state's urban water suppliers in an effort to assist their resource planning and to ensure adequate water supplies are available for future use. A secondary purpose of the UWMP is to provide a plan for a series of actions to be implemented during water shortage situations. This report was prepared according to the requirements of the CWC, UWMPA and the UWMP Guidebook 2010 (March 2011).

1.2 Background

1.2.1 Urban Water Management Planning Act

In 1983, Assembly Bill (AB) 797 altered Division 6 of the CWC by producing the UWMPA. Since 1983, several amendments to the Act have modified and added to the requirements of the UWMPs submitted today. One such amendment required projections for water use to extend 20 years at 5-year intervals. Recently, this has been increased to a 25 year projection providing for a minimum 20-year projection up until the next UWMP is completed.

Various other amendments have increased requirements to include sections on recycled water use, demand management measures (DMMs), and water shortage contingency plans. Recycled water use sections were added to assist in evaluation of alternate water supplies for future use when projects exceed the current water supplies. Demand management measures must be clearly described including which measures are being implemented and which are scheduled for implementation in the future. Water contingency plans are to be prepared and coordinated with other water suppliers in the area for use during times of drought. Pertinent legislation that is applicable to UWMPs includes:

Legislation	Requirements
SB610 and AB901	Consideration of water availability when reviewing new large developments
SB318	Investigate possibilities of developing desalinated water
AB105	Submit UWMP to State Library
SBx7-7 Water Conservation Act (2009)	Urban water suppliers to reduce the statewide average per capita daily water consumption by 20% by December 31, 2020 (20x2020 Plan)
AB1420	Water management grants or loans awarded or administered by the Department of Water Resources (DWR), State Water Resources Control Board (SWRCB)…be conditioned on the implementation of the water Demand Management Measures (DMM) described in Water Code Section 10631(f)
AB1465	Requires member of the California Urban Water Conservation Council to comply with UWMP requirements in accordance with the Urban Water Management Planning Act.
AB2572	All urban water suppliers are required to install water meters on all municipal and industrial water service connections on or before January 1, 2005 and, on or before January 1, 2010, to charge each customer that has a service connection for which a meter has been installed, based on volume of deliveries, as measured by the water meter.

1.2.2 Previous Urban Water Management Plan

The City previously prepared an UWMP in 2005; however, it was unrecorded. This 2010 UWMP serves as an update to the 2005 UWMP and complies with all new requirements and regulations.

1.3 Resource Maximization/Import Minimization

The City of California City optimizes many water management strategies and tools to maximize water resources and minimize the need for imported water. In an effort to improve the City's water efficiency and conservation the City has done the following.

The City is in the process of forming the Fremont Valley Integrated Regional Water Management Group (IRWMG), consisting of California City, Mojave Public Utility District (MPUD) and Antelope Valley East Kern Water Agency (AVEK). The IRWMG was provisionally accepted by the state in the spring of 2012. Once officially accepted, the group will begin work on an Integrated Regional Water Management Plan (IRWMP).

1.3.1 Previous Studies

The "Evaluation of Groundwater Resources in California City" (Stetson Engineers, December 2008) discusses regional geology and hydrology, and groundwater production, storage, recharge and quality. This study provides estimates of the "safe yield" of the groundwater basin underlying California City.

The Water Master Plan (WMP) (Quad Knopf, 2002) includes information regarding the City's water use, distribution system, future expansions and growth projections. The WMP is intended to provide a plan to guide water system improvements through 2020. It will be periodically updated to adjust for new conditions and growth within the City.

2 PLAN PREPARATION

2.1 Coordination

Legal Requirements:

§10620(d)(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

§10621(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by §10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, a city or county that receives notice pursuant to this subdivision.

§10635(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.

§10642 Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.

§10642 Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.

The City is the sole water supplier for the area and thus the City did not seek regional participation. However, the efforts to prepare this UWMP were coordinated with appropriate agencies to provide the most accurate and clear assessment of the water supply situation in the City. Once the Fremont Basin IRWM Group has prepared an IRMWP, the City will have an ability to approach their water goals from a more regional standpoint.

Table 2-1: Coordination with Appropriate Agencies
(UWMPGB Table 1)

Coordinating Agencies[1]	Participated in Developing the Plan	Commented on the Draft	Attended Public Meetings	Was Contacted for Assistance	Was Sent a Copy of the Draft Plan	Was Sent a Notice of Intention to Adopt
Antelope Valley East Kern (AVEK)				X		X
Mojave Public Utility District (MPUD)				X		X
Kern County Water Agency (KCWA)				X		X
Kern County Development Services Agency				X		X
Kern County Supervisor (District 2)				X		X

2.2 Plan Adoption, Submittal, and Implementation

Legal Requirements:

> *§10640 – 10621(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3.*
>
> *§10642 After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*
>
> *§10643 An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.*
>
> *§10644(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.*
>
> *§10645 Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

The City will hold a public hearing and adopt the 2010 UWMP on March 5, 2013. A copy of the adopting resolution is included in Appendix A. Prior to the public hearing; a notice will be published notifying the public of the pending hearing.

Once the UWMP has been adopted, a copy of the UWMP and amendments will be submitted to Kern County, DWR and the State Library. Once submitted to DWR, a copy will be made available for public review within 30 days and the reliability and Supply-and-Demand section will be submitted to Kern County within 60 days.

Once the UWMP has been adopted and submitted to the appropriate agencies, the City will implement the various demand management measures (DMMs) as discussed in Section 6 to conserve their water supply.

3 SYSTEM DESCRIPTION

3.1 Service Area Physical Description

Legal Requirements:

§10631(a) Describe the service area of the supplier.

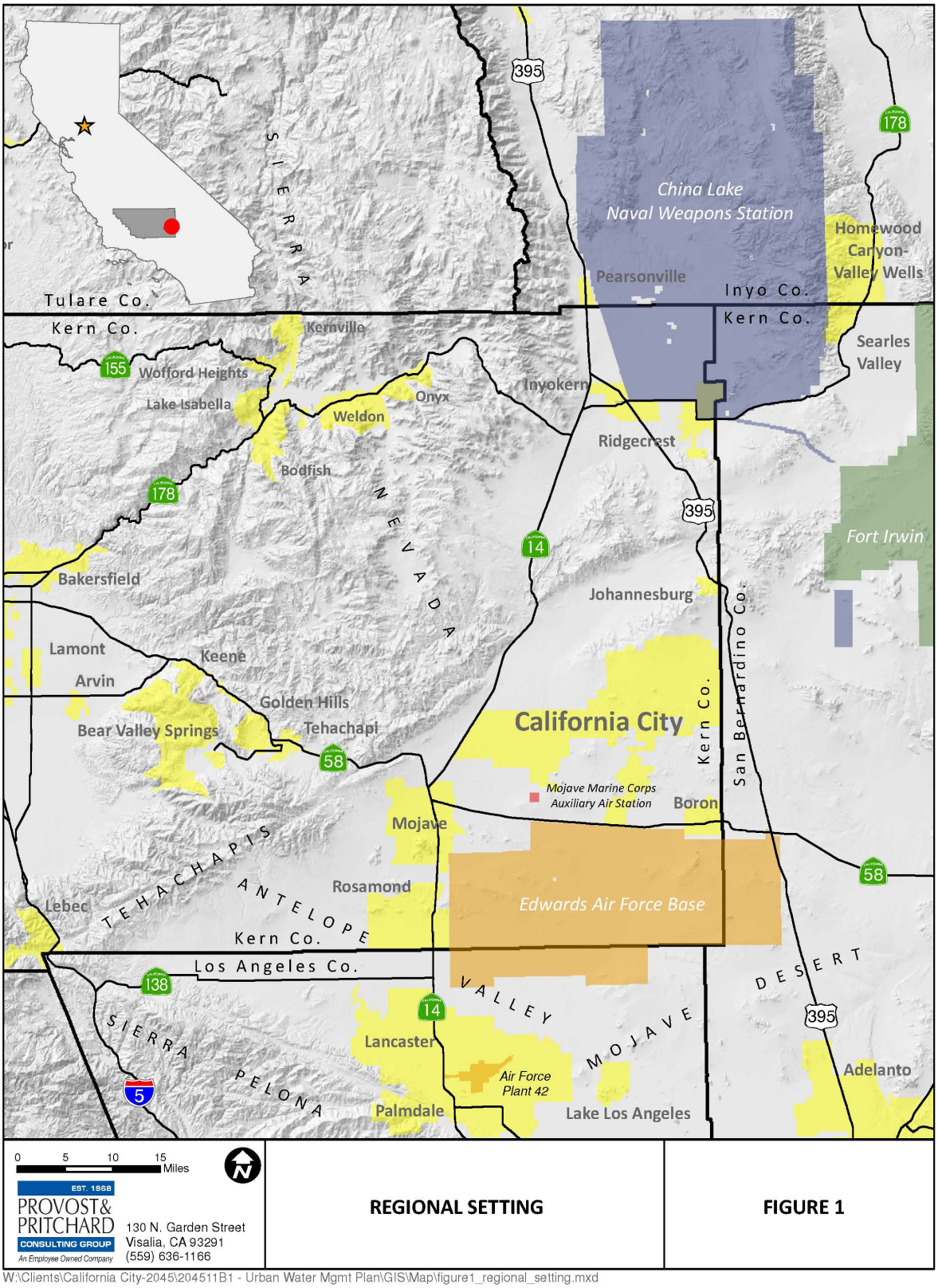
§10631(a) (Describe the service area) climate.

3.1.1 Location

California City is located in southeastern Kern County in the SWRCB South Lahontan Region, approximately 100 miles northeast of Los Angeles and 70 miles southeast of Bakersfield. California City is the third geographically largest city in California with an area of 203.4 square miles. The City is near Highway 58 and Highway 14, which links the City to the other parts of the state.

Of note, there are several military installations in the vicinity. To the southeast is Edwards Air Force Base and to the north is China Lake Naval Weapons Station. However, none of the military installations are near enough to the City to affect one and another's water supplies. Edwards AFB receives water from AVEK, similarly to California City, but through different facilities.

Figure 3-1: Regional Location Map



W:\Clients\California City-2045\204511B1 - Urban Water Mgmt Plan\GIS\Map\figure1_regional_setting.mxd

3.1.2 Land Use

The City is located in the Mojave high desert, near mineral rich areas, offering excellent opportunities for mining operations, specifically sodium borate. It is also near many major employment clusters such as Edwards Air Force Base, Mojave Air and Space Port, and the wind and energy development area of east Kern County. The California Correctional Center is the largest employer within the City. **Table 3-1** indicates the area for each land use category described in the 2009-2028 General Plan.

Table 3-1: Land Use Categories

Land use	Area (acres)	Percent of Total (%)
Single Family Residential	29,392	22.6
Multi-Family Residential	3,900	3.0
Commercial	748	0.6
Industrial	11,217	8.6
Open Space	82,426	63.3
Governmental	181	0.1
Conservation	2,176	1.7
Medical	160	0.1
Total	130,200	100
Source: California City 2009-2028 General Plan		

The single largest land use is open space, consisting of 63.3 percent of the land area. Most of the City's residents live in the "First Community" which contains about 9,600 acres and most of the multi-family and smaller single family residential lots. The "Second Community", which is located to the east of the center of California City, consists of larger lots and is currently sparsely populated. Sewer service is available in portions of the "First Community"; all other areas are served by septic tanks with onsite subsurface disposal.

3.1.3 Climate

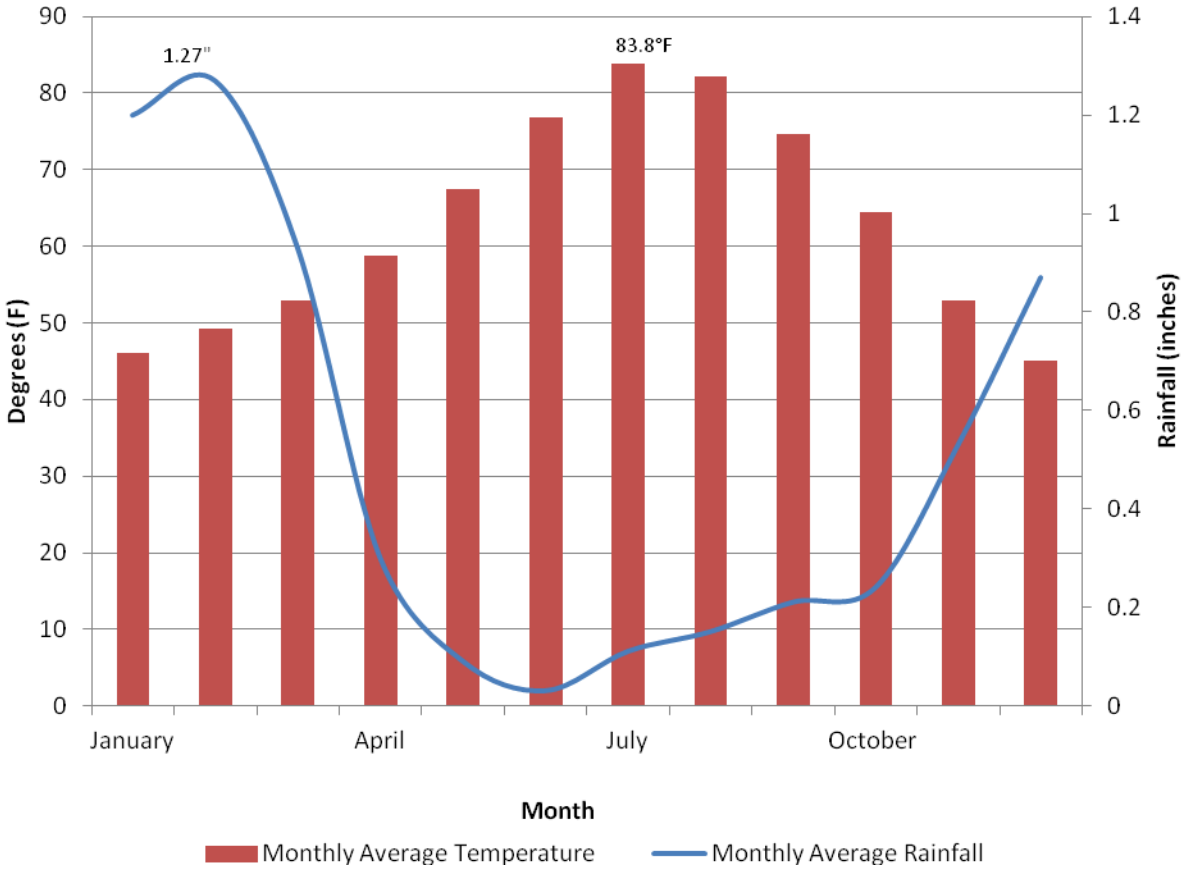
The City is located in the high desert with an elevation range of 2,300 to 4,000 feet above sea level. Its climate is semi-arid, which provides for warm, dry weather in the summer and mild cooler weather in the winter. Rainfall for the area is less than 6-inches annually, with about 75 percent occurring in December through March. The precipitation varies considerably from year to year, with a prolonged drought occurring from 1945 to 1964 and several shorter drought periods within the last ten years. Because precipitation occurs predominantly in the winter months, when landscaping and agricultural water demand is at the lowest, summer water demand is 3 to 5 times that of the winter months.

Table 3-2: Climate Characteristics

Month	Monthly Average Rainfall (inches)	Average Min. Temperature (ºF)	Average Max. Temperature (ºF)	Monthly Average Temperature (ºF)	Average Pan Evaporation (inches)	Monthly Average ETo (Zone 17) (inches per month)
January	1.2	34.2	57.8	46.0	0.00	1.86
February	1.27	37.1	61.2	49.2	4.65	2.80
March	0.93	41.0	64.7	52.9	6.45	4.65
April	0.3	46.3	71.3	58.8	9.97	6.00
May	0.09	55.1	79.9	67.5	13.59	8.06
June	0.03	63.8	89.9	76.9	15.33	9.00
July	0.11	69.8	97.7	83.8	17.21	9.92
August	0.15	68.0	96.4	82.2	16.0	8.68
September	0.21	60.3	89.0	74.7	11.83	6.60
October	0.24	50.3	78.5	64.4	8.28	4.34
November	0.53	40.2	65.7	53.0	4.76	2.70
December	0.87	32.9	57.2	45.1	3.52	1.86
Annual Total/Averages	5.93	49.9	75.8	62.9	111.59	66.50
Source: Western Regional Climate Center; Mojave, CA Station 045756						

The extreme high temperatures often exceed 100 degrees Fahrenheit from May through September. Because of its high desert location, humidity levels are very low and it is often windy. This gives California City one of the state's highest pan evaporation and reference evapo-transpiration (ET_o) rates. The high evaporation and ET_o rates result in significantly higher water usage for landscape irrigation than other areas in California.

Figure 3-2: Climate Characteristics



3.2 Service Area Population

Legal Requirements:

§10631(a) (Describe the service area) current and projected population…The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier…

§10631(a) …(population projections) shall be in five-year increments to 20 years or as far as data is available.

§10631(a) Describe…other demographic factors affecting the supplier's water management planning.

The population of California City was consistently near 3,000 residents from 1965 to 1980. From 1980 to 1990, the population grew to approximately 6,000. From 1990 to 2000, the population continued to increase at a similar rate, reaching 8,385 citizens. Since 2000 the rate of growth has increased slightly to a total population of 14,120 (2010 Census). Most growth was a result of employment opportunities at Edwards Air Force Base, Rio Tinto (Borax) Mine, Mojave Air and Space Port and the California City Correctional Center (CCC). CCC has an approved expansion; however it is extremely unlikely the project will be built, given the current economic and political climate.

Table 3-3: Population – Current and Projected
(UWMPGB Table 2)

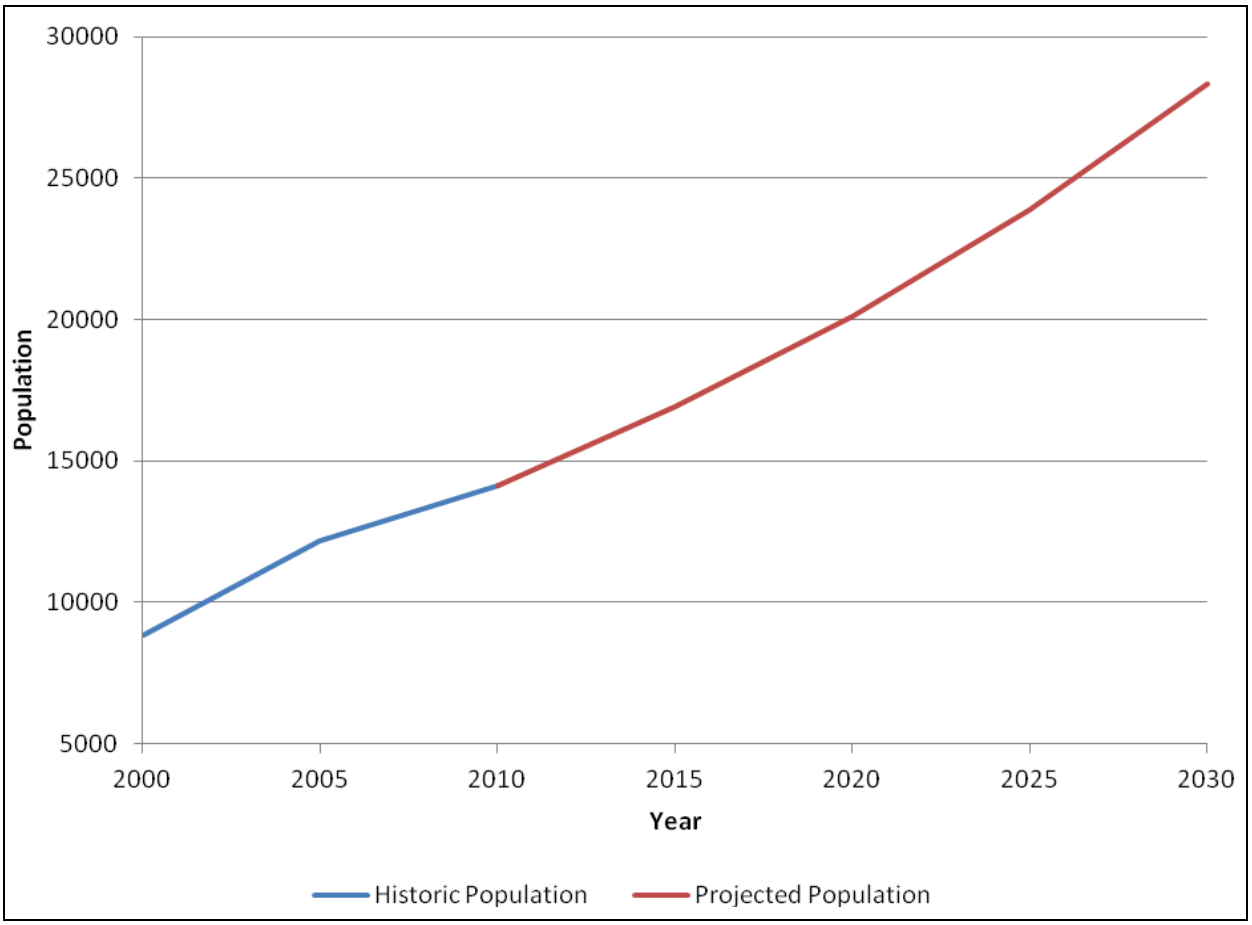
	2010	2015	2020	2025	2030
Service Area Population[1]	14,120[2]	16,922	20,098	23,870	28,350
Percent Change	21.7%	11.5%	11.5%	12.4%	12.5%
Average Annual Growth Rate	4.3%	2.3%	2.3%	2.5%	2.5%

[1]Service area population is defined as the population served by the distribution system.

[2]US Census 2010

Source: California City Water Master Plan and 2010 Census

Figure 3-3: Population – Historical and Projected



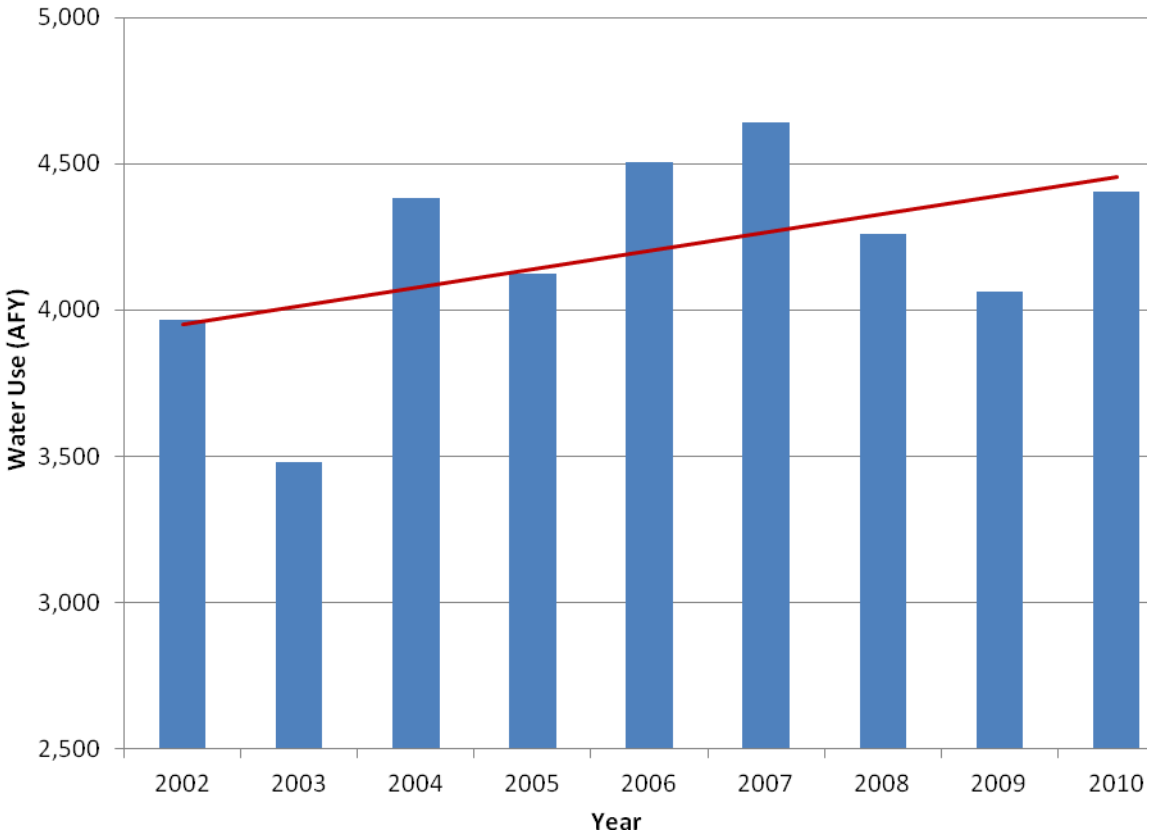
According to the 2010 Census, the City has 5,210 housing units with an average of 3.07 persons per household.

4 SYSTEM DEMANDS

4.1 Historical Water Use

Most water use in the City is residential. As of 2010, all of the 4,403 services are metered and the percent of industrial and commercial uses rose to nearly 10 percent.

Figure 4-1: Historical Water Use



As illustrated above, the City's water use has increased from 2002 to the present. While the increase has fluctuated annually, the general trend is upward, as shown by the trend line plotted on the graph. It is anticipated this trend will continue, but at a slower pace because of conservation measures being or to be implemented. The following table shows a more detailed breakdown of the water usage in 2005, indicating usage by metered and non-metered services. As shown, the City is 100 percent metered.

Table 4-1: Water Deliveries – 2005
(UWMPGB Table 3)

Water use sectors	Metered	
	# of accounts	Volume (AFY)
Single family	3,504	1,726
Multi-family	Not Tracked	
Commercial	132	766
Institutional	Not Tracked	
Landscape	Not Tracked	
Municipal	Not Tracked	
Total	3,636	4,124[1]

[1] Total does not include system losses; therefore, the total deliveries are different that the total shown in Table 4-9.

4.2 Baselines and Targets

Legal Requirements:

§10608.20(e) An urban retail water supplier shall include in its urban water management plan…due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

Determining the City's baseline per capita use is the first step of calculating the required targets for the 20-year planning period, which will allow DWR to determine the City's compliance with required reduction described in the Water Conservation Bill of 2009.

4.2.1 Baseline

To determine the City's baseline water use, it was determined that the City would take the 10-year baseline approach. A 5-year baseline must also be calculated to assist in establishing the reduction targets. The following table summarizes the 2005 baseline data and water deliveries made in 2008, substantiating the 10-year baseline approach.

Table 4-2: Base Period Ranges
(UWMPGB Table 13)

Base	Parameter	Value
10-year base period	2008 total water deliveries	4,261
	2008 total volume of delivered recycled water	570
	2008 recycled water as a percent of total deliveries	13%
	Number of years in base period[1]	10
	Year beginning base period range	2001
	Year ending base period range[2]	2010
5-year base period	Number of years in base period	5
	Year beginning base period range	2004
	Year ending base period range[3]	2008

Units : AFY

[1]If the 2008 recycled water percent is less than 10 percent, then the first base period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first base period is a continuous 10- to 15-year period.

[2]The ending year must be between December 31, 2004 and December 31, 2010.

[3]The ending year must be between December 31, 2007 and December 31, 2010.

The data used to calculate the baseline is summarized in the following table. The UWMPA requirements state a continuous range must be used with the range ending between the end of 2004 and 2010.

Table 4-3: Base Daily Per Capita Water Use –10 Year Range
(UWMPGB Table 14)

Base period year		Distribution System Population	Annual system gross water use (mgy)	Annual daily per capita water use (gpcd)
Sequence	Calendar Year			
1	2001	8,833	1,383	429
2	2002	9,306	1,513	445
3	2003	9,803	1,335	373
4	2004	10,328	1,641	435
5	2005	10,880	1,573	396
6	2006	11,462	1,714	410
7	2007	12,075	1,764	400
8	2008	12,720	1,664	358
9	2009	13,401	1,598	327
10	2010	14,120	1,631	316
Average Base Daily Per Capita Water Use				**389**

The following table summarizes the data used to calculate the 5-year baseline, which has a UWMPA requirement to be a continuous range, ending between the end of 2007 and 2010.

Table 4-4: Base Daily Per Capita Water Use – 5 Year Range
(UWMPGB Table 15)

Base period year		Distribution System Population	Annual system gross water use (mgy)	Annual daily per capita water use (gpcd)
Sequence	Calendar Year			
1	2004	10,328	1,641	435
2	2005	10,880	1,573	396
3	2006	11,462	1,714	410
4	2007	12,075	1,764	400
5	2008	12,720	1,664	358
		Base Daily Per Capita Water Use		**400**

4.2.2 Targets

Four methods have been developed to determine water use targets for the City. The UWMPA requires a target be established for 2020 and an interim target for 2015. Each method and its calculated water use are described below.

4.2.2.1 Method 1 – 80 Percent

Method 1 is based upon the determined base daily per capita use as determined by the water supplier. The base daily per capita use has been calculated to be 389 gallons per person per day (gpcd), as shown in **Table 4-3**. Method 1 requires that this usage be reduced to by 20 percent, yielding a target use of 311 gpcd.

4.2.2.2 Method 2 – Performance Standards

Method 2 uses commercial, industrial, institutional, indoor residential, and landscape water usage quantities to calculate a water use target. The City's data is does not track landscape water usage separately, therefore making this method impractical for use in calculating a target water use.

4.2.2.3 Method 3 – 95 Percent Hydrologic Region Target

Method 3 is based upon the hydrologic region target, which is reduced by 5% to obtain the 95% Target. According to the 20x2020 Water Conservation Plan, the region-specific conservation goal is 170 gpcd for the South Lahontan region. With this information, Method 3 yields are target use of 162 gpcd.

4.2.2.4 Method 4 – Provisional

Method 4 was released by DWR on January 24, 2011, presented to several agencies, adopted in mid-February 2011 and released in the final 2010 guidebook. DWR has stated that this is a provisional method, subject to later revisions during the 2015 UWMP cycle. The methodology in this method is based on the base daily per capita use in 2000 and reduction in the three sectors:

- Residential indoor;
- Commercial, industrial, and institutional (CII); and
- Landscape use and water loss.

4.2.2.4.1 Residential Indoor Savings

Because residential water usage is measured by a single meter typically, DWR has provided an assumption of 70 gpcd for standard residential indoor water use. Method 4 outlines two ways to determine indoor residential savings. The first way utilizes a best management practices (BMP) calculator that sums the conservation elements for residential indoor use. Due to a lack of data, this process will not be used or discussed further. The other way to determine indoor residential savings is to use the DWR provided 'default' savings value of 15 gpcd. The City will use this option.

4.2.2.4.2 Commercial, Industrial and Institutional Savings

Method 4 estimates a CII savings of 10 percent for all CII uses in the City. The calculated baseline for CII use (over the same 2001 through 2010 period) was 56 gpcd. The draft provisional method estimates a default value for CII savings of 10 percent. The CII water savings are therefore 5.6 gpcd.

4.2.2.4.3 Landscape and Water Loss Savings

This section is based on a 21.6% reduction as stated in the provisional method. The landscape and water loss water use is determined by subtracting the default indoor water use of 70.0 gpcd and CII water use of 56 gpcd from the calculated base line per capita use. Based on calculated baseline per capita water use, the landscape and water loss use is 263 gpcd. The landscape and water loss savings are therefore 56.9 gpcd.

4.2.2.4.4 Metered Savings

Metered savings are considered in addition to the savings attributed to the three sectors previously discussed. Based on the provisional method, a meter savings of 20 percent is applied to the average delivery per unmetered connection in the midpoint of the baseline period. Using the assumed savings outlined in the provisional method of 20 percent, savings from metering is calculated as 0 gpcd because the City is fully metered.

4.2.2.4.5 Summary

Based on the steps above, the total target water savings is estimated at 77 gpcd. When compared with the baseline demand of 389 gpcd, this would result in a water conservation target of 312 gpcd.

Table 4-5: Method 4 Summary

	Baseline Water Use (gpcd)	Water Savings (gpcd)
Residential Indoor	70	-15.0
CII	56	-5.6
Landscape/Water Loss	263	-56.9
Metered	N/A	-0
Totals	389	-77
Net Usage	**312**	

4.2.2.5 Minimum Water use Reduction Requirement

The minimum reduction required by DWR is below 95% of the 5-year baseline, which is 380 gpcd, as detailed in Table 4-6.

4.2.3 Summary of Baseline and Targets

As shown in the previous sections, the total water savings is expected to be 78 gpcd, resulting in a water conservation target of 311 gpcd. A summary of the baselines and targets is presented in the following table.

Table 4-6: Baseline and Targets Summary

Baselines	
10-Year	389
5-Year	400
Target Determinations (gpcd)	
Method 1	311
Method 2	N/A
Method 3	162
Method 4	312
Target Confirmation (gpcd)	380
Target Selected (gpcd)	312
Interim Target (gpcd)	350
Units: gpcd	

4.3 Water Demands

Legal Requirements:

§10631(e)(1) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) Agricultural.

§10631(e)(2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

§10631.1(a) The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.

The table below illustrates the current and projected water demand from 2010 through 2030 in acre-feet per year and the number of metered and non-metered connections for the same time period. The data presented for 2010 is actual data, while the remaining years are projections based on the general plan land uses and population growth.

Table 4-7: Water Deliveries 2010 – 2030
(UWMPGB Tables 4, 5, 6 & 7)

Year	Account Information[3]	Water Use Sectors						Total[1]
		SF	MF	COM	INST	LAN	MUN	
2010	# Accounts	4,084		107	1	2	63	4,257
	Deliveries (afy)	1,536		418	160	297	128	4,403
2015	# Accounts	4,850		143	1	3	84	5,081
	Deliveries (afy)	2,048	2,487[2]	558	213	397	171	5,874
2020	# Accounts	5,761		152	1	3	89	6,006
	Deliveries (afy)	2,177	2,664[2]	593	226	422	182	6,243
2025	# Accounts	6,842		187	2	3	108	7,139
	Deliveries (afy)	2,636	3,200[2]	718	274	511	220	7,558
2030	# Accounts	8,126		222	2	4	130	8,484
	Deliveries (afy)	3,180	3,862[2]	866	331	616	265	9,120

SF – Single Family
MF – Multi-Family
COM – Commercial
INST – Institutional
LAN – Landscape
MUN – Municipal

[1] Total does not include system losses; therefore, the total deliveries is different that the total shown in Table 4-9.
[2] Due to lack of tracking deliveries to multi-family accounts, projections are estimates only.
[3] All Accounts are metered.

Residential Customer Class

There are approximately 3.07 people per household within the City. Total system per capita water production averages 389 gallons per day for all uses, including residential, commercial, industrial, schools and governmental. For residential use only, consumption averages 126 gallons per person per day (gpcd). All averages were taken from 2001 to 2010.

Commercial Customer Class

The City has a wide variety of commercial customers, ranging from restaurants, beauty shops, printing shops, offices and other retail stores. The City also is host to national chain retail stores and a community shopping center. The City also includes in its commercial customer class churches, hospitals and other governmental uses besides the City's. A unique commercial customer is an automotive test track.

Institutional/Governmental Customer Class

This customer class includes schools and City government buildings. There is currently 1 customer in this class with an associated consumption of 160 afy. This class includes the California Correctional Center.

Landscape Customer Class

This class includes all of the publicly maintained landscape in the City. There are currently 2 customers in this class with an associated consumption of 297 afy. In the future this class will grow however in line with population growth in both connections and consumption.

4.4 Water Demand Projections

Legal Requirements:

> *§10631(k) Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

The population growth data summarized in **Table 3-3** was used to estimate the future water use within the City. The population in 2010 was 14,120 and is projected to reach 28,350 by 2030. The following series of tables summarizes the usage of water supply not identified previously followed by a summary of all water usage in the City. The projections are based on a similar growth pattern as the population where applicable.

The City does not sell water to other water agencies; therefore UWMP Guidebook Table 9 is not necessary.

Table 4-8: Additional Water Uses and Losses
(UWMPGB Table 10)

Water use	2005	2010	2015	2020	2025	2030
Groundwater recharge	259	196	245	245	245	245
Surface Water	0	0	0	0	0	0
Recycled water	444	405	518	518	518	518
System losses	330	352	471	501	606	732
Total	703	601	763	763	763	763

Units: AFY
Note: System Losses represent approximately 8% of total water deliveries and are accounted for within total deliveries and are therefore not added to the total in this table.

The record keeping of California City does not allow for determination of the exact losses the system experiences, however, the nearby Mojave water system reports losses in the 8 percent range. Their system is similar in construction and age to California City's, and therefore likely has similar losses. For analysis purposes, the system losses have been calculated based on this percentage. In future years, California City will maintain records of this data so the actual percentage for the system can be documented.

Table 4-9: Total Water Use
(UWMPGB Table 11)

Water Use	2005	2010	2015	2020	2025	2030
Total water deliveries[1]	4,124	4,403	5,881	6,262	7,580	9,146
Sales to other water agencies[2]	0	0	0	0	0	0
Additional water uses and losses[3]	703	601	763	763	763	763
Total	4,827	5,004	6,644	7,024	8,343	9,909

Units: AFY
[1] UWMPGB Tables 3 through 7
[2] UWMPGB Table 9
[3] UWMPGB Table 10

The summary of water deliveries, sales and additional uses and losses portrays the overall water use picture for the City. As shown, the large increase between 2010 and 2015 results from the use of actual data for 2010 and the use of projected numbers for 2015 based on the interim target of 350 gpcd as shown in **Table 4-6**.

4.5 Planned Development

Legal Requirements:

§10910(a) Any city or county that determines that a project, as defined in section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

§10912 For the purpose of this part, the following terms have the following meanings:

§10912(a) "Project" means any of the following:

(1) A proposed residential development of more than 500 dwelling units.

(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(4) A proposed hotel or motel, or both, having more than 500 rooms.

(5) A proposed industrial, manufacturing or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(6) A mixed-use project that includes one or more of the projects specified in this subdivision.

(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

At this time the only significant planned potential development is the CCA expansion, which has been approved by the City but is unlikely to be built within the planning horizon of this document. The City has a very large inventory of improved subdivided residential lots where houses can be built upon receipt of a building permit. These lots are expected to be built out at the rate of normal population growth.

4.5.1 Low Income Projected Water Demands

California City's Housing Element is currently being updated and has obtained the most recent Regional Housing Needs Allocation (RHNA) numbers. The Housing Element contains the Regional Housing Needs Allocation (RHNA) and the assumptions used to develop the allocations. The RHNA identified the needs for 99 very low and 67 low income housing units by 2013 for a total of 166 units. California City is on target to complete these units on schedule.

To calculate the low income water demands a value of 3.07 persons per household, the interim demand target of 350 gpcd will be used for 2015 and the 2020 target of 311 will be used for the years 2020 through 2030. Using the total of 166 low income units * 3.07 persons per unit * 350 gpcd *365 days / 325,851 gallons of water per af results in a demand of 200 afy.

Table 4-10: Low-Income Projected Water Demands
(UWMPGB Table 8)

Low Income Water Demands	2015	2020	2025	2030
Very Low Income Water Demands (AFY)	119	106	106	106
Low Income Water Demands (AFY)	81	72	72	72
Total	200	178	178	178

4.6 Water Use Reduction Plan

Legal Requirements:

CWC§10608.26 Urban wholesale water suppliers shall include in the urban water management plans . . . an assessment of their present and proposed future measures, programs, and policies to help achieve the water use reductions required by this part (10608.36). Urban retail water suppliers are to prepare a plan for implementing the Water Conservation Bill of 2009 requirements and conduct a public meeting which includes consideration of economic impacts.

The previously discussed conservation targets will provide a large amount of the required conservation and will take a significant effort to attain. The following demand projections are not inclusive of the demand management measures (DMMs), as those are difficult to quantify and will be better understood with actual data as the measures are implemented. However, projections with and without conservation efforts are shown in **Table 4-12**.

Table 4-11: Total Water Use Projections with Water Conservation

Demand Projection	Water Use			
	2015	2020	2025	2030
Population	16,922	20,098	23,870	28,350
Demand Projection w/o Conservation	7,374	8,758	10,402	12,354
Demand Projection w/ Conservation	6,644	7,024	8,343	9,909
Difference	-730	-1,733	-2,059	-2,445
Units : AFY				

Figure 4-2: Water Use – Historical and Projected

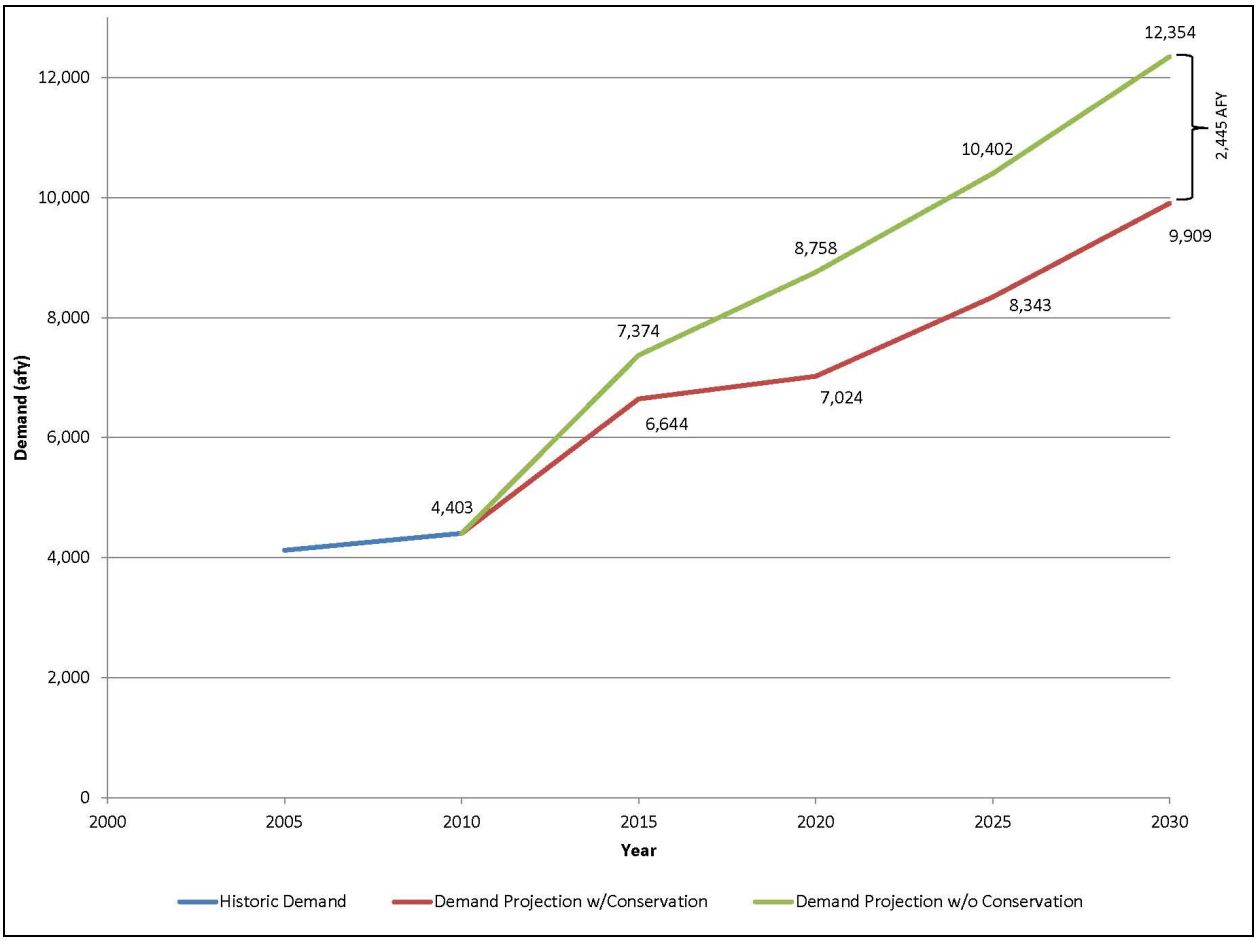


Figure 4-2 shows the disparity in water use projected with and without conservation practices in place. The City will have to achieve a water savings of 2,445 afy by 2030. To achieve these savings, the City will make efforts toward implementing the DMMs described in Section 7. Of primary concern are the residential DMMs, as the customer basis is largely residential. DMMs to be implemented are discussed more completely in Section 7. The largest potential water savings will be in the reduction of outside water use.

5 SYSTEM SUPPLIES

5.1 Water Sources

Legal Requirements:

> *§10631(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

UWMPA requirements state that the water supplier must describe their existing and planned water supply sources for the next 20 years. The following description includes information such as water rights, an overdraft summary, any adjudication decrees and other pertinent information from the ground water management plan.

5.1.1 Water Supply Facilities

The City currently utilizes groundwater wells and surface water purchased from AVEK for its water supply. The City's groundwater wells currently have the capability to produce 4,425 gallons per minute (Water Master Plan). The City has 5 primary wells and one additional standby well. All production wells are disinfected with sodium hypochlorite and meet all drinking water quality standards set by Federal and State health agencies. The wells are located in the First Community. Water levels in the wells range from 339 to 497 feet below ground surface and the pumping capacities range from 850 to 1000 gpm. Future plans call for the construction of 2 new wells in the Fremont Basin north of the City. The system also incorporates 5 above ground storage reservoirs totaling 5.71 MG (Water Master Plan).

California City has 3 water sources: groundwater, imported surface water, and recycled wastewater. Imported surface water can be purchased from AVEK through standing agreements with the City. Additional supplies are available from AVEK and increased groundwater pumping. As new homes are connected to the sewer system, additional recycled water will be available. **Table 5-1** below shows current and projected water supplies.

City water personnel have the ability to increase or decrease the amount of water purchased from AVEK, depending on demand, but the maximum amount is about 1,700 afy. According to AVEK personnel, water may be limited during a multi-year drought. The AVEK supply is also limited by the reliability of the State Water Project water.

Water supply for the Wonder Acres area of California City is purchased from AVEK but "wheeled" through the MPUD system. The City pays a "wheeling" charge for water delivered by MPUD. AVEK water delivered from MPUD is used exclusively in the Wonder Acres area, near Highway 14 and California City Boulevard. Currently, there

are 38 service connections with water consumption remaining relatively consistent. Discussions with the General Manager of the Mojave Public Utilities District in 2000 predicted increased water supply to this community would not be a problem. The current agreement limits this water supply to a peak of 500 gpm. A 1978 agreement provides for delivery of AVEK water that is transferred to California City via MPUD's infrastructure.

The Cities wastewater treatment plant currently produces 405 acre feet per year, solely used for irrigation of the golf course.

Table 5-1: Water Supplies
(UWMPGB Table 16)

Water Supply Sources	2010	2015	2020	2025	2030
City Produced Groundwater	3,300	5,282	5,402	6,551	7,928
Purchased from AVEK[1]	1,055	1,312	1,572	1,742	1,931
Delivered from MPUD	49	50	50	50	50
Total	4,404	6,644	7,024	8,343	9,909

Units : AFY
[1] AVEK 2010 UWMP

Table 5-2: Wholesale Supplies
(UWMPGB Table 17)

Wholesale sources	Contracted Volume	2015	2020	2025	2030
N/A	0	0	0	0	0

The City does not use wholesale water for its supply source.

5.1.2 Water Storage Facilities & Distribution System

The City's system has a total of 4 pressure zones to maintain acceptable pressure ranges between 40 and 100 psi. The distribution system consists of water mains, ranging in size from 4 to 16-inches in diameter, providing service to 4,403 connections. A 20-inch transmission line connects the City with the reservoirs in the foothills. The City has five storage reservoirs with a total capacity of 5.71 MG.

5.2 Groundwater

Legal Requirements:

§10631(b) (Is) groundwater…identified as an existing or planned source of water available to the supplier…

§10631(b)(1) (Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.

§10631(b)(2) (Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.

§10631(b)(2) For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board.

§10631(b)(2) (Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

§10631(b)(2) For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

§10631(b)(3) (Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

§10631(b)(4) (Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

5.2.1 Groundwater Description and Management Plan

The City lies within the Fremont Valley Groundwater Sub-basin (FVGB) of the South Lahontan Hydrologic Study Area. The Sub-basin is identified as sub-basin 6-46 in the Department of Water Resources Bulletin 118. The Muroc Fault traverses the sub-basin, dividing it into two smaller sub-basins with California City on the north and Mojave on the south. The California City sub-basin (CCSB) contains approximately 142,451 acres (Stetson 2008) and potentially 1,382,000 acre-feet of storage capacity; however, estimates of the storage capacity range greatly with a high estimate of 5,700,000 acre-feet in 1955, when the basin was considered full. Within the City boundary, the FVGB groundwater storage was estimated at approximately 1,980,000 af in 1955 and 1,650,000 af in 2007 (Stetson 2008).

The CCSB is hydraulically connected to the Antelope Valley Groundwater Basin (AVGB) by the alluvial filled narrows between the Castle Butte and the Twin Buttes; groundwater is able to move between the two valleys in this area. There are several other faults in the sub-basin, Garlock Fault and El Paso Fault system, which run on the north and west side of the sub-basin, respectively, which act as a restrictive groundwater barrier on the west and northwest side of the sub-basin between the Tehachapi, Piute and El Paso Mountains and the FVGB.

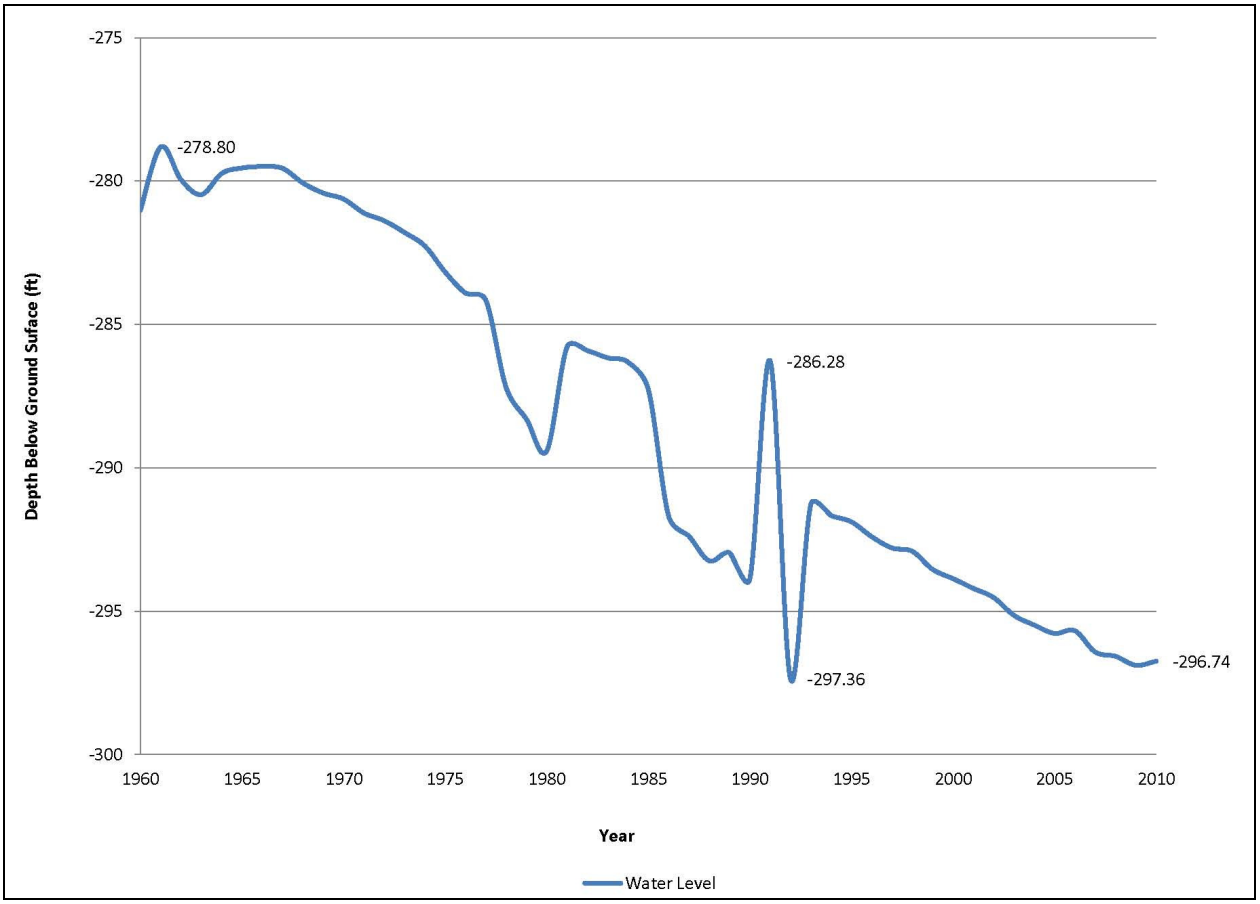
The CCSB has one area of depression, the now-dry Koehn Lake. According to Stetson, groundwater in the sub-basin flows from the alluvial fans along the mountains towards this depression. This flow stems in part from the AVGB, which contributes up to 2,570 afy (Stetson 2008).The City, on average, pumps 3,300 acre feet per year from the aquifer, which provides the customers with approximately 75 percent of their potable water supply.

FVGB does not have a regional groundwater management plan at this time; however the tentative Fremont Basin IRWMG will be working on an IRWMP for the basin, in which California City would probably participate.

5.2.2 Groundwater Levels and Historical Trends

The average groundwater elevation in 2010, according to the USGS groundwater field data, was 297 feet, which is a decrease of approximately 29 feet from the groundwater elevation of 268 feet in 1953.

Figure 5-1: Depth to Groundwater



Source: USGS

5.2.3 Sources of Recharge

Recharge in the California City sub-basin is derived from percolation of precipitation and runoff from surrounding watersheds. Additional recharge is realized from the subsurface flows from AVGB and Mojave sub-basin. The Muroc Fault acts as a partial barrier between the California City and Mojave sub-basins and CCSB, only allowing subsurface flow when the groundwater storage is in the Mojave sub-basin is high enough to crest the top of the fault, approximately 2,420 feet above sea level.

The estimates of groundwater recharge have historically ranged greatly; however, Stetson reports an average between 1945 to 2007 of 13,100 afy including percolation of precipitation within the basin limits, percolation of runoff from other watersheds, and subsurface inflows from the Mojave sub-basin and AVGB (Stetson 2008).

In addition to the natural recharge, California City performs intentional recharge efforts to offset their extraction from the aquifer. The City operates a wastewater treatment plant which produces recycled water. The recycled water is used, in part, for recharge via percolation ponds while the remainder is used for landscape irrigation. The City's has steadily increased its recharge amount to over 300 acre-feet in 2009. It is anticipated the recharge amount will remain near this amount for the future unless there is a substantial increase in residential development or industrial use, which is not anticipated.

5.2.4 Existing and Projected Groundwater Pumping

The City has historically relied on groundwater pumping for a large portion of its water supply. The following tables show the quantities of groundwater the City has pumped in the last five years and anticipates what will be pumped through 2030.

Table 5-3: Groundwater – Volume Pumped
(UWMPGB Table 18)

Basin name(s)	Metered or Unmetered	2006	2007	2008	2009	2010
Fremont Valley	Metered	3,352	3,082	3,420	3,373	3,300
Total groundwater pumped		3,352	3,082	3,420	3,373	3,300
Groundwater as a percent of total water supply		74.4%	66.4%	80.3%	83.0%	74.9%
Units : AFY						

As discussed previously, the City utilizes groundwater and surface water for its supplies; **Table 5-3** shows the percentage of groundwater varies each year, but averages near 75 percent.

Table 5-4: Groundwater – Volume Projected to be Pumped
(UWMPGB Table 19)

Basin name(s)	2015	2020	2025	2030
Fremont Valley	5,282	5,402	6,551	7,928
Total groundwater pumped	5,282	5,402	6,551	7,928
Percent of total water supply	79.5%	76.8%	78.5%	80.0%
Units : AFY				

As the City grows, the surface water available will not grow at the same rate, therefore, the projections show an increase dependency on groundwater, averaging nearly 79 percent of the total City supply over the next fifteen years.

5.3 Transfer or Exchange Opportunities

Legal Requirements:

§10631(d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

The City routinely receives water from AVEK and MPUD, as discussed above. In the event of an emergency, it is possible the City may be able to increase the water supply from one or both these agencies on a temporary basis. However, if the situation is drought-related, it is likely the water supplied from AVEK will be affected by the same situation and an increased supply to California City may not be possible. AVEK is currently developing a water banking facility to mitigate the variability of the State Water Project supply. The other option for the City would be to increase its groundwater pumping or implement restrictions on its customers to decrease usage.

Table 5-5: Transfer and Exchange Opportunities
(UWMPGB Table 20)

Transfer agency	Transfer or exchange	Short term or long term	Proposed Volume
AVEK	Transfer	Short Term	Varies
MPUD	Transfer	Short Term	Varies
		Total	Varies

5.4 Desalinated Water Opportunities

Legal Requirements:

§10631(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.

5.4.1 Brackish Water and/or Groundwater Desalination

The ground water that the City relies on is not brackish or in need of desalination. If this were to change in the future, the City will consider this option.

5.4.2 Seawater Desalination

Due to the geographic location of the City, desalination of seawater for use by the City is not practical or economically feasible.

5.5 Recycled Water Opportunities

Legal Requirements:

§10633 Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.

§10633(a) (Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

§10633(b) (Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.

§10633(c) (Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

§10633(d) (Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

§10633(e) (Describe) the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.

§10633(f) (Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

§10633(g) (Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

The City of California City owns and operates a 1.5 MGD extended aeration activated sludge tertiary treatment facility (WWTP) and all domestic sewer collection systems within the City limits. The collection systems are gravity fed and only receive domestic

wastewater (no storm water runoff). Currently, approximately 30 percent of the City is served by the WWTP. The remaining area is served by onsite septic systems.

The existing California City Wastewater Treatment Facility is designed to treat an average flow of 1.5 MGD and peak flow of 3.0 MGD. Currently, the average influent flow is 0.8 MGD. The present treatment process includes an influent pump station, head works consisting of a Parshall flume, mechanical bar screen and sonic flow meter. Secondary treatment consists of one extended aeration activated sludge basin, (split into two cells) two clarifiers and a return activated sludge (RAS) waste activated sludge (WAS) pump station. The tertiary treatment facilities consist of filter influent pump station, a chemical mixing/flocculation tank, storage facilities for polymer, alum and chlorine, tertiary sand filters and sodium hypochlorite disinfection.

Sludge treatment and disposal consists of pumping WAS to 5 lined sand type sludge beds for dewatering and solar drying. The existing sludge drying beds have a total area of 15,000 square feet. Dried sludge is removed and disposed at the authorized site, currently a landfill.

Based on 2009 recommended capacity evaluation reports, the following upgrades are proposed:

- Replace the influent pumps to be capable of pumping a 3.0 MGD peak flow.
- Replace tertiary filtration media with cartridge based system
- Upgrade head works to a two channel facility
- Add a sludge dewatering system to allow open use of processed sludge
- Upgrade pumps and lines to handle a 4.5 MGD peak flow.

Table 5-6: Recycled Water – Wastewater Treatment
(UWMPGB Table 21)

Type of Wastewater	2010	2015	2020	2025	2030
Wastewater collected & treated in service area	769	922	1,095	1,301	1,545
Volume that meets recycled water standard	763	922	1,095	1,301	1,545
Units : AFY					

Table 5-7: Recycled Water – Non-Recycled Wastewater Disposal
(UWMPGB Table 22)

Method of disposal	Treatment Level	2010	2015	2020	2025	2030
Process Evaporation	Any	168	171	203	241	286
Evaporation/Percolation Ponds	Tertiary	196	247	294	349	414
Landscape	Tertiary	405	504	599	711	845
	Total	769	922	1,095	1,301	1,545
Units : AFY						

Currently, the only permitted sites for use of the secondary and tertiary treated effluent are the 8 existing percolation ponds, the Central Park Lake (used as recreational non-contact water) and the Tierra Del Sol Golf course, (used for landscape and course irrigation). The eight percolation ponds hold approximately 300 acre-feet of tertiary treated effluent. The Central Park Lake is primarily a holding transfer point of tertiary treated effluent for the irrigation systems at Tierra Del Sol golf course. The treatment plant sends approximately 500 acre-feet/year of tertiary treated effluent to the Tierra Del Sol golf course.

Table 5-8: Recycled Water – 2005 Use Projection Compared to 2010 Actual
(UWMPGB Table 24)

Use type	2010 Actual Use[1]
Landscape Irrigation (AFY)	405
Groundwater Recharge (AFY)	196
Total	601

[1]A 2010 projection for recycled water was not developed; therefore, it is not presented in this table.

California City is studying the feasibility of using the tertiary treated effluent on the green belts, parks and local athletic fields. The capital cost of the recycle water distribution system to convey the treated effluent to potential recycling points, has been a deterrent to the City's investment. However, grants may provide opportunities for additional water recycling in the future. The present demands of the Tierra Del Sol golf course (approximately 500 acre-feet/year) and Central Park Lake has consumed virtually all of the recyclable water that the treatment facility produced in prior years. However, additional supply will be added as homes currently with onsite septic systems connect to the sewer system.

The City has achieved considerable savings in potable water consumption because of the use of recycled water for golf course irrigation and the Central Park lakes. Therefore the expanded use of recycled water for irrigation of medians and neighborhood parks will further reduce water consumption. However, installing a recycled water distribution system for limited residential and small businesses use has been demonstrated in other areas to not be cost effective and is not expected to be implemented in the near term in the City.

The City of California City does not sell the tertiary treated effluent produced by the Treatment Facility and is the sole end user from a marketing standpoint therefore; the City has not developed a program that encourages the use of recycled water. The future users and their demands are detailed in **Table 4-8**. UWMPGB Tables 23 and 25 are not applicable.

5.6 Future Water Projects

Legal Requirements:

§10631(h) (Describe) all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

The City's water system contains a large percentage of steel water mains which were constructed in the 1960s. These water mains are susceptible to corrosion over time and are very prone to leakage. The Water Master Plan 2002 recommended a water main replacement program be implemented to replace all steel mains. The completion of the water main replacement program is expected to substantially reduce the volume of "unaccounted" water lost by leakage.

Table 5-9: Future Water Supply Projects
(UWMPGB Table 26)

Project Name	Start Year	Completion Year	Potential Constraints	Normal Year	Single-Dry Year	Multiple-Dry Year
Waterman Well	2014	2015	Funding	Project in conceptual stage, projected water supply potential of 800 afy. [1]		
Wonder Acres Project	2013	2014	Funding	No additional supply expected with this project.		
North Well	2013	2014	Funding	Project in conceptual stage, projected water supply potential of 800 afy. [1]		

Units: AFY
[1] Based on 1000 gpm yield and 50% utilization.

6 WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLAN

6.1 Water Supply Reliability

Legal Requirements:

> *§10620(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*
>
> *§10631(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

6.1.1 Frequency and Magnitude of Supply Deficiencies

This section discusses the reliability of water supplies and their vulnerability to seasonal and climatic shortages. The City has historically used mostly groundwater to meet all of their water demands. Groundwater supplies are not immediately impacted by droughts, and, as a result, there is no history of any water supply deficiencies for the City water system. Even during the 1976-1977 droughts, records indicate a sufficient supply of water.

The City obtains approximately 24 percent of its water supply from AVEK. The source of AVEK water is the State Water Project with the water delivered through the California Aqueduct. The AVEK water is thus subject to variability in supply and in reliability. The supply variability is a function of hydrologic conditions in northern California. The reliability is a function of environmental conditions in the Sacramento-San Joaquin River Delta. The Delta is extremely vulnerable to earthquakes, rising sea levels and droughts. If there is a water shortage, all AVEK customs will receive a smaller allocation of water. When this occurs, California City will utilize more groundwater.

Regarding the groundwater supply, the most likely reasons the City would have a deficiency would be due to coliform contamination, pump failure, well collapse or other mechanical or structural failure. Another scenario would be a declining groundwater table due to lack of recharge. In this scenario, well pumps would need to be lowered and/or the well deepened. The City has a goal to maintain sufficient standby well capacity to meet peak month water demand with the largest well out of service. With sufficient standby well capacity, a short term loss of a well would not affect overall water supply.

In addition, the most immediate threat of water shortage could arise from damage due to an earthquake, or an extended power outage. An exceptionally long hot spell during summer months or high winds causing power outages are the main concern due to climate. Customers are encouraged to water lawns during early morning hours and for shorter period of time when temperatures exceed normal. The water system is gravity

fed from a 2.5 MG tank, kept a minimum two-thirds full at all times. During an extended power supply emergency, the City can institute a water conservation emergency which would limit water use.

6.1.2 Basis of Water Year Data

Only the surface water components of the City's supply are immediately affected by drought conditions; therefore the single and multiple dry years were taken from AVEK and MPUD's UWMP. As shown in **Table 6-1**, both agencies identify 1977 as their single dry year but AVEK identifies years 1931-1933 as their multiple dry year while MPUD identifies 1987-92.

Table 6-1: Basis of Water Year Data
(UWMPGB Table 27)

Water Year Type	Base Year(s)
Average Water Year	2005
Single-Dry Water Year	1977
Multiple-Dry Water Years	Varies

6.1.3 Supply Reliability

During drought years, water use patterns typically change. Outdoor water use will typically increase as irrigation is used to replace the decrease in precipitation. However, the increase in outdoor use can be offset, in part, by increasing mandatory conservation measures.

In order to assess the impact of drought years on the City's annual demands, the City's historic per capita water usage was calculated. By dividing the City's service area population into the total water consumed on an annual basis, consumption in gallons per capita per day (gpcd) was determined. This method of annual consumption, based on current population, normalizes the impact of growth changes. The historical per capita consumption from 2001 to 2010 is shown in Figure 6-1**.**

The historic per capita demand has been variable over the past several years. As shown, the per capita consumption in 2002 was about 14 percent above the 10 year average of 389 gpcd. The 10 year Historic Per Capita Demand is considered to be indicative of the maximum potential variation in water demands on an annual basis. As shown in Figure 6-1, the year 2002 represents the largest increase in water demand above the Historic Per Capita Trend. For purposes of calculating the impact of dry years, water demands will be increased by 14 percent for single dry and multiple dry hydrologic years.

Figure 6-1: Historic Per Capita Demand

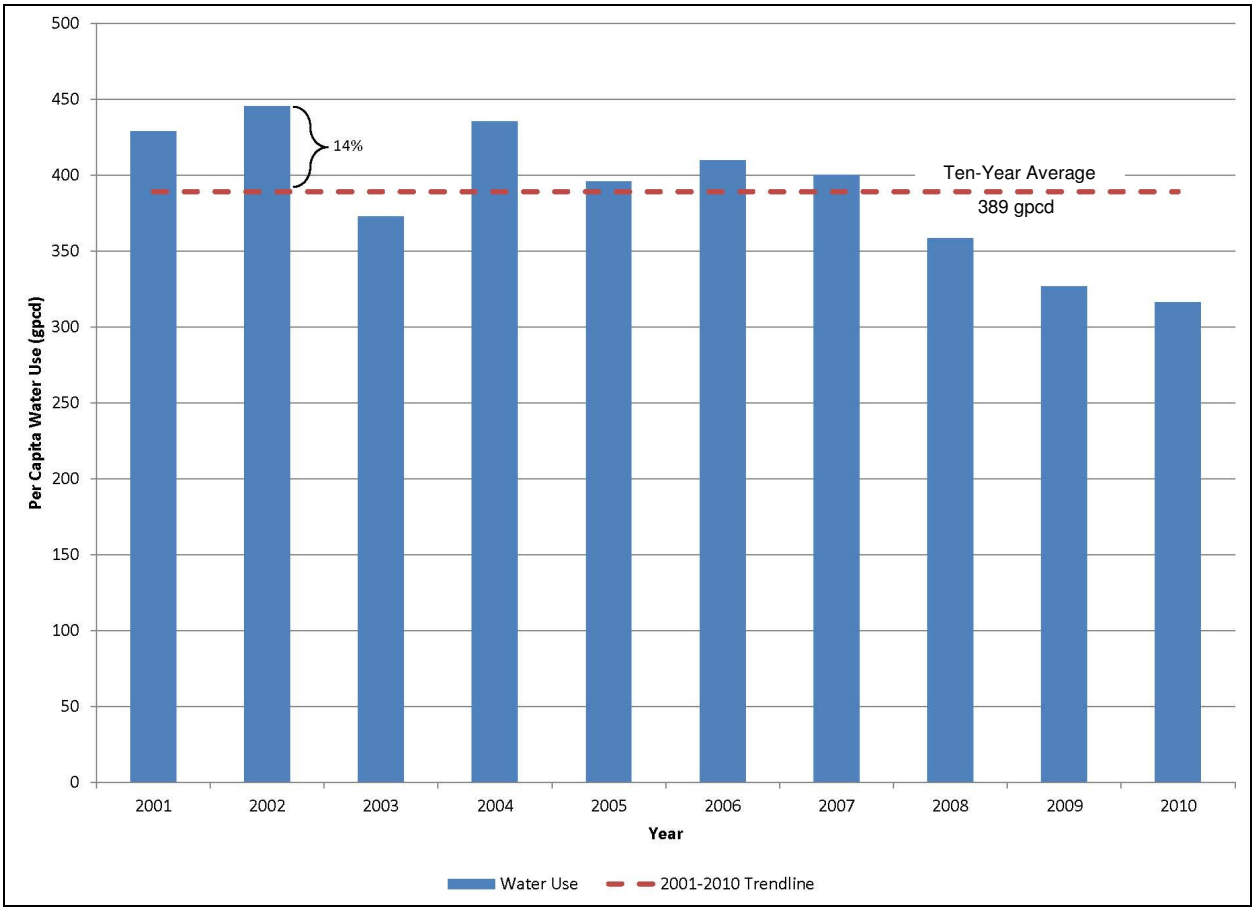


Table 6-2 presents calculations showing the percentage of supply available for the hydrologic years. The percentages of normal year were calculated by comparing the actual per capita demand for that year to the per capita demand trend of 389 gpcd. Since the City relies on groundwater and surface water to meet its demands, the available "supply" drawn from the groundwater aquifer in any year is essentially equal to the system water demand for that year and is shown as the same for all year types.

Table 6-2: Supply Reliability – Historic Conditions
(UWMPGB Table 28)

Supply Source	Normal Water Year (2005)	Single Dry Water Year (1977)	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
City-produced Groundwater	3,417[1]	1,103[2]	1,856[3]	1,955[3]	2,060[3]
AVEK	637[4]	124[5]	325[5]	372[5]	376[5]
MPUD	70[6]	3[7]	41[7]	41[7]	41[7]
Percent of Normal Year[8]		111%	120%	121%	120%

Units: AFY
Notes:
[1] Actual amount of groundwater pumped in 2005.
[2] Population of City in 1977 multiplied by per capita demand trend of 389 gpcd
[3] Population of City in 1987-1989 multiplied by per capita demand trend of 389 gpcd
[4] Actual amount of water delivered from AVEK for 2005.
[5] From AVEK 2010 UWMP; Single Dry year is 19.4% of Normal; Multiple Dry Years are 51%, 58.5% and 59% of Normal, respectively.
[6] Actual amount of water delivered from MPUD for 2005
[7] From MPUD 2010 UWMP; Single Dry Year is 4% of Normal; Multiple Dry Years are 58% of Normal.
[8] Percentages adjust to present day

Based on conservative planning assumptions, the City's current supply reliability is summarized in Table 6-3. The "Normal Year" water use was calculated by multiplying the City service area's 2010 population by the baseline per capita water usage of 389 gpcd. This equates to an annual volume of 6,153 acre-feet per year for a "normal" condition; however, the City's actual 2010 water use was 4,403 acre-feet. This variation is because the Normal Water Year demand estimate is based on a 10 year Historic Per Capita Trend, (see Figure 6-1**)**. The Single and multiple dry year consumptions are assumed to be 14 percent more than the normal water use, based on Figure 6-1.

Table 6-3: Supply Reliability – Current Water Sources
(UWMPGB Table 31)

Water Supply Sources	Normal Water Year	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
City-Produced Groundwater	3,417	3,998	3,759	3,711	3,708
AVEK	637	124	325	372	376
MPUD	70	3	41	41	41
Percent of Normal Year:		100%	100%	100%	100%

Units : acre-feet per year

6.1.4 Projected Normal Water Year Demands

The normal year water demands are based on the historical data and population projections developed above. The demand and supply data is discussed in more detail in Sections 4 and 5, respectively.

Table 6-4: Supply and Demand Comparison – Normal Year
(UWMPGB Table 32)

Water Use	Water Use (AFY)			
	2015	2020	2025	2030
Supply totals	6,644	7,024	8,343	9,909
Demand totals	6,644	7,024	8,343	9,909
Difference	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%
Units : afy				

As shown, both supply and demand are expected to increase linearly from 2015 to 2030, as expected. The supply will be provided by the sources discussed previously.

6.1.5 Projected Single Dry Water Year

The effect of drought conditions were taken from AVEK and MPUD's UWMPs, as discussed above. MPUD states the singe dry year should be a 42% reduction of the normal year. AVEK states the single dry year will be an 80.6% reduction of the normal year. AVEK's and MPUD's dry year reductions will be augmented by additional groundwater pumping.

Table 6-5: Supply and Demand Comparison – Single Dry Year
(UWMPGB Table 33)

Water Use	Water Use (afy)			
	2015	2020	2025	2030
Supply totals	6,644	7,024	8,343	9,909
Demand totals	6,644	7,024	8,343	9,909
Difference	0	0	0	0
Difference as % of Supply	0%	0%	0%	0%
Difference as % of Demand	0%	0%	0%	0%
Units : afy				

As illustrated, the supply and demand numbers will still increase, but will be reduced from the normal/average year.

6.1.6 Projected Multiple Dry Water Years

The effect of drought conditions were taken from AVEK and MPUD's UWMPs, as discussed above. MPUD states the multiple dry years should be a 42% reduction of the normal year for each dry year. However, AVEK has a varying reduction and states the multiple dry years will be a 49%, 41.5% and 41% reduction of the year 1, 2 and 3,

respectively. The groundwater supply will fluctuate to meet the demand and make up for reductions in AVEK and MPUD supplies during these periods.

Table 6-6: Supply & Demand Comparison – Multiple Dry Years
(UWMPGB Table 34)

Water Use		Water Use (AFY)			
		2015	2020	2025	2030
Year 1	Supply totals	6,644	7,024	8,343	9,909
	Demand totals	6,644	7,024	8,343	9,909
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Year 2	Supply totals	6,644	7,024	8,343	9,909
	Demand totals	6,644	7,024	8,343	9,909
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Year 3	Supply totals	6,644	7,024	8,343	9,909
	Demand totals	6,644	7,024	8,343	9,909
	Difference	0	0	0	0
	Difference as % of Supply	0%	0%	0%	0%
	Difference as % of Demand	0%	0%	0%	0%
Units : AFY					

Factors Affecting Supply Reliability

California City's primary water source is groundwater pumping. The wells are monitored and maintained closely. Each well is sounded regularly to detect any drops in the water table. Two additional production wells are being planned for 2020 and four additional storage tanks are in the early planning stages.

The wastewater treatment plant capacity increased from 1 MGD to 1.5 MGD in 2002 with changes in the City's Municipal Code, a regular stream of additional sewer connections is expected to match City growth. This will provide additional recycled water which will save on potable water use for irrigation. Potable water can still be used as a back-up when needed.

Table 6-7: Factors Resulting in Inconsistency of Supply
(UWMPGB Table 29)

Water supply sources[1]	Specific source name, if any	Limitation quantification	Legal	Environmental	Water quality	Climatic	Additional information
Groundwater					X		
AVEK						X	
MPUD						X	
Recycled Water					X		

6.1.6.1 Legal

At this time the groundwater supplies the City relies upon are neither in the process of adjudication nor the subject of any new legislation limiting them.

6.1.6.2 Environmental

The status of the environmental situation in California is routinely changing because of new legislation, regulations, court decisions and endangered species issues. Should new environmental legislation/regulations become effective, it could potentially affect water supply. The recent concerns in the Delta are an example of the conflict between environmental water needs versus municipal/farming water needs. Because of the mixture of groundwater and surface water within the City, it is anticipated that alterations to the water supply could be made to accommodate these changes, should they occur.

6.1.6.3 Water Quality

Water quality standards are reviewed periodically as new constituents are deemed 'of concern' and MCLs are established or modified. City staff will monitor changes to drinking water standards and respond accordingly.

It is conceivable that an MCL may change or be introduced that removes a portion of the water supply for the City for a short period until treatment can be developed or new supplies can be developed. For the purposes of this UWMP, no loss of supply is assumed to occur as a result of changing water quality standards.

6.1.6.4 Climatic

As climate change occurs and begins to affect water supply conditions more, alterations in the water supply planning arena will have to take place. Climate change elements such as drought or massive flooding could strongly affect supply reliability, therefore requiring the City to make modification to their water supplies. Within the time frame of

this UWMP, climate change is not assumed to affect the water supply. The City will adapt to any changes by utilizing its groundwater to overcome any short term shortage.

6.2 Water Shortage Contingency Planning

Legal Requirements:

§10632(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

§10632(d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

§10632(e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

§10632(f) Penalties or charges for excessive use, where applicable.

§10632(g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures or the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.

§10632(h) A draft water shortage contingency resolution or ordinance.

California City adopted an Emergency Response Plan in 1999. They also participated in a functional disaster exercise in conjunction with County or State officials. Emergency exercises will be conducted annually. Although utility loss is covered in the plan, a more precise water contingency plan is as follows:

Triggering Events

1. Reductions in specific water supplies:
2. Dropping groundwater level.
3. Changes in water quality
4. System Failures
5. Disaster

Stages of Action

City personnel first will evaluate the water shortage and recommend actions to Council, and call a special meeting if needed.

Evaluation will be based on the following conditions:

1. Cause of water shortage
2. Possible duration of shortage
3. Amount of shortage based on % of normal water demand

6.2.1 Water Shortage Stages and Reduction Objectives

The City has prepared a 4 stage conservation plan to invoke during a declared water shortage. The plan includes voluntary and mandatory rationing depending on the severity of the water supply shortage.

Table 6-8: Water Shortage Stages and Reduction Objectives
(UWMPGB Table 35)

Stage No.	Customer Reduction Goals	Type of Rationing	% Shortage
I	15%	Voluntary	Up to 15%
II	25%	Mandatory	15 – 25%
III	35%	Mandatory	25 – 35%
IV	50% or greater	Mandatory	35 – 50%

Priority for use of available potable water during a shortage is established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals, convalescent facilities, retirement and mobile home communities, student housing, fire fighting and public safety.)

- Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses).

- Permanent agriculture (orchards, vineyards and other commercial agriculture which would require at least five years to return to production).

- Annual agriculture (floriculture, strawberries and other truck crops).

- Existing landscaping

- New customers, proposed projects without permits when shortage declared.

A potable water shortage reduction will reduce recycled water production to the extent that indoor water use is reduced.

6.2.2 Water Shortage – Health and Safety Requirements

Based on commonly accepted estimates of interior residential water use in the United States, **Table 6-9** indicates per capita health and safety water requirements. In Stage I shortage, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

However, under Stage II, Stage III and Stage IV mandatory rationing programs, the City has established a health and safety allotment of 68 gpcd, because that amount of water is sufficient for essential interior water with no habit or plumbing fixture changes. If customers wish to change water use habits or plumbing fixtures, 68 gpcd is sufficient to provide for limited non-essential (i.e. outdoor) uses.

Stage IV mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, would require that customers make changes in their interior water use habits (for instance, not flushing toilets unless "necessary" or taking less frequent or shorter showers).

Table 6-9: Per Capita Health and Safety Water Quantity Calculations

	Non-Conserving Fixtures		Habit Changes[1]		Conserving Fixtures[2]	
Toilets	5 flushes x 5.5 gpf	27.5	3 flushes x 5.5 gpf	16.5	5 flushes x 1.6 gpf	8.0
Shower	5 min x 4.0 gpm	20.0	4 min x 3.0 gpm	12.0	5 min x 2.0 gpm	10.0
Washer	12.5 gpcd	12.5	11.5 gpcd	11.5	11.5 gpcd	11.5
Kitchen	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Other	4 gpcd	4.0	4 gpcd	4.0	4 gpcd	4.0
Total (gpcd)		68.0		48.0		37.5

[1] Reduced shower use results from shorter and reduced flow. Reduced washer use results from fuller loads.
[2] Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads and efficient clothes washers.

6.2.3 Water Shortage Stages and Triggering Mechanisms

As the water purveyor, the City of California City must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The rationing program triggering levels shown below were established to ensure that this goal is met.

Rationing stages may be triggered by a shortage in one water source or a combination of sources. Although an actual shortage may occur at any time during the year, a shortage (if one occurs) is usually forecasted by the Water Department on or about April 1 each year.

The City's potable water sources are groundwater and imported surface water. Rationing stages may be triggered by a supply shortage or by contamination in one source or a combination or source. Because shortages overlap stages, triggers

automatically implement the more restrictive stage. Specific mechanisms for triggering the City's rationing stages are shown in Table 6-10Water Allotment Methods

The City has established the following allocation method for each customer type.

Single Family	Hybrid of Per-capita and Percentage Reduction
Multifamily	Hybrid of Per-capita and Percentage Reduction
Commercial	Percentage Reduction
Industrial	Percentage Reduction
GVT/Institutional	Percentage Reduction
Recreational	Percentage Reduction-vary by efficiency
New Customers	Per-capita (no allocation for new landscaping during a declared water shortage).

Based on current and project customer demand, the Emergency Plan indicates the water allocated to each customer type by priority and rationing stage during a declared water shortage.

Individual customer allotments are based on a five-year period. This gives the city a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year based period.

The Public Works Director shall classify each customer and calculate each customer's allotment according to the Sample Water Rationing Allocation Method. The allotment shall reflect seasonal patterns. Each customer shall be notified of their classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible, notice will be provided by other means. Any customer may appeal the Public Works Director's classification on the basis of use or the allotment on the basis of incorrect calculation.

Table 6-10: Water Shortage Stages and Triggering Mechanisms

Supply	Stage I Up to 15%	Stage II 15 – 25%	Stage III 25-35%	Stage IV 35-50%
Water Supply Condition				
Current Supply	Total supply is 85 – 90% "normal" And Below "normal" year is declared Or	Total supply is 75 – 85% "normal" Or Below "normal" year is declared Or	Total supply is 65 - 75% "normal" Or 4th consecutive Below "normal" year is declared. Or	Total supply is less than 65% "normal" Or 5th consecutive Below "normal" year is declared Or
Future Supply	Projected supply insufficient to provide 80% or "normal" deliveries for the next two years Or	Project supply insufficient to provide 75% of "normal" deliveries for the next two years. Or	Projected supply insufficient to provide 65% of "normal" deliveries for the next two years. Or	Projected supply insufficient to provide 50% of "normal" deliveries for the next two years. Or
Groundwater	No excess groundwater pumping undertaken	First year of excess groundwater pumping taken, must be "replaced" within four years.	Second year of excess groundwater pumping taken, must be "replaced" within four years.	No excess groundwater pumping available. Or Reduced groundwater pumping due to replenishment of previously pumped groundwater
Water Quality	Contamination of 10% of water supply (exceeds primary drinking water standards).	Contamination of 20% of water supply (exceeds primary drinking water standard).	Contamination of 30% of water supply (exceeds primary drinking water standards).	
Disaster Loss				Disaster Loss

6.2.4 Prohibitions, Consumption Reduction Methods, and Penalties

The City of California City's "No Waste" Ordinance (see Appendix D) includes prohibitions on various wasteful water uses such as lawn watering during mid-day hours, washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 24 hours after customer notification. The Fire Department personnel will also be notified to stop flowing hydrants (except when necessary).

Table 6-11: Water Shortage Contingency – Mandatory Prohibitions
(UWMPGB Table 36)

Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Mandatory Rationing	II, III, IV

Table 6-12: Water Shortage Contingency – Consumption Reduction Methods
(UWMPGB Table 37)

Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Demand Reduction Program	All Stages	0-50%
Flow Restriction	IV	35-50%
Restrict Building Permits	II, III, IV	15-50%
Use Prohibitions	All Stages	0-50%
Water Shortage Pricing	All Stages	0-50%
Per Capita Allotment by Customer Type	IV	35-50%
Voluntary Rationing	I	0-15%
Mandatory Rationing	II, III, IV	15-50%
Education Program	All Stages	0-50%
Percentage Reduction by Customer Type	II, III, IV	15-50%

Any customer violating the regulations and restrictions on water use set forth in the "No Water" Ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the City may cause a flow-restrictor to be installed in the service. If a flow restrictor is placed, the violator shall pay the cost of the installation and removal. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the Kern County District Attorney's office for prosecution pursuant. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council.

6.2.5 Revenue and Expenditure Impacts/Measures to Overcome Impacts

California City currently has no surplus revenues from water sales, operating with an approximate deficit of $350,000 each year, if the existing rates are increased by 25% to eliminate the existing shortage, rate increases would still be needed to cover increased expenses and decreased sales if a shortage should occur.

Analysis indicates rate increases would need to be as follows with no additional water purchased:

Stage I	No Increase
Stage II	25% Increase
Stage II	50% Increase
Stage IV	100% Increase

Table 6-13: Water Shortage Contingency – Penalties and Charges
(UWMPGB Table 38)

Penalties or Charges	Stage When Penalty Takes Effect
Written Notice – 1st Violation	All
Written Warning and possible installation of flow-restrictor device – 2nd Violation	All
Misdemeanor Charge – 3rd and subsequent Violations	All
Disconnection – Potentially at 3rd or subsequent Violation	All

6.2.6 Actions During a Catastrophic Interruption

In the event of non-drought related events that interrupt the City's ability to provide water immediate measures need to be planned that will allow the City to provide a minimum amount of water to customers. Possible catastrophes include a regional power outage, terrorism event at selected locations or a natural disaster which affects selected facilities.

Table 6-14: Actions During a Catastrophic Event

Example of Actions	Check if Discussed
Determine what constitutes a proclamation of a water shortage	X
Stretch existing water storage	X
Obtain additional water supplies	
Develop additional water supplies	
Determine where the funding will come from	X
Contact and coordinate with other agencies	
Create an Emergency Response Team/Coordinator	X
Create a catastrophe preparedness plan	X
Put employees/contractors on-call	X
Develop methods to communicate with the public	X
Develop methods to prepare for water quality interruptions	X

6.2.7 Reduction Measuring Mechanism

Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported weekly to the Water Treatment Facility Supervisor. Totals are reported monthly to the Water Department Manager and incorporated into the water supply report.

During a Stage I or a Stage II water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Public Works Director and the Water Shortage Response Team. Monthly reports are sent to the City Manager and the City Council so the corrective action can be taken.

During a stage III or a Stage IV water shortage, the procedure listed above will be followed with the addition of a daily production report to the Public Works Director.

During emergency shortage, production figures are reported to the Supervisor hourly and to the Public Works Director and the Water Shortage Response Team daily. Daily reports will be provided to the City Manager and the City Council.

6.3 Water Quality

Legal Requirements:

> *§10634 The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

California City's groundwater quality is fairly consistent; unlike many other communities in East Kern County, the City does not have arsenic contamination in their supply. The surface water delivered from AVEK and MPUD have not had quality problems in the past and the City has no reason to assume it will change in the future.

Table 6-15: Water Quality – Current and Projected Water Supply Impacts
(UWMPGB Table 30)

Water source	Description of condition	2010	2015	2020	2025	2030
Surface Water	Acceptable	0	0	0	0	0
Groundwater	Acceptable	0	0	0	0	0

It is not anticipated that water quality will adversely affect water supply in the near future. In the instance that a well or surface water has water quality issues, an alternative water supply will be put in place to compensate for the loss.

6.4 Drought Planning

Legal Requirements:

§10631(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) an average water year, (B) a single dry water year, (C) multiple dry water years.

§10632(a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.

§10632(b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.

§10632(i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

§10635(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

Past drought conditions have had little effect on water supply as the City relies primarily on groundwater. The City maintains an 18-hole championship golf course and central park area with several small lakes. In 1994, the City constructed a 1 MGD tertiary wastewater treatment plant. The treated effluent is utilized to fill the lakes and irrigate these facilities. The wastewater treatment plant was expanded to 1.5 MGD in 2002. Plans are in process to expand the wastewater treatment plant to 3.0 MGD in 2015. The sewer system will also be extended incrementally through the creation of neighborhood sewer assessment districts. This will ultimately make more recycled water available.

As discussed in **Table 6-8**, the stages of rationing vary from 15% (Stage 1) to 50% and higher (Stage IV). Stage 1 is considered the lowest level of rationing and is voluntary, while Stage 4 is the highest level and mandatory with a goal of reducing the customer usage by at least 50% in response to a water supply shortage of 35% to 50%.

7 DEMAND MANAGEMENT MEASURES (DMM)

7.1 DMMs

Legal Requirements:

§10631(f)(1) and (2) (Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) water survey programs for single-family residential and multifamily residential customers; (B) residential plumbing retrofit; (C) system water audits, leak detection, and repair; (D) metering with commodity rates for all new connections and retrofit of existing connections; (E) large landscape conservation programs and incentives; (F) high-efficiency washing machine rebate programs; (G) public information programs; (H) school education programs; (I) conservation programs for commercial, industrial, and institutional accounts; (J) wholesale agency programs; (K) conservation pricing;(L) water conservation coordinator; (M) water waste prohibition; (N) residential ultra-lowflush.

§10631(f)(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

§10631(f)(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.

§10631(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

The City already has water conservation and recycling programs in place. It takes the issues of water conservation very seriously and is implementing best management practices (BMPs) as necessary to achieve those goals. California Department of Water Resources (DWR) has expanded on typical BMPs in the form of Demand Management Measures (DMMs), which are discussed below, including a description, implementation schedule and cost analysis if applicable. At this time, the City has implemented 6 DMMs, with 6 more planned for implementation.

Table 7-1: Demand Management Measures

Demand Management Measure	Implemented	Planned for Implementation	Cost Effective Analysis Completed	Not Applicable
DMM1 – Water Survey Programs		X		
DMM2 – Residential Plumbing Retrofit		X		
DMM3 – Water System Audits	X			
DMM4 – Metering and Commodity Rates	X			
DMM5 – Landscape Irrigation Programs		X		
DMM6 – Washing Machine Rebate Program		X		
DMM7 – Public Information Program		X		
DMM8 – School Education Program		X		
DMM9 – Commercial, Industrial and Institutional Conservation Programs	X			
DMM10 – Wholesale Agency Programs				X
DMM11 – Conservation Pricing	X			
DMM12 – Water Conservation Coordinator	X			
DMM13 – Water Waste Prohibition	X			
DMM14 – Ultra Low Flush Toilet Replacement			X	

7.1.1 Water Survey Programs

This program involves making free water audits available, upon request, to all residential customers. The audit would include identification of any leaks inside or outside the home, reviewing water usages with the customer and recommending improvements for the customer to implement.

The City plans to implement this DMM by the end of 2013. They will notify residents of the program via a billing insert.

Table 7-2: Water Survey Program Implementation

	Estimated Number of Surveys	
	2014	2015
# of single family surveys	10	20
Actual/projected expenditures $	$750	$1,500

Implementation Schedule: Ongoing

The effectiveness of this DMM will be measured by tracking the number of surveys completed and the associated improvements recommended.

7.1.2 Residential Plumbing Retrofit

This DMM involves installing water savings devices within residences, business and other usage locations to reduce the amount of water used or to limit the amount of water delivered to the connection. These devices include low flow showerheads, faucet aerators with flow restrictors and low flow toilets. State law began requiring low-flow fixtures on all new construction in 1978, with an increase in stringency of the regulation in 1992, which required Ultra-Low-Flush toilets.

The City plans to implement this DMM by the end of 2013. Studies have shown installation of retrofit fixtures on older homes offer the greatest benefit due to the discrepancy between current and antiquated technology. The City expects to see a substantial water savings by implementing this program. They will notify residents of the program via a billing insert.

Table 7-3: Residential Plumbing Retrofit Implementation

	Estimated Number of Devices Distributed	
	2014	2015
# of showerheads distributed	10	20
#of faucet aerators distributed	20	40
Projected expenditures ($)	$200	$400

Implementation Schedule: Ongoing

The effectiveness of this DMM will be measured by documenting the number of devices distributed and calculating an estimated amount of water savings achieved annually.

7.1.3 Water System Audits

The Water System Audits involve accounting for any water loss throughout the system by quantifying the amount of water used and the amount delivered. The difference is the water loss. Once the loss is quantified, the DMM requires that the leaks be isolated and a plan for repair implemented.

In the past ten years, the City has repaired approximately 260 leaks per year (on average); 150 on water mains and 110 at water services. The City will continue to perform system audits, locate and repair leaks in a timely manner. The City is also seeking funding through the USDA for a waterline replacement project, which would replace older water mains throughout the City to avoid future leaks and breaks.

Table 7-4: Water System Audits Program Implementation

	Projected Audits to be Performed		
	2013	2014	2015
Water Main Leaks Repaired	150	150	150
Water Service Leaks Repaired	110	110	110
Actual Expenditures	TBD	TBD	TBD

Implementation Schedule: Ongoing

The effectiveness of this DMM will be measured by documenting the number of leaks located and repaired as well as the expenditures associated with the repairs.

7.1.4 Metering and Commodity Rates

The Metering DMM entails installing water meters on all new connections and implementing a plan to retrofit all existing unmetered connections.

The City requires meters on all water services, including public uses. At this time 100% of all existing connections are metered and the City requires meters to be installed on all new connections.

7.1.5 Landscape and Irrigation Programs

DMM5 consists of assigning water budgets to dedicated irrigation or mixed-use meters and providing audits to those meters. The City plans to select an irrigation control system that takes weather and evapo-transpiration conditions into account to reduce water consumption for large landscaped areas. The main area this would apply to would be Tierra Del Sol Golf course, which is already utilizing recycled water for a majority of its landscape use.

The effectiveness of this DMM will be measured by implementation of a new irrigation control system on large landscaped areas throughout the City.

7.1.6 Washing Machine Rebate Program

The Washing Machine Rebate DMM provides a financial incentive to customers who install high-efficiency washing machines in lieu of traditional machines in their homes.

The City is in the process of drafting a washing machine rebate program, which will begin in 2013. The program will issue $50 or $75 rebates to purchasers of qualifying water and energy efficient washing machines. The annual budget for the program will be $5,000, which the City feels is sufficient to meet the needs at this time. If a larger budget is necessary, the City will revisit the program guidelines and/or budget allotment at the next fiscal year.

Table 7-5: Washing Machine Rebate Program Implementation

	Projected Rebates to be Distributed		
	2013	2014	2015
Number of $75/$50 Rebates	67	67	67
Projected Expenditures ($)	$5,000	$5,000	$5,000
Projected Water Savings (afy)	0.04	0.04	0.04

Implementation: Ongoing

The effectiveness of this DMM will be measured by the quantity of rebates distributed and the actual expenses of the program.

7.1.7 Public Information Program

The Public Information DMM involves dissemination of information to the public through brochures, press releases, educational flyers, commercials, water conservation flyers and conservation kits, to name a few. The City currently provides water conservation information through billing inserts. Additional information is made available to the public through the UWMP and regional water planning efforts. Notices of public meetings for the IRWMP will be posted to involve citizens in the process and educate the community about water conservation. This program does not provide a quantifiable water savings, however it goes a long way towards promoting conservation efforts.

The City intends to distribute one flyer per year, minimum, and the effectiveness of the program will be measured by completion of the task.

7.1.8 School Education Program

The School Education Program provides for an educational process that provides materials and assistance for educating middle school, high school and college aged students about water issues including conservation and usages.

The City intends to begin a school education program in the 2013-2014 school year and will include distributing information at public school events. Additional efforts may include visiting classrooms, tours of the treatment facility to educate about the importance of recycled water or school-wide presentations during times of drought to discuss the benefits of water conservation.

The City intends to conduct 2 school presentations per year and will track the number of presentations given to determine the effectiveness of the program.

7.1.9 Commercial, Industrial, and Institutional Conservation Programs

The conservation program for CII Users involves replacing existing toilets with ultra-low-flow toilets in CII facilities within the city. Additionally, surveys are provided for these customers to evaluate their water usage and help with possible ways to save.

The City meets with local CII Users to discuss possible conservation methods the users can employ in their facilities. The City intends to continue this program in the future. Direct water savings from this program are difficult to quantify but the program contributes to the overall City approach to conservation.

Table 7-6: CII Conservation Program Implementation

	Planned		
	2013	2014	2015
# of surveys to be completed	1	0	1
Incentives to be provided?	No	No	No
# of follow-up visits	0	1	0
Projected expenditures ($)	$100	$100	$100

Implementation Schedule: Ongoing

The effectiveness of this program will be measured by tracking the actual number of surveys and follow-up visits the City conducts.

7.1.10 Wholesale Agency Programs

DMM10 applies to wholesale water suppliers. The City does not supply wholesale water and therefore this DMM does not apply.

7.1.11 Conservation Pricing

This DMM would implement a tiered water rate structure to encourage conservation. The City already has implemented this type of rate structure. The following tables detail the tiered billing structure.

Table 7-7: Conservation Pricing – Base Rate

Meter Size	Monthly Service Charge
3/4" or smaller	$23.62
1"	$39.45
1 1/2"	$78.65
2"	$125.89
3"	$275.65
4"	$496.32
6"	$1,102.35
8"	$1,889.60

Table 7-8: Conservation Pricing – Tier Structure

Tier	Minimum CF Use	Maximum CF Use	Rate (per 100 CF)
3/4" Water Service Tiered Rates			
I	901	1,500	$0.55
II	1,501	2,500	$1.15
III	2,501	4,000	$1.45
IV	4,001	Up	$1.75
1" Water Service Tiered Rates			
I	1,504	2,505	$0.55
II	2,506	4,175	$1.15
III	4,176	6,680	$1.45
IV	6,681	Up	$1.75
1 1/2" Water Service Tiered Rates			
I	2,998	4,995	$0.55
II	4,996	8,325	$1.15
III	8,326	13,320	$1.45
IV	13,321	Up	$1.75
2" Water Service Tiered Rates			
I	4,798	7,995	$0.55
II	7,996	13,325	$1.15
III	13,326	21,320	$1.45
IV	21,321	Up	$1.75

Tier	Minimum CF Use	Maximum CF Use	Rate (per 100 CF)
3" Water Service Tiered Rates			
I	10,504	17,505	$0.55
II	17,506	29,175	$1.15
III	29,176	46,680	$1.45
IV	46,681	Up	$1.75
4" Water Service Tiered Rates			
I	18,901	31,500	$0.55
II	31,501	52,500	$1.15
III	52,501	84,000	$1.45
IV	84,001	Up	$1.75
6" Water Service Tiered Rates			
I	42,004	70,005	$0.55
II	70,006	116,675	$1.15
III	116,676	186,680	$1.45
IV	186,681	Up	$1.75
8" Water Service Tiered Rates			
I	72,001	120,000	$0.55
II	120,001	200,000	$1.15
III	200,001	320,000	$1.45
IV	320,001	Up	$1.75

7.1.12 Water Conservation Coordinator

A Water Conservation Coordinator (WCC) would be responsible for coordinating water conservation programs and activities including the public information program and education program. The City does not have a dedicated WCC at this time, but those duties are managed by the administrative assistant to the Public Works Director. It is anticipated this staff person spends approximately 20 percent of their time on tasks related to these responsibilities.

7.1.13 Water Waste Prohibition

The City has a “No Waste” Ordinance in place which includes prohibitions on various wasteful water uses such as lawn watering during mid-day hours, washing sidewalks and driveways with potable water, and allowing plumbing leaks to go uncorrected more than 24 hours after customer notification. The Fire Department personnel will also be notified to stop flowing hydrants (except when necessary).

7.1.14 Ultra Low Flush Toilet Replacement

California City has determined for its system, a toilet replacement program would be too costly. According to the EPA, the average person flushes the toilet 5.1 times per day. California City has an average of 3.07 people per residence, which yields 15.66 flushes per day. A standard toilet uses an average of 3.5 gallons per flush (gpf), while a low flush toilet uses 1.28 gpf.

Table 7-9: Low Flush Toilet Cost/Benefit Analysis

Flushes per Day[1]	15.66
Gallons Saved per Flush[2]	2.22
Water Savings per Rebate (afy)	0.0398
Cost of Rebate[3]	$100
Cost per AF	$2,568

Notes:
[1] *EPA Toilet Supporting Statement*
[2] Standard Toilets use 3.5 gallons per flush; Low Flush Toilets use 1.28 gallons per flush per EPA guidelines
[3] Cost of Rebate includes hard cost of rebate and soft cost of managing and implementing rebate program.

As shown above, utilizing the rebate program would equate to a cost of $2,568 per acre-foot of water produced. California City produces their water for approximately $600 per acre-foot. The high cost of water savings for this program makes it economically infeasible to implement within California City.

8 COMPLETED UWMP CHECKLIST

No.	UWMP requirement [a]	CWC Reference	Additional clarification	UWMP location
PLAN PREPARATION				
4	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	10620(d)(2)		Section 1 Appendix B
6	Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.	10621(b)		Section 1 Appendix B
7	Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.	10621(c)		Appendix A
54	Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.	10635(b)		Section 1 Appendix B
55	Provide supporting documentation that the water supplier 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 plan.	10642		Appendix B
56	Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.	10642		Section 1 Appendix B
57	Provide supporting documentation that the plan has been adopted as prepared or modified.	10642		Appendix A
58	Provide supporting documentation as to how the water supplier plans to implement its plan.	10643		Section 6
59	Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes.	10644(a)		Section 1 Appendix A
60	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours	10645		Section 1 Appendix B

No.	UWMP requirement [a]	CWC Reference	Additional clarification	UWMP location
SYSTEM DESCRIPTION				
8	Describe the water supplier service area.	10631(a)		Section 2
9	Describe the climate and other demographic factors of the service area of the supplier	10631(a)		Section 2
10	Indicate the current population of the service area	10631(a)	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Section 2
11	Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional or local service area population projections.	10631(a)	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Section 2
12	Describe other demographic factors affecting the supplier's water management planning.	10631(a)		Section 2
SYSTEM DEMANDS				
1	Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	10608.20(e)		Section 3
2	*Wholesalers:* Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. *Retailers:* Conduct at least one public hearing that includes general discussion of the urban retail water supplier's implementation plan for complying with the Water Conservation Bill of 2009.	10608.36 10608.26(a)	Retailers and wholesalers have slightly different requirements	Section 1
3	Report progress in meeting urban water use targets using the standardized form.	10608.40		N/A until 2015
25	Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.	10631(e)(1)	Consider 'past' to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Section 3
33	Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types	10631(k)	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Appendix B

No.	UWMP requirement [a]	CWC Reference	Additional clarification	UWMP location
34	Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)		Section 3
SYSTEM SUPPLIES				
13	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.	10631(b)	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided.	Section 4
14	Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate "not applicable" in lines 15 through 21 under the UWMP location column.	10631(b)	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Section 4
15	Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)		Section 4
16	Describe the groundwater basin.	10631(b)(2)		Section 4
17	Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.	10631(b)(2)		Section 4
18	Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		Section 4 (In Process)
19	For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate "not applicable" in the UWMP location column.	10631(b)(2)		Section 4
20	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	10631(b)(3)		Section 4
21	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	10631(b)(4)	Provide projections for 2015, 2020, 2025, and 2030.	Section 4

No.	UWMP requirement [a]	CWC Reference	Additional clarification	UWMP location
24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)		Section 4
30	Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.	10631(h)		Sections 3 and 5
31	Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.	10631(i)		Section 3
44	Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	10633		Section 4
45	Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)		Section 4
46	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)		Section 4
47	Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)		Section 4
48	Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)		Section 4
49	The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	10633(e)		Section 4
50	Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)		Section 4
51	Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)		Section 4

No.	UWMP requirement [a]	CWC Reference	Additional clarification	UWMP location
WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING [b]				
5	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	10620(f)		Sections 4, 5 and 6
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.	10631(c)(1)		Section 5
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)		Section 5
35	Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage	10632(a)		Section 5
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)		Section 5
37	Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.	10632(c)		Section 5
38	Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)		Section 5
39	Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)		Section 5
40	Indicated penalties or charges for excessive use, where applicable.	10632(f)		Section 5
41	Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.	10632(g)		Section 5
42	Provide a draft water shortage contingency resolution or ordinance.	10632(h)		Section 5 Appendix D
43	Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)		Section 5

No.	UWMP requirement [a]	CWC Reference	Additional clarification	UWMP location
52	Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability	10634	For years 2010, 2015, 2020, 2025, and 2030	Section 5
53	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)		Section 5
DEMAND MANAGEMENT MEASURES				
26	Describe how each water demand management measures is being implemented or scheduled for implementation. Use the list provided.	10631(f)(1)	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Section 6
27	Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.	10631(f)(3)		Section 6
28	Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.	10631(f)(4)		Section 6
29	Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.	10631(g)	See 10631(g) for additional wording.	Appendix E
32	Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)		N/A

9 REFERENCES

Antelope Valley – East Kern Water Agency, "2010 Urban Water Management Plan", May 2011

Mojave Water Agency, *"2004 Regional Water Management Plan, Integrated Regional Water Management Plan, Groundwater Management Plan, Urban Water Management Plan",* December 2005,

California City, "*California City 2005 Urban Water Management Plan"*, December 2005,

California City, "2009-2028 General Plan", October 6, 2009

Stetson Engineering, Inc., "Evaluation *of Groundwater Resources in California City",* December 2008.

California Department of Water Resources, "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan", March 2011

California Energy Commission, *"The Future Is Now: An Update on Climate Change Science Impacts and Response Options for California*, May 2009", Public Interest Energy Research Program

Quad Knopf, "*Water Master Plan for California City"*, September 13, 2002,

20x2020 Water Conservation Plan, February 2010