CITY OF SHASTA LAKE
Founded July 2, 1993

2015 Urban Water Management Plan Update

Public Review Draft | July 2016

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CITY OF SHASTA LAKE

2015 URBAN WATER MANAGEMENT PLAN

PUBLIC REVIEW DRAFT
July 2016

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CITY OF SHASTA LAKE

2015 URBAN WATER MANAGEMENT PLAN

TABLE OF CONTENTS

Page No.

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION AND OVERVIEW

1.1 BACKGROUND AND PURPOSE

The California Water Code (CWC) requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMP) for submission to the California Department of Water Resources (DWR). The UWMP, which must be filed every five years, must satisfy the requirements of the Urban Water Management Planning Act (UWMPA) of 1983, including amendments that have been made to the Act. The UWMPA requires urban water suppliers servicing 3,000 or more connections, or supplying more than 3,000 acre-feet (AF) of water annually, to prepare a UWMP.

The purpose of the UWMP is to maintain efficient use of urban water supplies, continue to promote conservation programs and policies, ensure that sufficient water supplies are available for future beneficial use, and provide a mechanism for response during water drought conditions. This document, which was prepared in compliance with the CWC, and as set forth in the 2015 Urban Water Management Plan Guidebook for Urban Water Suppliers (March 2016) established by the DWR, constitutes the City of Shasta Lake (City) 2015 UWMP.

This 2015 UWMP was prepared in compliance with the UWMPA (CWC §10610 et seq.) and the Water Conservation Bill of 2009 (Senate Bill [SB] X7-7) by Carollo Engineers. Contact information for the City and Carollo Engineers is included in the Contact Sheet provided at the beginning of this document.

The City recognizes the importance of maintaining a high quality reliable water supply. Although water is a renewable resource, it is limited. A long-term reliable supply of water is essential to protect the local and state economy. The main focus for the City is to provide high quality water, maximize the efficient use of water, and promote conservation.

1.2 URBAN WATER MANAGEMENT PLANNING AND THE CALIFORNIA WATER CODE

The CWC sections applicable to UWMPs are summarized in the sections below.

1.2.1 Urban Water Management Planning Act of 1983

In 1983, State Assembly Bill (AB) 797 modified the CWC Division 6 by creating the UWMPA. Several amendments to the original UWMPA, which were introduced since 1983, have increased the data requirements and planning elements to be included in the UWMPs.

Initial amendments to the UWMPA required that total projected water use be compared to water supply sources over the next 20 years, in 5-year increments. Recent DWR guidelines

also suggest projecting through a 25-year planning horizon to maintain a 20-year timeframe until the next UWMP update has been completed.

Other amendments require that UWMPs include provisions for recycled water use, demand management measures (DMMs), and a water shortage contingency plan. The UWMPA requires inclusion of a water shortage contingency plan which meets the specifications set forth therein. Recycled water was added in the reporting requirements for water usage and figures prominently in the requirements for evaluation of alternative water supplies, when future projections predict the need for additional water supplies. Each urban water purveyor must coordinate the preparation of the water shortage contingency plan with other urban water purveyors in the area, to the extent practicable. Water suppliers must also describe their water DMMs that are being implemented or are scheduled for implementation.

In addition to the UWMPA and its amendments, there are several other regulations that are related to the content of the UWMP. In summary, the key relevant regulations are:

- AB 1420: Requires implementation of DMMs/Best Management Practices (BMPs) and meeting the 20-by-2020 targets to qualify for water management grants or loans.
- AB 1465: Requires water suppliers to describe opportunities related to recycled water use and stormwater recapture to offset potable water use.
- Amendments SB 610 (Costa, 2001) and AB 901 (Daucher, 2001): Require counties and cities to consider information relating to the availability of water to supply new large developments by mandating the preparation of further water supply planning (Daucher) and Water Supply Assessments (Costa).
- SB 1087: Requires water suppliers to report single-family residential (SFR) and multi-family residential (MFR) projected water use for lower income areas separately.
- Amendment SB 318 (Alpert, 2004): Requires the UWMP to describe the opportunities for development of desalinated water, including but not limited to, ocean water, brackish water, and groundwater, as long-term supply.
- AB 105 (Wiggins, 2004): Requires urban water suppliers to submit their UWMPs to the California State Library.
- SB X7-7: Requires development and use of new methodologies for reporting population growth estimates, base per capita use, and water conservation. An agency can choose from four methods to establish their interim (2015) and year 2020 water conservation targets.

1.2.2 Applicable Changes to the Water Code since 2010 UWMPs

Changes to the CWC since 2010 UWMPs are summarized in Table 1-1.

Table 1-1 Applicable Changes to the Water Code since 2010 UWMPs			
Topic	CWC Section	Legislative Bill	Summary
Demand Management Measures	10631 (f) (1) and (2)	AB 2067, 2014	Requires water suppliers to provide narratives of water demand management measures.
Submittal Date	10621 (d)	AB 2067, 2014	Requires each urban water supplier to submit its 2015 plan to the DWR by July 1, 2016.
Electronic Submittal	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to be submitted electronically to DWR.
Standardized Forms	10644 (a) (2)	SB 1420, 2014	Requires the plan, or amendments to the plan, to include any standardized forms, tables, or displays specified by DWR.
Water Loss	10631 (e) (1) (J) and (e) (3) (A) and (B)	SB 1420, 2014	Requires a plan to quantify and report on distribution system water loss.
Estimated Future Water Savings	10631 (e) (4)	SB 1420, 2014	Provides for water use projections to display and account for the water savings estimated to result from adopted codes, standards, ordinances, or transportation and land use plans, when that information is available and applicable to an urban water supplier.
Voluntary Reporting of Energy Intensity	10631.2 (a) and (b)	SB 1036, 2014	Provides for an urban water supplier to include certain energy-related information, including, but not limited to, and estimate of the amount of energy used to extract or divert water supplies.
Defining Water Features	10632	AB 2409, 2014	Requires urban water suppliers to analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains separately from swimming pools and spas.

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

Beginning in 2016, retail water suppliers are required to comply with the water conservation requirements in SB X7-7 in order to be eligible for State water grants or loans. Refer to Chapter 4 for detailed information on SB X7-7.

1.3 ABBREVIATIONS AND DEFINITIONS

To conserve space and improve readability, the following abbreviations are used in this report. The abbreviations are spelled out in the text the first time the phrase or title is used in each chapter and subsequently identified by abbreviation only.

AB	Assembly Bill
ACID	Anderson-Cottonwood Irrigation District
AF	Acre-Feet
AFY	Acre-Feet per Year
AWWA	American Water Works Association
BMPs	Best Management Practices
BVWD	Bella Vista Water District
Caltrans	California Department of Transportation
CCR	California Code of Regulations
CCSD	Centerville Community Services District
CF	Cubic Feet
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Information System
City	City of Shasta Lake
County	Shasta County
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
CWP	Cold Water Pool
DOF	California Department of Finance
DMMs	Demand Management Measures
DWR	California Department of Water Resources

EDD	California Employment Development Department
EIR	Environmental Impact Report
ETo	Evapotranspiration
^{o}F	Degrees Fahrenheit
gpcd	Gallons Per Capita Per Day
gpm	Gallons Per Minute
GWMP	Coordinated AB 3030 Groundwater Management Plan
HVAC	Heating, Ventilation, and Air Conditioning
I-5	Interstate 5
IRWM	Integrated Regional Water Management
Knauf	Knauf Insulation
MCM	MCM Properties Inc.
MFR	Multi-Family Residential
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
PRV	Pressure Reducing Valve
RAWC	Redding Area Water Council
RHNA	Regional Housing Need Allocation
SB	Senate Bill
SCWA	Shasta County Water Agency
SDAPUD	Shasta Dam Area Public Utility District
SFR	Single-Family Residential
SPI	Sierra Pacific Industries
USBR	United States Bureau of Reclamation

UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMPA	Urban Water Management Planning Act
WTP	Water Treatment Plant
WWTF	Wastewater Treatment Facility

PLAN PREPARATION

The City of Shasta Lake (City) previously prepared an Urban Water Management Plan (UWMP) in 2010, which was approved and adopted on August 19, 2014. Following adoption, the 2010 UWMP was submitted to and formally approved by the California Department of Water Resources (DWR). This 2015 UWMP serves as an update to the 2010 UWMP.

This section includes specific information on how the UWMP was developed, including efforts in coordination and outreach.

2.1 BASIS FOR PLAN PREPARATION

California Water Code (CWC) 10617 requires that urban water suppliers with 3,000 or more service connections or supplying 3,000 or more acre-feet (AF) of water per year prepare an UWMP every five years. The California Health and Safety Code defines a "Public Water System" as one that provides water for human consumption and has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days of the year. The number of municipal connections and volume of water supplied (metered deliveries) in 2015 by the City is reported in Table 2-1. The City only manages one Public Water System and is not participating in a Regional UWMP.

Table 2-1 Retail Only: Public Water Systems

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
CA4510006	City of Shasta Lake	3,820	1,617
	TOTAL	3,820	1,617

NOTES: Units of measure in this UWMP are acre-feet (AF). Source: Large Water System 2015 Annual Report to the Drinking Water Program for Year Ending December 31, 2015.

2.2 INDIVIDUAL PLANNING AND COMPLIANCE

This 2015 UWMP reports solely on the City's service area, as shown in Table 2-2. The City has notified and coordinated with appropriate regional agencies and constituents.

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

2.3 CALENDAR YEAR AND UNITS OF MEASURE

The City is reporting on a calendar year basis and therefore, 2015 data includes the months of January to December 2015. Table 2-3 indicates the City's type of reporting year, and the units of measure for reporting water volumes throughout the 2015 UWMP.

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

2.4 COORDINATION AND OUTREACH

The Urban Water Management Planning Act (UWMPA) requires that the UWMP identify the water agency's coordination with appropriate nearby agencies.

The City coordinated its efforts with relevant agencies and parties to ensure that the data and issues discussed in the plan are presented accurately.

2.4.1 Wholesale and Retail Coordination

Retail agencies that receive a water supply from one or more wholesalers are required to provide wholesalers with projected water demand from that source, in five-year increments for 20 years. The City does not purchase or receive potable water from a wholesaler. Therefore, Table 2-4 has been left blank.

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

2.4.2 Coordination with Other Agencies and the Community

The City solicited participation from other agencies, organizations, and the community for the preparation of the 2015 UWMP. Table 2-5 summarizes how the UWMP preparation was coordinated.

2.4.3 Notice to Cities and Counties

The City provided formal written notification to the United States Bureau of Reclamation (USBR), Shasta County (County), Shasta County Water Agency (SCWA), City of Redding, Anderson-Cottonwood Irrigation District (ACID), and Bella Vista Water District (BVWD) that the City's UWMP was being updated. In accordance with the UWMPA, this notification was provided at least 60 days prior to the public hearing of the plan. Electronic copies of the final UWMP will be provided to the USBR, County, SCWA, City of Redding, ACID, and BVWD no later than 30 days after its submission to DWR. Appendix A contains copies of outreach documents.

Table 2-5 Coordination with Appropriate Agencies								
Coordinating Agencies	Participated in Developing the Plan	Notified of UWMP Update	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	Not Involved No Information
City of Shasta Lake – City Manager	✓	✓				✓		
City of Shasta Lake – Development Services	✓	✓				✓		
City of Shasta Lake – Public Works Department	✓	✓				✓		
City of Shasta Lake – Finance Department		✓				✓		
City of Shasta Lake – Wastewater Utility	✓	✓				✓		
City of Shasta Lake – Water Utility	✓	✓				✓		
Anderson-Cottonwood Irrigation District (ACID)		✓				✓	✓	
Bella Vista Water District (BVWD)		✓				✓	✓	
Shasta County Water Agency (SCWA)		✓				✓	✓	
City of Redding		✓				✓	✓	
Department of Water Resources (DWR)								
California Urban Water Conservation Council (CUWCC)								
United States Bureau of Reclamation (USBR)		✓				✓	✓	
County of Shasta		✓				✓	✓	
General Public (Website and Publication/Posting)		✓				✓	✓	

Chapter 3

SYSTEM DESCRIPTION

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a thorough description of the water system, service area, and various aspects of the area served including climate, population, and other demographic factors.

3.1 GENERAL DESCRIPTION

The City of Shasta Lake (City) is located north of Redding in western Shasta County (County). The City is located along the Interstate 5 (I-5) corridor, south of Shasta Lake and the Shasta Dam. The closest neighboring communities are Bella Vista, Redding, and Shasta to the south, Lakehead and Mountain Gate to the north, and French Gulch to the west.

The City is located within the upper Churn Creek, Stillwater Creek, and Moody Creek watersheds. The developed areas of the City are gently rolling with numerous small creeks tributary to the three major watersheds. The elevation of the southern portion of the City is less variable, which then becomes hilly with steep slopes towards the northern boundary. The northern portion of the City is generally undeveloped land. Elevations in the City range from a high of about 1,280 feet above sea level at the northern ridge to a low of about 670 feet at the southern boundary. The majority of the community lies between the intermediate elevations of 800 and 900 feet (Water Management Plan 2011 Criteria, April 2014).

The City, incorporated in 1993, provides water, sewer, recycled water, storm drain, and electric services to the residents of the City. Water service is provided to all residential, commercial, and industrial customers, and for fire protection services. The City provides recycled water for industrial reuse and irrigation of a portion of I-5.

The City limits comprise 10.8 square miles. The water service area encompasses the entire City limits. In addition, the City provides water service to a portion of the City of Redding in their Buckeye service area.

3.1.1 Description of Transmission, Treatment, and Distribution Facilities

In 1945, the City water system began with the establishment of the Shasta Dam Area Public Utility District (SDAPUD) that was organized to serve the unincorporated communities of Central Valley, Summit City, Project City, and Pine Grove. A long-term (40 years) water contract was signed in 1948 with the United States Bureau of Reclamation (USBR). In 1954, the USBR replaced transmission piping and increased pump capacity and storage at the Reclamation Dam facilities. At the same time, piping was extended to serve the area then known as the Buckeye County Water District (City of Redding).

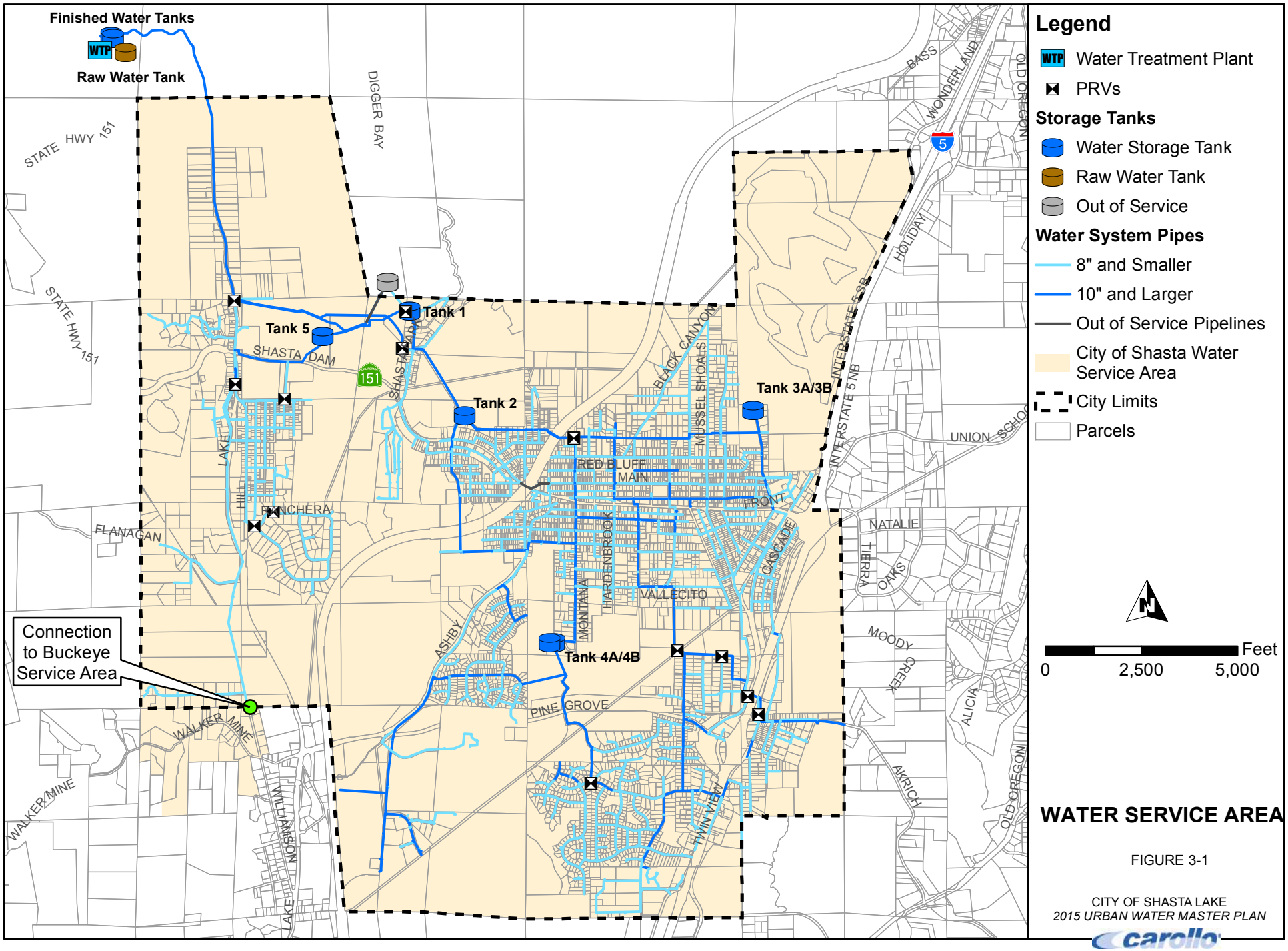
In 1966, SDAPUD constructed a 2.0 million gallon per day (MGD) filtration plant approximately one mile northwest of Central Valley, just above Toyon Government Camp. Capacity improvements to this plant occurred over the next 24 years until 1990, when a new treatment plant at Fisherman's Point replaced the old facility. Additional improvements to the distribution and storage facilities were implemented by the SDAPUD until 1993, at which time; the City was incorporated and acquired control of the water system from SDAPUD (Water Management Plan 2011 Criteria, April 2014).

The City water supply is surface water diverted from Shasta Lake. The diversion point is at the face of Shasta Dam, where there are two intakes (750 and 950 feet above sea level). Raw water is pumped to the Fisherman's Point Water Treatment Plant (WTP) via the USBR Raw Water Pumping Station located at the base of Shasta Dam.

The Fisherman's Point WTP is capable of treating and distributing a maximum of approximately 9.72 MGD and consists of filtration (Micro-Floc Trident) and disinfection with chlorine. The distribution system includes approximately 79 miles of pipelines consisting of steel, cast iron, asbestos cement, and polyvinyl chloride piping. Most of the steel piping is pre-1960 vintage with a large portion of smaller diameter mains (less than 5-inch) being installed prior to 1950. There is approximately 42,240 feet of undersized steel pipe over 45 years old that is in need of replacement (Water Management Plan 2011 Criteria, April 2014). The City's water system consists of approximately 79 miles of active water distribution system pipelines up to 24-inches in diameter, the Fisherman's Point WTP, 10 storage tanks (9 treated water, one raw water), two intertie booster pump stations, one raw water booster pump station, 15 pressure reducing valve (PRV) stations, and nine pressure zones.

3.2 SERVICE AREA BOUNDARY MAP

The City limits comprise 10.8 square miles. The water service area encompasses the entire City limits. In addition, the City provides water service to a portion of the City of Redding in their Buckeye service area (Summit City Pressure Zone), as described in Section 6.7.2.3. The total water service area is 11.0 square miles. Figure 3-1 shows the City limits, water service area, and the main distribution system components (large diameter pipelines and water tanks). The WTP is located outside of City limits, north of Fisherman's Point adjacent to Shasta Dam.


Finished Water Tanks
WTP
Raw Water Tank
Connection to Buckeye Service Area
Tank 1
Tank 2
Tank 3A/3B
Tank 4A/4B
Tank 5
STATE HWY 151
DIGGER BAY
SHASTA DAM
SHASTA BAR
BLACK CANYON
MUSSEL SHOALS
INTERSTATE 5 SB
INTERSTATE 5 NB
HOLIDAY
BASS
WONDERLAND
OLD OREGON
UNION SCHOOL
RED BLUFF MAIN
FRONT
NATALIE
TIERRA OAKS
CASCADE
HARDENBROOK
MONTANA
VALLECITO
ASHBY
PINE GROVE
MOODY CREEK
ALICIA
AKRICH
TWIN VIEW
WILLIAMSON
WALKER MINE
LAKE
HILL
FANCHERA
FLANAGAN
Legend
WTP Water Treatment Plant
PRVs
Storage Tanks
Water Storage Tank
Raw Water Tank
Out of Service
Water System Pipes
8" and Smaller
10" and Larger
Out of Service Pipelines
City of Shasta Water Service Area
City Limits
Parcels
N
Feet
0
2,500
5,000
WATER SERVICE AREA
FIGURE 3-1
CITY OF SHASTA LAKE
2015 URBAN WATER MASTER PLAN
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3.3 SERVICE AREA CLIMATE

The City's climate is characterized by hot dry summers and mild winters with an average annual rainfall of approximately 61.82 inches. Approximately 79 percent of the average annual precipitation occurs between November and March. Evapotranspiration (ETo) values, which serve as indicators of how much water is required to maintain healthy agriculture and landscaping, range from 1.25 inches in December to 8.60 inches in July. Temperature, rainfall, and ETo averages for the City are presented in Table 3-0.

Table 3-0 Climate Characteristics

Month	Standard Monthly Average ETo[1] (inches)	Monthly Average Rainfall[2] (inches)	Monthly Average Temperature[2] (°F)	
			Minimum	Maximum
January	1.96	11.12	38.9	52.5
February	1.91	10.05	41.0	56.7
March	3.23	8.74	43.0	61.3
April	5.12	4.37	47.7	68.5
May	6.61	2.58	54.8	77.5
June	8.31	1.30	62.2	86.0
July	8.60	0.20	68.3	95.2
August	6.38	0.40	66.6	93.7
September	5.40	1.05	62.3	87.8
October	3.44	3.40	54.4	75.2
November	1.62	7.86	45.6	60.5
December	1.25	10.74	40.1	53.1
Annual	**53.82**	**61.82**	**52.1**	**72.3**

NOTES: Source: California Irrigation Management Information System (CIMIS) Station 224 Shasta College. Represents monthly average ETo from January 2013 to February 2016.

Source: Western Regional Climate Center Shasta Dam (048135). Represents monthly average from January 1943 to January 20, 2015. °F = Degrees Fahrenheit.

3.3.1 Climate Change

The California Water Code (CWC) does not require that UWMPs address climate change. The potential water supply and demand effects related to climate change have not been included in this UWMP.

The Integrated Regional Water Management (IRWM) Climate Change Vulnerability Assessment is included as Appendix B. No vulnerabilities were identified for the category of *Sea Level Rise*. For the category of *Water Demand*, it was noted that there are major industries that require cooling/process water, and that City water use can vary by more than 50 percent seasonally. The City also indicated that water use curtailment measures are effective. For the category of *Water Supply*, the City indicated that a portion of the water supply is from snowmelt and that the region has faced a drought in the past during which it failed to meet local water demands. Wildfires are a concern in the region, as noted in the *Water Quality* and *Flooding* categories. For the category of *Ecosystem and Habitat Vulnerability*, it was noted that the region relies on aquatic or water-dependent habitats for recreation or other economic activities and has rivers with quantified environmental flow requirements or known water quality/quantity stressors to aquatic life. It was noted that hydropower is a source of electricity in the region in the *Hydropower* category.

3.4 SERVICE AREA POPULATION AND DEMOGRAPHICS

This section summarizes historical, current, and projected population trends in the City. Population projections are essential to the planning process and form the basis for most planning decisions, yet projecting future growth is far from an exact science given the complex set of variables that can affect the rate of growth. Typically, projections are developed by taking past patterns and combining them with assumptions regarding the future to obtain an estimate of future growth rates. These projections serve to provide the City insight on the type and quantity of future growth as well as guidance regarding future planning activities; therefore, such planning activities can only be as effective as the ability to anticipate population growth.

The population of the City increased from approximately 100 people in 1938 to 2,600 people in 1945 due to the construction of Shasta Dam. After incorporation of the City in 1993, the California Department of Finance (DOF) extrapolated the population of the City from 1990 census data as 8,783 people. The population increased to 9,008 in 2000 (Census 2000) and to 10,164 in 2010 (Census 2010). Figure 3-2 shows the historical population based on information gathered from the DOF. The DOF estimates population each year based on the number of building permits issued, residential units destroyed, requests for new electrical connections, etc.

Selecting a population growth rate for this UWMP update is challenging due to impacts from the recession and the differing expected growth rates reported for the area. The City's General Plan (1999) projected buildout to 2050 based on an average growth rate of 1.58 percent. The 2009-2014 Housing Element expected a 0.5 percent growth rate and reported that the growth rate from 2000 through 2009 was 1.37 percent.

Figure 3-2 Historical and Projected Population

In early 2014, a draft Environmental Impact Report (EIR) was published for the Mountain Gate at Shasta project that estimated a slow to moderate annual average growth rate of the City between 0.5 and 1.0 percent through 2023 based on the trends of the last 10 years and the recent economic recession. Based on this information a growth rate of 1.0 percent annually was utilized to project the population through 2040. The current and projected population for the City is contained in Table 3-1.

Table 3-1 Retail: Population - Current and Projected

Population Served	2015	2020	2025	2030	2035	2040*(opt)*
	10,020	10,531	11,068	11,633	12,226	12,850

NOTES: 2015 population is per SB X7-7 Method for Population Finances 1 (Department of Finance [DOF] Table E-5). Projected populations assume 1% annual population growth.

3.4.1 Other Demographic Factors

This section summarizes and analyzes demographic information from the 2010 Census. Analyzing demographic data can yield important information about possible shifts in demand for City water service.

According to the 2010 Census, the total population was 10,164 and the number of housing units was 4,209. The median age in the City was 38.8 with 78.6 percent of the population over 16 years of age (2010 Census). The population was split 49.9 to 50.1 percent male to female, respectively (2010 Census).

Table 4-C.4 of the Senate Bill [SB] X7-7 Verification Forms (Appendix C) shows that the California Median Household Income in 2010 was $60,883. The median household income for the City was $43,895, or 72 percent of the statewide average (2010 Census). This defines the entire incorporated area of the City as a Disadvantaged Community.

The California Employment Development Department (EDD) reported a 15.8 percent unemployment rate for 2010, and a 7.3 percent unemployment rate for 2015.

SYSTEM WATER USE

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) identify the quantity of water supplied to the agency's customers including a breakdown by user classification.

This section describes the water system demands and water demand projections.

4.1 RECYCLED VERSUS POTABLE AND RAW WATER DEMAND

This chapter covers potable and raw water demand. Recycled water is addressed comprehensively in Chapter 6.

4.2 WATER USES BY SECTOR

Water demands served by the City of Shasta Lake (City) are primarily residential (includes single-family residential [SFR] and multi-family residential [MFR]), commercial, industrial, and institutional (CII), and landscape irrigation. All connections in the City are metered.

The following water use sectors and associated metered deliveries, as shown in Table 4-0, were reported in the 2010 UWMP.

Table 4-0 2010 Water Deliveries

Use Type	Metered Volume
Single-Family Residential	1,637
Multi-Family Residential	92
Commercial/Institutional	285
Industrial	271
Landscape Irrigation	0
Agriculture	0
Other	0
Total	**2,285**

NOTES: Units of measure in this UWMP are acre-feet (AF). Source: 2010 California Department of Water Resources (DWR) Public Water System Statistics.

The City classifies meters (2015) into the following categories: 3,604 residential (includes SFR and MFR), 198 CII, and 18 landscape irrigation meters. The actual demands for potable and raw water are presented in Table 4-1 for the 2015 calendar year.

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type *(Add additional rows as needed)*	2015 Actual		
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*	Additional Description *(as needed)*	Level of Treatment When Delivered *Drop down list*	Volume
Single Family		Drinking Water	1,059
Multi-Family		Drinking Water	66
Commercial	Includes Institutional.	Drinking Water	130
Industrial		Drinking Water	186
Landscape		Drinking Water	44
Agricultural irrigation		Drinking Water	0
Losses		Drinking Water	132
		TOTAL	1,617
NOTES: Units of measure in this UWMP are acre-feet (AF). Source: Large Water Systems 2015 Annual Report to the Drinking Water Program for Year Ending December 31, 2015.			

Table 4-2 contains the projected potable and raw water demands from 2020 through 2040. The demand projections are based on the City's selected 15-year baseline water use. To project the number of connections per customer sector, it was assumed that the number of connections will grow consistently with the projected water demands; this is based on the relative distribution of customer types, accounts, and water use reported for 2015. However, the customer sector water deliveries in Table 4-2 are only general estimates of projected use, and may vary significantly based on future development and water conservation measures taken by each customer sector. Ultimately, the implementation, magnitude, and type of future development will determine the distribution of water use per customer sector.

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type *(Add additional rows as needed)*	Additional Description *(as needed)*	Projected Water Use *Report To the Extent that Records are Available*				
Drop down list *May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool*		2020	2025	2030	2035	2040-opt
Single Family		1,809	1,901	1,998	2,100	2,207
Multi-Family		113	118	125	131	138
Commercial	Includes Institutional.	222	233	245	258	271
Industrial		318	334	351	369	388
Landscape		75	79	83	87	92
Agricultural irrigation		0	0	0	0	0
TOTAL		2,536	2,666	2,802	2,944	3,095
NOTES: Units of measure in this UWMP are acre-feet (AF).						

The City's total water demands for potable and raw water, and recycled water demand, based on the figures presented in Table 4-1, Table 4-2, and Table 6-4, are summarized in Table 4-3. The City provides recycled water to several industries and irrigation customers, as described by Chapter 6.

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	2040 *(opt)*
Potable and Raw Water *From Tables 4-1 and 4-2*	1,617	2,536	2,666	2,802	2,944	3,095
Recycled Water Demand* *From Table 6-4*	135	135	135	135	135	135
TOTAL WATER DEMAND	1,752	2,672	2,801	2,937	3,080	3,230
**Recycled water demand fields will be blank until Table 6-4 is complete.*						
NOTES: Units of measure in this UWMP are acre-feet (AF).						

4.3 DISTRIBUTION SYSTEM WATER LOSSES

Distribution system water losses ("real" losses) are the physical water losses from the water distribution system and the supplier's storage facilities, up to the point of customer consumption. The City's distribution system losses are quantified using the American water Works Association (AWWA) Method Guidance "Water Resources Water Audit Manual." An electronic copy of the 2015 audit in excel format will be submitted to DWR with the adopted 2015 UWMP. The distribution system water loss for the most recent 12-month period available (2015 calendar year) is reported in Table 4-4.

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2015	132
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Units of measure in this UWMP are acre-feet (AF).	

4.4 ESTIMATING FUTURE WATER SAVINGS

"Passive" savings are water savings from codes, standards, ordinances, or transportation and land use plans. As shown in Table 4-5, future water savings are not included in the total water use projections (Table 4-2).

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) *Drop down list (y/n)*	No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc... utilized in demand projections are found.	
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes

4.5 WATER USE FOR LOWER INCOME HOUSEHOLDS

As shown in Table 4-5, lower income household demand projections are included in the total water use projections (Table 4-2 and Table 4-3).

The most recent Shasta County Local Governments Regional Housing Need Allocation (RHNA) Plan has determined that Shasta has a housing construction need of 134 units for the planning period 2014 - 2019. Of these units, 24.2 percent should be affordable to very low-income households, 15.9 percent to low-income households, 17 percent moderate-income households, and 43 percent above moderate-income households. Very low- and low-income housing needs represent 53 housing units of the City's total housing allocation.

The 2009-2014 Housing Element lists 64 housing units (new construction, rehabilitation, and conservation) for extremely low-, very low-, and low-income levels. This exceeds the RHNA of 53 low- and very low-income housing units (Shasta County Local Governments RHNA Plan).

SB X7-7 BASELINES AND TARGETS

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) identify the baseline water demand, urban water use target, and interim urban water use target for the City of Shasta Lake (City).

The base daily per capita use is the first step in determining the City's various urban water use targets over the 20-year planning horizon. The current per capita use sets the "baseline" on which the urban and interim water use targets are determined. These targets are necessary to judge compliance with the 2020 use reductions set forth in the Water Conservation Bill of 2009 (Senate Bill [SB] X7-7).

5.1 BASELINE PERIODS

The first step in developing the baseline water use for the City is determining the applicable range and years for which the baseline average will be calculated. The UWMPA stipulates an agency may use either a 10 or 15-year average to determine its baseline. If 10 percent of total water deliveries in 2008 were from recycled water, then the agency can use a 15-year average baseline. Since the recycled water deliveries in 2008 were greater than 10 percent of the total water deliveries, a 15-year average was used for baseline determination. In addition to the 15-year baseline, a 5-year baseline is also calculated, which is used to establish the minimum criteria for the City's use reduction targets. A summary of the 2008 total and recycled water deliveries, 15-year baseline range (1996 to 2010), and 5-year baseline range (2006-2010) is included in Table 1 of the SB X7-7 Verification Forms (Appendix C).

5.2 SERVICE AREA POPULATION

The 2010 Census reported 10,164 residents in the City. Service area population is reported for each year in the baseline periods as well as 2015, the compliance year, in Table 3 of the SB X7-7 Verification Forms (Appendix C). The City used the 2000 and 2010 census data, the California Department of Finance (DOF) values for baseline years prior to 2001, and Housing Element values for 2001 to 2009. For the 2015 UWMP update, the DOF values for 2001 to 2009 were used instead of the Housing Element values to maintain consistency for the population methodology. Note that the DOF population values for 2001 to 2009 are lower than the Housing Element values.

5.2.1 Population Methodology

The City's service area boundaries overlap by 100 percent with the boundaries of the City limits; therefore, the DOF methodology for population estimates is used as shown in Table 2 of the SB X7-7 Verification Forms (Appendix C).

5.3 GROSS WATER USE

"Gross water use" means the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier with certain acceptable exclusions. Gross water use is reported for each year in the baseline periods as well as 2015, the compliance year, in Table 4 of the SB X7-7 Verification Forms (Appendix C). The annual gross water values are the "total amount of potable water" reporting in the Annual Reports to the Drinking Water Program. These values do not account for losses at the water treatment plant (WTP) or in the distribution system.

As shown in Table 4-C.4 of the SB X7-7 Verification Forms (Appendix C), the City is eligible for process water deductible exclusion. However, the City is not subtracting process water from their gross water use.

5.4 BASELINE DAILY PER CAPITA WATER USE

The baseline daily per capita water use in each of the baseline years is calculated in Table 5 of the SB X7-7 Verification Form (Appendix C) by dividing annual gross water use by annual service area population. The average baseline daily per capita water use is summarized in Table 6 of the SB X7-7 Verification Form (Appendix C) for the 15-year baseline, 5-year baseline, and 2015 compliance year.

5.5 2015 AND 2020 TARGETS

The UWMPA requires urban water suppliers to determine the interim and urban water use targets for 2015 and 2020, respectively. As shown in Table 7 of the SB X7-7 Verification Forms (Appendix C), the 2010 target method is Method 4.

5.5.1 Target Methods

Four target methods have been developed, and identify the specific steps water suppliers shall follow to establish these targets. A brief description of each method, as well as the water use calculated using each methodology is included below.

5.5.1.1 Method 1 – 80 Percent of Base Daily Per Capita Water Use

Method 1 requires an urban water supplier to first determine the base daily per capita use. In order to determine the target using Method 1, 80 percent of the base daily per capita use (15-year base period) is calculated. Based on the 15-year baseline daily per capita use of 267 gallons per capita per day (gpcd) determined previously, the target use for Method 1 is 214 gpcd. This is shown in Table 7-A of the SB X7-7 Verification Forms (Appendix C).

5.5.1.2 Method 2 – Performance Standards

Method 2 requires water suppliers to use baseline commercial, industrial, and institutional (CII), indoor residential, and landscaped area water use to calculate a water use target.

Based on the nature of the data required to determine a target using Method 2, it is not feasible for the City to use this methodology.

5.5.1.3 Method 3 – 95 Percent of Hydrologic Region Target

Method 3 requires water suppliers to use the hydrologic region target to calculate a water use target for 2020. In order to determine the target using Method 3, 95 percent of the region-specific conservation goal is calculated. Based on a target of 176 gpcd for the Sacramento River region, the Method 3 target is 167 gpcd. This is shown in Table 7-E of the SB X7-7 Verification Forms (Appendix C).

5.5.1.4 Method 4 – Savings by Water Sector

Method 4 identifies water savings obtained through identified practices and subtracts them from the base daily per capita water use value identified for the water supplier. The water savings identified that can be used to reduce the base daily per capita water use value include:

- Indoor residential use savings
- Metered savings (not applicable since City is fully metered)
- CII savings
- Landscape and water loss savings

To calculate the CII savings, a retail water supplier must have data for the entire baseline period used in the base daily per capita water use calculation. The City has metered CII usage data for the entire baseline. The CII gpcd and the landscape and water loss savings gpcd were calculated from historical data. The default indoor residential use savings of 15 gpcd was used. The target use for Method 4 is 215 gpcd. The DWR Spreadsheet Tool for Calculating Provisional Method 4 Urban Water Use Targets is included as Appendix D.

5.5.2 5-Year Baseline - 2020 Target Confirmation

The final step in determining the applicability of the water use target for the City is to confirm that the water use targets meet the minimum reduction requirements as defined by the California Department of Water Resources (DWR). To confirm the target, the 5-year average baseline (259 gpcd) previously determined is used. In order to meet the minimum criteria, the chosen use 2020 target must fall below 95 percent of the 5-year baseline, which for the City is 246 gpcd. This is shown in Table 7-F of the SB X7-7 Verification Forms (Appendix C), the 2010 target method is Method 4.

5.5.3 2015 Interim Urban Water Use Target

The 2015 Interim Target is the value halfway between the 15-year baseline gpcd and the confirmed 2020 Target. The Interim 2015 Target is 241 gpcd, as shown in Table 8 of the SB X7-7 Verification Forms (Appendix C).

5.5.4 Baselines and Targets Summary

Based on the water use targets calculated above, the City's water use target for 2020 is 215 gpcd. Based on the 15-year baseline of 267 gpcd, the 2015 interim water use target is 241 gpcd. The 2020 target was determined using Method 4. According to the DWR guidelines, the 2020 target is valid since it is less than the target confirmation criteria of 246 gpcd. A summary of the various baselines, 2015 interim use target, and the confirmed 2020 target are summarized in Table 5-1.

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

Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	*1996*	*2010*	*267*	*241*	*215*
5 Year	*2006*	*2010*	*259*		
*All values are in Gallons per Capita per Day (GPCD)					

5.6 COMPLIANCE DAILY PER CAPITA WATER USE (GPCD)

"Compliance daily per-capita water use means the gross water use during the final year of the reporting period. Water suppliers are required to calculate their actual 2015 water use (2015 calendar year) and evaluate whether their per capita 2015 target use was met and assess progress towards achieving their 2020 target water use. Refer to Table 5-2 and SB X7-7 Table 9 (Appendix C) for 2015 compliance.

The City determined its 15-year baseline water use and urban water use targets in accordance with the methods described in the DWR 2015 UWMP Guidebook. After doing so, it is evident that the City met the interim target for 2015 (241 gpcd) in 2015 (150 gpcd). If the City can maintain water consumption rates, it will meet 2020 conservation goals. However, if consumption rates begin to rise above interim water use goals, the City must implement additional conservation measures to meet its 2020 goals. In all of its conservation programs, the City will avoid placing a disproportionate burden on any customer sector to reach its 2020 water use target.

Table 5-2: 2015 Compliance

Retail Agency or Regional Alliance Only

Actual 2015 GPCD*	2015 Interim Target GPCD*	Optional Adjustments to 2015 GPCD *From Methodology 8*					2015 GPCD* *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2015 GPCD*		
150	241	0	0	0	0	150	150	Yes

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

SYSTEM SUPPLIES

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a description of the agency's existing and future water supply sources for the next 20 years.

The City of Shasta Lake's (City's) water supply is Shasta Lake through a combination of a long-term (40 years) contract with the United States Bureau of Reclamation (USBR) and long- and short-term agreements with surrounding agencies and water suppliers. Water contracts and agreements are included in Appendix E. Table 6-0 summarizes the annual entitlement under each contract/agreement. Each contract/agreement is detailed separately below.

Table 6-0 Active Water Supply Contracts and Agreements

Water Supplier	Agreement Type	Acre-Feet per Year (AFY)	Source	Term
US Bureau of Reclamation (USBR)(1)	Purchase	4,430	CVP(2)	40 Years
Shasta County Water Agency (SCWA)	Purchase	50	CVP	Annual
McConnell Foundation	Purchase	Varies	CVP	Annual
Centerville Community Services District (CCSD)	Purchase	250	CVP	Annual
Anderson-Cottonwood Irrigation District (ACID)	Transfer	140	CVP	Annual

NOTES:
1. Contract 4,430 acre-feet (AF). Includes original contract (4,400 AF) plus the 30 AF reallocated from the Summit City Pressure Zone Agreement with the City of Redding.
2. CVP = Central Valley Project.

6.1 PURCHASED OR IMPORTED WATER

6.1.1 United States Bureau of Reclamation Contract

The City entered into a long-term contract with the USBR (Contract No. 4-7-20-W1134-LTR1) that authorizes the City to divert from Shasta Lake a specified quantity of the water supply created by the Central Valley Project (CVP). The contract was entered into in

March 2005, and allows the City to divert up to 4,430 acre-feet (AF) per year from Shasta Lake for municipal and industrial purposes. The contract is effective from March 1, 2005 to February 28, 2045.

Provisions in the contract allow for the renewal of the contract for successive periods and to increase or decrease the quantity of water available to the City. The City is required under the contract to prepare and implement a water conservation program for all water diverted from the USBR sources. This program must be submitted to USBR for approval every five years. The 2010 UWMP was submitted to USBR for review and approval to satisfy this requirement. Upon completion, this UWMP will be submitted to USBR for review.

The contract states that USBR will use all reasonable means to prevent shortages in the quantity of water available to the City. However, the contract also states that no liability shall accrue against the United States if shortages occur due to drought or other causes, which are beyond the control of the United States. During drought conditions, CVP diversions can be cut back significantly, as was the case in 1992 when they were reduced by 50 percent in the region. The percent reduction is applied to the historical average of the City's actual water usage over the prior three water years.

Currently the City only uses about 60 percent of the USBR allocation during an average year. However, during drought years, this allocation can be reduced drastically. In 2014, the average water usage over the prior three years was 2,582 AF. The allocation reduction is 50 percent, resulting in approximately 1,291 AF available to the City for the current water year. In the agreement for the 2015 water year (April 2015 through February 2016), the allocation was 646 AF (25 percent of historical average).

6.1.2 Shasta County Water Agency Contract

On March 3, 1998 the City entered into a contract with the Shasta County Water Agency (SCWA) to purchase 50 AF of CVP water per year. SCWA has a contract with the USBR (Contract No. 14-06-2003367A) to receive water from Shasta Lake and Whiskeytown Lake. SCWA approves the 50 AF on an annual basis. On March 13, 2013, the City requested SCWA permanently assign 50 AF to the City under a long-term agreement. The City is currently in the process of negotiating a permanent transfer agreement with the USBR. In the agreement for the 2015 water year (April 2015-February 2016), the allocation was 12 AF (25 percent of historical average).

6.1.3 McConnell Foundation Purchase Agreement

The City has entered into short-term annual purchase agreements with the McConnell Foundation since 2001. The McConnell Foundation has a USBR contract to receive 5,100 AF of CVP water each year. The City requests to purchase water from the McConnell Foundation when needed to make up for the reduction in water supply. The City has used the McConnell agreements to supplement its supply during USBR restrictions on Shasta Lake diversions. In Shasta County (County), the only unrestricted water contractor not

impacted by the Cold Water Pool (CWP) issues is the McConnell Foundation. In the agreement for the 2015 water year (April 2015-February 2016), the City purchased 900 AF of supplemental water.

6.1.4 Centerville Community Services District Purchase Agreement

From 2002 to 2004, the City purchased 240 AF of CVP water annually from the Centerville Community Services District (CCSD). In the agreement for the 2015 water year (April 2015-February 2016), the City purchased 65 AF of supplemental water.

6.1.5 Siddiqui Family Partnership Purchase Agreement

In 2003, the City had a purchase agreement with the Siddiqui Family Partnership to purchase 220 AF of CVP water. At this time, the City is not considering renewing this agreement.

6.2 GROUNDWATER

The City is located north of the Redding Groundwater Basin (identified as Groundwater Basin Number 5-6.04 by the Department of Water Resources [DWR]) which contains the main water-bearing geologic units in the northern Sacramento Valley. The Redding Groundwater Basin is an unadjudicated basin. The geology underlying the City is characterized mainly by dense, relatively un-fractured meta-volcanic rock (Copley greenstone). Wells completed in the Copley greenstone generally have very low yields (less than 10 gallons per minute [gpm]). Less dense, probably more highly fractured black shale, the Kennett formation underlies the northeastern corner of the City. Wells of record completed in the Kennett formation within the City have similar or slightly higher yields than those completed in the Copley greenstone.

Chico formation rocks underlie the extreme south portion of the City. The Chico formation generally has poor water quality, and wells completed in this area of the City generally have low yields. A small area of Red Bluff formation occurs in the southeastern corner of the City.

Most wells of record within the City have very low yields (less than 10 gpm). The highest yielding wells near the City are those of the Mountain Gate Community Services District (two wells that average 200 gpm each).

The area with the best potential groundwater yield within the City's sphere of influence is the northeastern corner. This area appears to have a similar geologic setting to that of the Mountain Gate Community Services District well area. The Kennett formation has been mapped in that area, and there appears to be at least two fracture zones running through the area. Geologic conditions may not match exactly those of the Mountain Gate area, however, and it cannot be stated with certainty that yields similar to those at Mountain Gate can be obtained.

DWR Bulletin 118, “California’s Groundwater” contains a detailed description of the Redding Basin and its characteristics and conditions. Based upon the water balance provided in Bulletin 118, groundwater outflows exceed groundwater inflows by approximately 4,800 acre-feet per year (AFY), suggesting a basin overdraft situation may exist.

In 1996, the City joined the SCWA, the City of Redding, and several other local agencies as a member of the Redding Area Water Council (RAWC). The RAWC is a consortium of public and private agencies. RAWC was formed in 1993 as a forum to address the severe local impacts to water supplies during the 1986 to 1992 drought. The RAWC prepared the Coordinated AB 3030 Groundwater Management Plan (Plan) for the Redding Groundwater Basin in 1998 and updated it in 2007. The DWR does not identify the Redding Groundwater Basin as being over drafted nor expected to become over drafted. The purposes of the Plan are to avoid or minimize conditions that adversely affect groundwater availability and quality in the Plan area and to develop a management program that addresses data collection and protects and enables reasonable use of the groundwater resources of the Redding Basin.

As shown in Table 6-1, the City does not operate groundwater wells within the City limits for water supply. The 1998 Master Water Plan determined it was not feasible to obtain any significant water supply from groundwater wells inside the City limits.

Table 6-1 Retail: Groundwater Volume Pumped

☑	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type ***Drop Down List*** *May use each category multiple times*	Location or Basin Name	2011	2012	2013	2014	2015
Add additional rows as needed						
	TOTAL	0	0	0	0	0

6.3 SURFACE WATER

The City's surface water supply is Shasta Lake through a combination of a long-term (40 years) contract with the USBR and long- and short-term agreements with surrounding agencies and water suppliers (as detailed in Section 6.1).

Shasta Lake is a CVP reservoir located approximately 9 miles northwest of the City of Redding. The reservoir controls runoff from four major tributaries including the Sacramento, McCloud, and Pit Rivers, Squaw Creek, and numerous minor creeks and streams. The USBR is responsible for the management of Shasta Lake.

Refer to Section 3.1.1 for a description of the City's water system, including transmission, treatment, and distribution facilities.

6.4 STORMWATER

The City has not identified any opportunities related to stormwater recapture to offset potable water use.

6.5 WASTEWATER AND RECYCLED WATER

The UWMPA requires that the UWMP address the opportunities for development of recycled water, including the description of existing recycled water applications, quantities of wastewater currently being treated to recycled water standards, limitations on the use of available recycled water, an estimate of projected recycled water use, the feasibility of said projected uses, and practices to encourage the use of recycled water.

6.5.1 Recycled Water Coordination

The City owns and operates the Wastewater Treatment Facility (WWTF) that collects and treats all wastewater within the service area. Therefore, the City coordinates recycled water use within the service area and does not rely on an outside facility or agency.

6.5.2 Wastewater Collection, Treatment Systems, and Disposal

6.5.2.1 Wastewater Collected Within Service Area

The City manages wastewater collection and treatment within the city limits. All of the wastewater flows from the City are collected and treated at the City's WWTF. The wastewater collection system consists of approximately 270,000 feet of gravity sewer line, seven raw sewage lift stations, and 18,000 feet of force mains.

The WWTF was upgraded in 1995 to an average dry weather flow capacity of 1.3 million gallons per day (MGD) and a peak wet weather capacity of 5.2 MGD. The WWTF consists of a head-works with a mechanical bar screen unit, oxidation ditch, mixed liquor pump station, two secondary clarifiers, two traveling bridge filter units, chlorine contact basin, aerobic digester, sludge storage basins, emergency storage basin and 400-AF reservoir. The upgraded plant was designed to meet Title 22 requirements for golf course irrigation and for future expansion to 2.3 MGD. According to the 2005 Wastewater System Master Plan, there is space available at the WWTF to expand to approximately 4.4 MGD. Table 6-2 contains current wastewater volumes collected within the City limits.

Table 6-2 Retail: Wastewater Collected Within Service Area in 2015						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2015 service area covered by wastewater collection system *(optional)*					
	Percentage of 2015 service area population covered by wastewater collection system *(optional)*					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
Add additional rows as needed						
City of Shasta Lake	Metered	722	City of Shasta Lake	Wastewater Treatment Facility	Yes	No
Total Wastewater Collected from Service Area in 2015:		722				
NOTES: Units of measure in this UWMP are acre-feet (AF).						

6.5.2.2 Wastewater Treatment and Discharge within Service Area

The treated effluent is discharged to either Churn Creek, the Reclaimed Water Reservoir for use in the recycled water distribution system, or the Irrigation Pump Station for irrigation of pastureland. The City irrigates approximately 40 acres of City pastureland surrounding the treatment plant site by Discharge Point LND-001.

From October 15 through April 15, the City is allowed to discharge treated water to Churn Creek, a tributary of the Sacramento River, provided there is a 10:1 dilution factor in the creek. Discharge is allowed from two discharge locations. Discharge Point 001 (Monitoring Location EFF-001) discharges water directly from the end of the WWTF to Churn Creek. Discharge Point 002 (Monitoring Location EFF-002) discharges water from the reclaimed reservoir to Churn Creek downstream from EFF 001. Effluent discharged to Churn Creek is dechlorinated.

Recycled water that cannot be discharged to Churn Creek due to the time of year or drought conditions (reduced creek flows) is stored in the 400-AF reservoir. The 2005 Wastewater System Master Plan indicated that the inability to discharge treated effluent would limit new development and recommended that the City seek additional recycled water users or develop a direct discharge to the Sacramento River.

The City is in the process of designing upgrades to the WWTF to enable year-round direct discharge of its effluent to Churn Creek. Once complete, the 400-AF reservoir will be abandoned. The plant upgrades will include four deep-bed filters, ultraviolet (UV) disinfection, and conversion of the chlorine contact basin into a reclaimed water storage basin. The reclaimed water storage basin will be used for chlorine contact for reclaimed, backwash, and utility water demand. UV disinfected effluent will be discharged directly to the Creek. The City will still supply recycled water users. As of April 2016, the project is at 30 percent design.

In 2015, the WWTF received an average annual flow of approximately 701 AF or approximately 0.63 MGD. As the WWTF was designed to meet Title 22 requirements, all of the flow discharged meets recycled water standards. The average percent of creek discharge to WWTF flow in 2015 was approximately 41 percent. Table 6-3 identifies the volume of treated wastewater either recycled or disposed of within the service area.

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

☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level *Drop down list*	2015 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Add additional rows as needed										
City of Shasta Lake Wastewater Treatment Facility	EFF-001,-002	Churn Creek		River or creek outfall	No	Tertiary	722	287	135	
City of Shasta Lake Wastewater Treatment Facility	LND-001	Spray Fields		Land disposal	No	Tertiary	722	202		
						Total	722	488	135	0

NOTES: Units of measure in this UWMP are acre-feet (AF). Refer to Table 6-4 for current and projected recycled water use within service area.

6.5.3 Recycled Water System

The City's WWTF produces disinfected tertiary recycled water per the recycled water criteria defined by the Division of Drinking Water (formerly the California Department of Public Health) under California Administrative Code, Division 4, Title 22, California Code of Regulations (CCR). The City provides recycled water to three users.

The City prepared a WWTF Future Reclaimed System Water Balance (WaterWorks Engineers, 2014) to determine the reclamation capacity of the WWTF and a Recycled Water Facilities Planning Report (PACE Engineering, 2009) that evaluated the feasibility of other recycled water customers in the surrounding areas. These documents are included in Appendix F. A schematic of the reclaimed water balance is provided in Figure 1 of the WWTF Future Reclaimed System Water Balance (WaterWorks Engineers, 2014).

6.5.4 Recycled Water Beneficial Uses

6.5.4.1 Current and Planned Uses of Recycled Water

The City provides recycled water to Sierra Pacific Industries (SPI), Knauf Insulation (Knauf), and the California Department of Transportation (Caltrans). SPI utilizes the recycled water for soaking log decks for fire prevention, Knauf for landscape and turf irrigation, and Caltrans for irrigation of the Shasta Dam Boulevard interchange on I-5.

Caltrans requested an additional 5 million gallons (MG) per year (15.4 AF) of recycled water for irrigation of additional interchanges on the I-5 corridor. A reclaimed water balance performed by WaterWorks Engineers (May 7, 2014) that took the WWTF upgrade, existing recycled water usage, and future Caltrans use into account, stated that there would be sufficient capacity to provide recycled water to the three current recycled water users and provide Caltrans with the additional supply they requested. The City supplied Caltrans with an additional 3 MG (9.2 AF) of recycled water in 2015.

The current and projected recycled water uses are summarized in Table 6-4. The projected recycled water volumes are based on current agreements, which may be revised in the future.

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

☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.
Name of Agency Producing (Treating) the Recycled Water:	City of Shasta Lake Wastewater Treatment Facility
Name of Agency Operating the Recycled Water Distribution System:	City of Shasta Lake Wastewater Treatment Facility
Supplemental Water Added in 2015	
Source of 2015 Supplemental Water	

Beneficial Use Type	General Description of 2015 Uses	Level of Treatment *Drop down list*	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation			0	0	0	0	0	0
Landscape irrigation (excludes golf courses)	Caltrans (I-5 landscape)	Tertiary	21	21	21	21	21	21
Golf course irrigation			0	0	0	0	0	0
Commercial use	Knauf	Tertiary	35	35	35	35	35	35
Industrial use	SPI	Tertiary	80	80	80	80	80	80
Geothermal and other energy production			0	0	0	0	0	0
Seawater intrusion barrier			0	0	0	0	0	0
Recreational impoundment			0	0	0	0	0	0
Wetlands or wildlife habitat			0	0	0	0	0	0
Groundwater recharge (IPR)*			0	0	0	0	0	0
Surface water augmentation (IPR)*				0	0	0	0	0
Direct potable reuse				0	0	0	0	0
Other *(Provide General Description)*			0	0	0	0	0	0
		Total:	135	135	135	135	135	135

**IPR - Indirect Potable Reuse*

NOTES: Units of measure in this UWMP are acre-feet (AF).

6.5.4.2 Planned Versus Actual Use of Recycled Water

The recycled water use projection for 2015 from the 2010 UWMP is compared to the 2015 actual use in Table 6-5. In the 2010 UWMP, the discharge of recycled water to pasture spray fields was included in the 2015 projected recycled water use (232 AF). This has been removed from the projected use since this method of disposal is no longer considered a recycled water application. In 2015, the City applied 202 AF to spray fields (Table 6-3).

Table 6-5 Retail: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual			
☐	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.		
Use Type		**2010 Projection for 2015**	**2015 Actual Use**
Agricultural irrigation		0	0
Landscape irrigation (excludes golf courses)		33	21
Golf course irrigation		0	0
Commercial use		35	35
Industrial use		44	80
Geothermal and other energy production		0	0
Seawater intrusion barrier		0	0
Recreational impoundment		0	0
Wetlands or wildlife habitat		0	0
Groundwater recharge (IPR)		0	0
Surface water augmentation (IPR)		0	0
Direct potable reuse		0	0
Other	*Type of Use*	0	0
Total		112	135
NOTES: Units of measure in this UWMP are acre-feet (AF). In the 2010 UWMP, the discharge of recycled water to pasture spray fields was included in the 2015 projected recycled water use (232 AF). This has been removed from the projected use since this method of disposal is no longer considered a			

6.5.5 Actions to Encourage and Optimize Future Recycled Water Use

The City encourages the use of recycled water by commercial and industrial water customers. The City will continue to be proactive in public education regarding the safety and reliability of recycled water for both irrigation and process uses. The rate for recycled water is currently $0.172 per 100 cubic feet (CF) compared to $1.30 per 100 CF for potable water. This provides a financial incentive to the existing customers and future customers.

The service area for Bella Vista Water District (BVWD) contains a number of agricultural water users and two golf courses, all located in reasonable proximity to the end of the City's existing recycled water pipeline. A Recycled Water Facilities Planning Report prepared by PACE Engineering in 2009, identified one potentially viable site in BVWD (Tierra Oaks Golf Course) primarily due to its proximity to the existing recycled water pipeline. This site could potentially use 400 AF annually. Additionally the Mountain Gate at Shasta Project has indicated they will use recycled water within the project boundaries if it is available. The amount that could potentially be distributed to the Mountain Gate at Shasta Project is unknown.

Other potential uses of recycled water within the City could include:

- Urban (park and streetscape) landscape irrigation,
- Residential irrigation,
- School landscape irrigation, and,
- Dual-plumbed business/commercial developments.

The above potential uses are typical urban uses of recycled water that do not require potable water, but do require treatment to meet certain recycled water standards outlined in the CCR Title 22.

Due to the pending WWTF upgrades, current recycled water rates, the long historical use of the three current recycled water customers, and the results of the reclaimed water balance performed by WaterWorks Engineers, there is not currently a need to provide further financial incentives to encourage recycled water use over the planning period. If projects occur, methods to encourage recycled water use can be developed to maximize project benefits. As shown in Table 6-6, the City does not plan to expand recycled water use at this time.

Table 6-6 Retail: Methods to Expand Future Recycled Water Use

☑	Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.		
Section 6.5.5	Provide page location of narrative in UWMP		
Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Add additional rows as needed			
		Total	0
NOTES: Units of measure in this UWMP are acre-feet (AF).			

6.6 DESALINATED WATER OPPORTUNITIES

The UWMPA requires that the UWMP address the opportunities for development of desalinated water, including ocean water, brackish water, and groundwater.

At the present time, the City does not foresee any opportunities for the use of desalinated water, including ocean water, brackish ocean water, and brackish groundwater, as a long-term supply since the City is not located near the coast or a brackish groundwater source.

6.7 EXCHANGES OR TRANSFERS

The UWMPA requires the UWMP to address the opportunities for development of short or long-term transfer or exchange opportunities.

6.7.1 Exchanges

Water exchanges entail water being delivered by one water user to another water user, with the receiving water user providing water in return at a specified time or when the conditions of the parties' agreements are met. The City does not have any planned or potential water exchanges.

6.7.2 Transfers

Water transfers entail a temporary or long-term change in the point of diversion, place of use, or purpose of use due to a transfer, sale, lease, or exchange of water or water rights. The City has three long-term transfer agreements. Two of the long-term agreements (MCM Properties Inc. [MCM] and Anderson-Cottonwood Irrigation District [ACID]) the City has in place are on hold due to CWP issues. The transfer agreement with the City of Redding is used to supply residents within the City of Redding. The City does not currently have any new transfer opportunities identified.

6.7.2.1 MCM Properties Transfer Agreement

The City has a long-term transfer agreement with MCM for 325 AF of CVP water. The agreement is effective from March 1, 2006 to February 28, 2045. MCM sells and transfers the water under USBR contract 7827A for diversion of CVP water from the Sacramento River. If supply is available, the City may request an additional 132 AF annually. The City has first right to this water if MCM determines water is available. The City would divert this water at Shasta Lake. This transfer agreement was put on hold due to CWP issues that were identified from a National Environmental Policy Act (NEPA) compliance analysis of the transfer proposal. Subsequently, a transfer agreement with ACID, detailed in the following subsection, was also put on hold due to CWP issues.

On February 28, 2008, the USBR required an environmental review for the proposed MCM and ACID transfers following a Temperature Impact Analysis. ACID and MCM withdrawals are on the Sacramento River whereas the transferred water would be through Shasta Lake. The USBR indicated that withdrawal of water from Shasta Lake would potentially affect downstream river temperatures through impacts to the CWP and result in detrimental impacts to fish. Therefore, these transfers have not been approved due to the CWP issues. The City has not received water from MCM to date.

6.7.2.2 Anderson-Cottonwood Irrigation District Transfer Agreement

The City has a long-term transfer agreement with the ACID for 2,000 AF of CVP water. The agreement is effective from April 24, 2008 to February 28, 2045. ACID sells and transfers the water under USBR contract 3346A-R-1 for diversion of CVP water from the Sacramento River. This transfer is available to the City between April 1 and October 31. The City would divert this water at Shasta Lake. This supply is subject to constraints discussed above with the USBR contract. As of April 18, 2014, ACID's USBR supply was cut by 25 percent.

As discussed above, this transfer has not been approved by the USBR due to CWP issues. The USBR did approve 140 AF of the ACID transfer in 2008 after the Temperature Impact Analysis. Since that time, the City has not received water from the ACID agreement, which is on hold until further analysis of the CWP issues.

6.7.2.3 City of Redding Summit City Pressure Zone Agreement

In 2004, the City entered into a long-term agreement with the City of Redding to provide service to a portion of the southwest section of the City, known as the Summit City Pressure Zone. Prior to this agreement, the area was served by the City of Redding. The water purchased by the City of Redding from USBR under the Buckeye Contract (Contract No. 14-06-00-5272A) is treated at the City of Shasta Lake's Water Treatment Plant (WTP) and conveyed to the Summit City Pressure Zone through an intertie. The City invoices the City of Redding monthly for this water through a master water meter. The City of Redding pays the City of Shasta Lake, at the tiered residential rate, for the water delivered to the Summit City Pressure Zone, less the USBR contract costs charged to the City of Redding. The agreement allowed the City to acquire 30 AF of the 40 AF of CVP water allocated to the Summit City Pressure Zone. The City is currently in the process of negotiating a permanent transfer agreement with the USBR.

6.7.3 Emergency Interties

The City has emergency inter-ties with the City of Redding and BVWD in which transfers of water can be made. These are addressed in Chapter 7.

6.8 FUTURE WATER PROJECTS

The UWMPA requires that suppliers describe water supply projects and programs that may be undertaken to meet the projected water demands.

In an effort to withdraw the full transfer amounts from ACID and MCM, the City requested DWR Integrated Regional Water Management (IRWM) grant funding for a water supply enhancement project to divert the transferred water through the BVWD's water intake on the Sacramento River, treat the water, and then deliver it to the City via the intertie with the BVWD. The project was to include infrastructure improvements to BVWD's and the City's treatment, pumping, distribution systems, and the existing intertie pump station. In a letter of support from the USBR dated June 11, 2014, it stated that by withdrawing water at the BVWD intake in the Sacramento River, the CWP issues are essentially eliminated as compared to diverting that same volume from Shasta Lake. This project would have allowed the City to withdraw the full transfer amounts from the ACID and MCM transfer, utilize existing long-term transfer agreements, and ensure a sustainable water supply and reliability for the City. Preliminary modeling and design revealed that the cost to upgrade BVWD's infrastructure alone was greater than 16 million dollars. This project is no longer viable.

In an effort to improve reliability, the City sent a comment letter (September 25, 2013) to the USBR regarding the Draft Environmental Impact Statement for the Shasta Lake Water Resources Investigation (enlargement of Shasta Dam) in which they requested that USBR dedicate 4,600 AF of the newly impounded water to the City's base allocation of 4,400 AF, increasing the total long-term allocation to 9,000 AF. This project is no longer viable.

As shown in Table 6-7, there are no expected future water supply projects and programs to increase water supply for average, single-dry, and/or multi-dry years.

Table 6-7 Retail: Expected Future Water Supply Projects or Programs						
☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.					
☐	Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.					
Section 6.8	Provide page location of narrative in the UWMP					
Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type *Drop Down List*	Expected Increase in Water Supply to Agency *This may be a range*
	Drop Down List (y/n)	*If Yes, Agency Name*				
Add additional rows as needed						
NOTES: Units of measure in this UWMP are acre-feet (AF).						

6.9 SUMMARY OF EXISTING AND PLANNED SOURCES OF WATER

The actual source and volume of water for the year 2015 is presented in Table 6-8.

Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		Actual Volume	Water Quality *Drop Down List*	Total Right or Safe Yield *(optional)*
Add additional rows as needed				
Purchased or Imported Water	USBR	646	Raw Water	4,430
Purchased or Imported Water	SCWA	12	Raw Water	50
Purchased or Imported Water	McConnell Foundation	900	Raw Water	Varies
Purchased or Imported Water	CCSD	65	Raw Water	Varies
Transfers	ACID	0	Raw Water	140
	Total	1,623		4,620
NOTES: Units of measure in this UWMP are acre-feet (AF). USBR Total Right includes original contract (4,400 AF) plus the 30 AF reallocated from the Summit City Pressure Zone Agreement with the City of Redding. The 2015 water year for these agreements is April 2015 through February 2016.				

The projected water supply for 2020, 2025, 2030, 2035, and 2040 are included in Table 6-9.

Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report To the Extent Practicable*									
Drop down list *May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool*		**2020**		**2025**		**2030**		**2035**		**2040** *(opt)*	
		Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*	Reasonably Available Volume	Total Right or Safe Yield *(optional)*
Add additional rows as needed											
Purchased or Imported Water	USBR	4,400	4,430	4,400	4,430	4,400	4,430	4,400	4,430	4,400	4,430
Purchased or Imported Water	SCWA	50	50	50	50	50	50	50	50	50	50
Purchased or Imported Water	McConnell Foundation	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Purchased or Imported Water	CCSD	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Transfers	ACID	140	140	140	140	140	140	140	140	140	140
	Total	4,590	4,620	4,590	4,620	4,590	4,620	4,590	4,620	4,590	4,620

NOTES: Units of measure in this UWMP are acre-feet (AF). USBR Total Right includes original contract (4,400 AF) plus the 30 AF reallocated from the Summit City Pressure Zone Agreement with the City of Redding.

6.10 CLIMATE CHANGE IMPACTS TO SUPPLY

The California Water Code (CWC) does not require that UWMPs address climate change. The potential water supply effects related to climate change have not been included in this UWMP. The IRWM Climate Change Vulnerability Assessment is included as Appendix B (refer to Section 3.3.1).

Chapter 7

WATER SUPPLY RELIABILITY

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) address the reliability of the agency's water supplies. This includes supplies that are vulnerable to seasonal or climatic variations. In addition, an analysis must be included to address supply availability in a single-dry year and in multiple-dry years.

7.1 CONSTRAINTS ON WATER SOURCES

7.1.1 Water Supply Reliability

There are two aspects of supply reliability that can be considered. The first relates to immediate service needs and is primarily a function of the availability and adequacy of the supply facilities. The second aspect is climate-related, and involves the availability of water during mild or severe drought periods. This section examines the reliability of the water supply available to the City of Shasta Lake (City), under both normal and dry conditions.

The City depends heavily on its long-term contract to purchase water from the United States Bureau of Reclamation (USBR) for 4,430 acre-feet (AF) per year. This contract to take water from Shasta Lake is the City's main source of water. During low rainfall years, the City's allocation can be reduced by up to 75 percent or to the City's public health and safety water supply level, whichever is greater, depending upon the USBR water supply projections. The public health and safety allocation amount for the City is 1,018 AF, calculated based on the USBR's Central Valley Project (CVP) Municipal and Industrial Water Shortage Policy.

For this reason, the City has constructed two inter-ties with the City of Redding and Bella Vista Water District (BVWD) in case of an emergency. The City has a purchase agreement with the BVWD to receive up to 250 AF per year of CVP water at the intertie location that connects their water systems. The intertie with BVWD is a manual connection. This agreement was effective December 7, 1999 and is renewed in five-year terms. The City has not purchased water from the BVWD since 2004. At this time, the City is not considering renewing this agreement.

The City has a purchase agreement with the City of Redding to receive up to 224 AF per year of groundwater. The most recent agreement was effective August 7, 2007. The agreement can be renewed in one-year terms. The City has not purchased groundwater from the City of Redding since 2005. At this time, the City is not considering renewing this agreement.

For the last few years, the City has purchased supplemental water from the Shasta County Water Agency (SCWA), the McConnell Foundation, and the Centerville Community

Services District (CCSD) under short-term contracts. A long-term contract with SCWA is being evaluated. The City also has long-term transfer agreements with MCM Properties, Inc. (MCM) and Anderson-Cottonwood Irrigation District (ACID), which have not been utilized due to Cold Water Pool (CWP) issues identified by the USBR as well as a long-term transfer agreement with the City of Redding for service to the Summit City Pressure Zone Agreement.

Unfortunately, short-term contracts are very insecure from the standpoint of reliability and cost fluctuations. Additionally, the MCM and ACID long-term transfer agreements have not been reliable due to CWP issues. Thus, in an effort to withdraw the full transfer amounts from MCM and ACID, the City requested the California Department of Water Resources (DWR) Integrated Regional Water Management (IRWM) grant funding for a project to divert the transferred water through the BVWD's water intake on the Sacramento River, treat the water, and then deliver it to the City via the intertie with the BVWD. As reported in Section 6.8, this project is no longer viable.

In addition, the City provided a comment letter to USBR on the Draft Environmental Impact Statement for the Shasta Lake Water Resources Investigation (Enlargement of Shasta Dam). As partial mitigation for the social disruptions, traffic impacts, and revenue losses predicted to result from this project, the City requested USBR dedicate 4,600 AF of the newly impounded water to the City's base allocation of 4,400 AF, increasing its total long-term allocation to 9,000 AF. This would provide a sustainable water supply and reliability for the City. As reported in Section 6.8, this project is no longer viable.

Without a sustainable and reliable water supply, future growth and industrial/commercial growth could be delayed for the City. The long-term contract amount with USBR is sufficient to meet City demands when allocations are not reduced. The City will continue to evaluate opportunities with surrounding agencies during reduced allocations from the USBR to improve the reliability of the water supply.

Table 7-0 contains a summary of factors affecting water supply reliability and that may pose an opportunity for inconsistency in supply. Legal and environmental factors represent supply restrictions that may be imposed due to downstream water temperature, CWP issues, quality, and quantity objectives. Climatic factors represent potential restrictions due to drought conditions.

7.1.2 Water Supply Quality

The UWMPA requires that the UWMP include a discussion of water quality impacts on the reliability of an agency's water supplies.

The water quality from Shasta Lake is very good. The Lake is most vulnerable to contaminants from recreational activities. Water quality does not have a significant effect on water management strategies or supply reliability due to the high quality of the surface

water supply. The City's drinking water meets all applicable water quality regulations (See Appendix G for a copy of the City's 2015 Water Quality Report).

Table 7-0 Factors Resulting in Inconsistency of Supply

Water Supply Sources[1]	Specific Source Name	Limitation Quantification	Legal	Environmental	Water Quality	Climatic	Additional Information
USBR Contract	CVP	Note 1	X	X		X	
Shasta County Water Agency	CVP	Note 1	X	X		X	
McConnell Foundation	CVP	Note 2	X				
Centerville Community Services District	CVP	Note 2	X	X		X	
MCM Properties Inc.	CVP	Note 1	X	X		X	
Anderson-Cottonwood Irrigation District	CVP	Note 1	X	X		X	

NOTES:
1. Quantity dependent on USBR allocations and USBR approval of transfers.
2. Quantity based on annual agreement amount.

7.2 RELIABILITY BY TYPE OF YEAR

This section considers the City's water supply reliability during three water scenarios: average year, single-dry year, and multiple-dry year period. An average year is also referred to as a "normal" year.

These scenarios are defined as follows:

- **Average year:** a year, or an averaged range of years, that most closely represents the average water supply available to the City. Generally a year in the historical sequence that most closely represents median runoff levels and patterns. It is defined as the median runoff over the previous 30 years or more. This median is recalculated every 10 years.
- **Single-dry year:** the year that represents the lowest water supply available to the City. Generally considered to be the lowest annual runoff for a watershed since the water-year beginning in 1903. Suppliers should determine this for each watershed from which they receive supplies.
- **Multiple-dry year period:** the period that represents the lowest average water supply available to the City for a consecutive multiple year period. Generally considered to be the lowest average runoff for a consecutive multiple year period (three years or more) for a watershed since 1903.

Since the City's water supply in future years will come from Shasta Lake, seasonal and climatic changes will impact the availability of water. Historical curtailments in the City's supply occurred during drought years. The specific years identified for average, single-dry, and multiple-dry water years presented in Table 7-1 were developed based on historical DWR runoff records for the Sacramento Valley and the availability of City records.

Table 7-1 Retail: Basis of Water Year Data

Year Type	Base Year *If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 1999-2000, use 2000*	Available Supplies if Year Type Repeats	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☐	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	% of Average Supply
Average Year	2004	3369	100%
Single-Dry Year	2015	1679	50%
Multiple-Dry Years 1st Year	2013	2610	77%
Multiple-Dry Years 2nd Year	2014	1994	59%
Multiple-Dry Years 3rd Year	2015	1679	50%
Multiple-Dry Years 4th Year *Optional*			
Multiple-Dry Years 5th Year *Optional*			
Multiple-Dry Years 6th Year *Optional*			

NOTES: Units of measure in this UWMP are acre-feet (AF). Source: Annual Report to the Drinking Water Program

The City was incorporated in 1993; therefore accurate water supply records are only available after 1993. The area experienced a severe drought from 1985 to 1992 and from 2007 through 2009. Table 7-1 reflects the more recent 2013 through 2015 drought since accurate water supply records were available. The year 2015 was selected for the single-dry year because the City's water supply allocation was reduced to 646 AF. Table 7-1 contains the actual water supply that was available for each of the water year types, as a percentage of the average water year that occurred in 2004.

7.3 SUPPLY AND DEMAND ASSESSMENT

7.3.1 Supplies and Demands for a Normal Water Year

During an average water year, a combined delivery of up to 4,430 AF of water is available to the City under its USBR contract. However, the City typically uses 60 percent of this

allotment. Future citywide demands, assuming the City can meet the water use targets will not exceed the supplies. Table 7-2 provides an estimate of the projected normal year supply and demand totals.

Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 *(Opt)*
Supply totals *(autofill from Table 6-9)*	4,590	4,590	4,590	4,590	4,590
Demand totals *(autofill from Table 4-3)*	2,672	2,801	2,937	3,080	3,230
Difference	1,918	1,789	1,653	1,510	1,360
NOTES: Units of measure in this UWMP are acre-feet (AF).					

7.3.2 Supplies and Demands for a Single-Dry Water Year

During a single-dry year, the USBR allotments can be reduced by 50 percent or more. Table 7-3 provides an estimate of the projected single-dry year supply and demand totals. Demand reductions due to water shortage stage rationing measures are not included in the single-dry year demand estimates.

Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2020	2025	2030	2035	2040 (Opt)
Supply totals	2,295	2,295	2,295	2,295	2,295
Demand totals	2,672	2,801	2,937	3,080	3,230
Difference	(377)	(506)	(642)	(785)	(935)
NOTES: Units of measure in this UWMP are acre-feet (AF).					

7.3.3 Supply and Demand for Multiple-Dry Water Year Periods

The multiple-dry year supplies were developed based on the DWR Sacramento Valley runoff tables and available water supply data. Table 7-4 provides an estimate of the projected multiple-dry year supply and demand totals. Demand reductions due to water shortage stage rationing measures are not included in the multiple-dry year demand estimates.

Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	3,534	3,534	3,534	3,534	3,534
	Demand totals	2,672	2,801	2,937	3,080	3,230
	Difference	863	733	597	455	304
Second year	Supply totals	2,708	2,708	2,708	2,708	2,708
	Demand totals	2,672	2,801	2,937	3,080	3,230
	Difference	37	(93)	(229)	(372)	(522)
Third year	Supply totals	2,295	2,295	2,295	2,295	2,295
	Demand totals	2,672	2,801	2,937	3,080	3,230
	Difference	(377)	(506)	(642)	(785)	(935)
NOTES: Units of measure in this UWMP are acre-feet (AF).						

7.4 REGIONAL SUPPLY RELIABILITY

The City is maximizing the use of local water resources (Shasta Lake) and reducing waste through the implementation of demand management measures (DMMs). The City's efforts help to minimize the need to purchase water from other agencies.

WATER SHORTAGE CONTINGENCY PLANNING

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include an urban water shortage contingency analysis that addresses 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. In addition to actions, the City of Shasta Lake (City) is required to develop mandatory prohibitions against specific water use during shortages and consumption reduction methods in the most restrictive stages. A copy of the 2016 Water Conservation and Drought Contingency Plan (Municipal Code Chapter 13.14) is included in Appendix H. The City's Water Conservation and Drought Contingency Plan serves as their Water Shortage Contingency Plan and may be amended as needed without amending this 2015 UWMP.

8.1 STAGES OF ACTION

The stages of action in response to water supply shortages, including up to a 50 percent reduction in water supply are summarized in Table 8-1. Detailed descriptions of each stage of action are included in the Water Conservation and Drought Contingency Plan (Appendix H).

Table 8-1 Retail
Stages of Water Shortage Contingency Plan

Stage	Complete Both	
	Percent Supply Reduction[1] *Numerical value as a percent*	Water Supply Condition (*Narrative description*)
Add additional rows as needed		
1	10%	Water Shortage Alert
2	11-20%	Moderate Water Shortage
3	21-30%	Emergency Water Shortage
4	31-40%	Severe Water Shortage
5	41-50%	Critical Water Shortage Emergency

[1] *One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.*

8.2 PROHIBITIONS ON END USES

Table 8-2 contains mandatory prohibitions and the water shortage stage when they are enacted. These prohibitions are detailed in the Water Conservation and Drought Contingency Plan (Appendix H).

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

Stage	Restrictions and Prohibitions on End Users ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *Drop Down List*
Add additional rows as needed			
1-5	Landscape - Restrict or prohibit runoff from landscape irrigation	Voluntary in Stage 1.	Yes
1-5	Landscape - Limit landscape irrigation to specific times	Voluntary in Stage 1.	Yes
2-5	Landscape - Limit landscape irrigation to specific days		Yes
1-5	Landscape - Prohibit certain types of landscape irrigation	Voluntary in Stage 1.	Yes
5	Landscape - Prohibit all landscape irrigation		Yes
1-5	Landscape - Other landscape restriction or prohibition	Voluntary in Stage 1.	Yes
N/A	CII - Lodging establishment must offer opt out of linen service		
1-5	CII - Restaurants may only serve water upon request	Voluntary in Stage 1.	Yes
N/A	CII - Commercial kitchens required to use pre-rinse spray valves		
1-5	CII - Other CII restriction or prohibition	Voluntary in Stage 1.	Yes
2-5	Water Features - Restrict water use for decorative water features, such as fountains		Yes
1-5	Pools and Spas - Require covers for pools and spas	Voluntary in Stage 1.	Yes
N/A	Pools - Allow filling of swimming pools only when an appropriate cover is in place.		
1-5	Other water feature or swimming pool restriction	Voluntary in Stage 1.	Yes
1-5	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Voluntary in Stage 1.	Yes
1-5	Other - Require automatic shut of hoses	Voluntary in Stage 1.	Yes
4-5	Other - Prohibit use of potable water for construction and dust control		Yes
1-5	Other - Prohibit use of potable water for washing hard surfaces	Voluntary in Stage 1.	Yes
N/A	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		
1-5	Other	Voluntary in Stage 1.	Yes

On May 9, 2016, the Governor of California issued an Executive Order declaring the following practices be permanently prohibited:

- Hosing off sidewalks, driveways, and other hardscapes
- Washing automobiles with hoses not equipped with a shut-off nozzle
- Using non-recirculated water in a fountain or other decorative water feature
- Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation
- Irrigating ornamental turf on public street medians

In the event any provision of this Chapter or the Water Conservation and Drought Contingency Plan (Appendix H) conflicts or overlaps with any mandatory State regulation related to water conservation, the most stringent shall apply.

8.2.1 Defining Water Features

The water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, are to be defined separately from swimming pools and spas in the 2015 UWMPs and supporting documents. The Water Conservation and Drought Contingency Plan (Appendix H) defines "ornamental pond" or "ornamental fountain" as a design element where open water performs solely an aesthetic function. The Water Conservation and Drought Contingency Plan (Appendix H) specifically identifies the water features to which prohibitions are applicable to, thus meeting the requirement.

8.3 PENALTIES, CHARGES, OTHER ENFORCEMENT OF PROHIBITIONS

The following penalties take effect in Stage 2. Customers violating the mandatory regulations and restrictions on water use set forth by the City shall be penalized as follows:

- **First Violation:** The City shall provide notice of the violation and a copy of Municipal Code Chapter 13.14 to the current property owner and/or billing address.
- **Second Violation:** The City shall issue a written notice of the violation and provide notice that additional violations may result in penalties or termination of service.
- **Third Violation:** A third violation within twelve calendar months of the second violation shall result in a penalty not to exceed $100.00.
- **Fourth Violation:** A fourth violation within twelve calendar months of the third violation shall result in a penalty not to exceed $200.00.
- **Fifth and Subsequent Violations:** A fifth violation and subsequent violations within twelve calendar months of the fourth violation shall result in a penalty not to exceed $500.00.

The penalties or charges for excessive use during water shortages are detailed in the Water Conservation and Drought Contingency Plan (Appendix H).

8.4 CONSUMPTION REDUCTION METHODS

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses methods to reduce consumption. Table 8-3 contains consumption reduction methods by water shortage stage.

8.5 DETERMINING WATER SHORTAGE REDUCTIONS

The UWMPA requires that the UWMP include a means to determine the actual water use reduction from implementing the stages of the Water Conservation and Drought Contingency Plan (Appendix H). Reductions in water use for each user can be determined based on meter readings.

Table 8-3 Retail Only:
Stages of Water Shortage Contingency Plan - Consumption Reduction Methods

Stage	Consumption Reduction Methods by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	Additional Explanation or Reference *(optional)*
Add additional rows as needed		
1-5	Expand Public Information Campaign	
1-5	Improve Customer Billing	
1-5	Increase Frequency of Meter Reading	
1-5	Offer Water Use Surveys	Offered at all times.
1-5	Provide Rebates on Plumbing Fixtures and Devices	Offered at all times.
4	Decrease Line Flushing	
1-5	Reduce System Water Loss	
5	Moratorium or Net Zero Demand Increase on New Connections	
4-5	Implement or Modify Drought Rate Structure or Surcharge	
1	Other	Voluntary Rationing
2-5	Other	Mandatory Rationing

8.6 REVENUE AND EXPENDITURE IMPACTS

According to the UWMPA, the UWMP is required to include an urban water shortage contingency analysis that addresses the financial impacts from reduced water sales and proposed measures to overcome deficits (e.g., development of a reserve account or special rate adjustments).

The City is fully metered and all City customers are billed volumetrically. Therefore, the City may experience a decrease in revenue with reduced water sales during a water shortage. Annually during the budget process, the City forecasts the revenues expected for the upcoming year. At that time, shortfalls in revenues relating to water shortage will be identified and rate adjustments recommended. The City shall monitor water revenues and expenses closely to evaluate whether “water shortage” adjustments to water rates are required. Additional costs would indeed be associated with increased monitoring during water shortage situations, namely due to an increase in the hours required to monitor customer accounts. The additional costs associated with this effort, however, are not expected to significantly impact City revenues and expenditures.

8.6.1 Drought Rate Structures and Surcharges

The City's Water Conservation and Drought Contingency Plan (Appendix H) does not include drought rate structures or surcharges. The City has hired Raftelis Financial Consultants, Inc. to complete a comprehensive water rate study, which will address drought impact on revenue.

8.6.2 Use of Financial Reserves

The City does not expect to use financial reserves to address decreased water sales during a water shortage.

8.6.3 Other Measures

The City will consider postponement of capital improvements as a means to overcome impacts from water shortage contingency planning to revenues and expenditures.

8.7 RESOLUTION OR ORDINANCE

The California Water Code (CWC) requires that the City develop mandatory provisions and a draft water shortage contingency resolution as part of the UWMP to reduce water use, including prohibitions against specific wasteful practices, such as gutter flooding. The Water Conservation and Drought Contingency Plan (Municipal Code Chapter 13.14) is included in Appendix H.

8.8 CATASTROPHIC SUPPLY INTERVENTION

The UWMPA requires that the City develop stages of action to be undertaken during a catastrophic interruption of water supply or the City's water treatment facilities that could include flooding, major fire emergencies, regional power outage, an earthquake, water contamination, and acts of sabotage. In response to these possibilities, the City has developed an Emergency/Disaster Response Plan, which includes appropriate personnel listings, resource inventories, locations for emergency operations centers, response procedures, and the steps necessary to resume normal operations. The plan contains procedures for the distribution of potable water in a disaster, these procedures are consistent with guidelines prepared by the California State Office of Emergency Services.

The City will take the following actions in the event of a catastrophic supply interruption:

- Start delivering water through the emergency interties
- Submit press releases, including boil orders
- Communicate water supply stages of action

8.9 MINIMUM SUPPLY NEXT THREE YEARS

The CWC requires that the City estimate the minimum water supply available during each of the next three years (2017, 2018, and 2019), assuming the driest three-year historic supply shortage (see Table 7-1). In 2015, the City's allocation was reduced to 658 acre-feet (AF) for the water year, including United States Bureau of Reclamation (USBR) and Shasta County Water Agency (SCWA). To supplement supply, the City purchased water from nearby agencies including the McConnell Foundation and Centerville Community Services District (CCSD). The purchases from nearby agencies have not been included since they are negotiated annually.

The estimate for the minimum supply for the next three years is included in Table 8-4. The minimum supply has been adjusted according to the USBR's Central Valley Project (CVP) Municipal and Industrial Water Shortage Policy. As stated in Section 7.1.1, the City's public health and safety allocation amount for the City is 1,018 AF. The minimum supply also includes 140 AF from Anderson-Cottonwood Irrigation District (ACID) and 12 AF from SCWA.

Table 8-4 Retail: Minimum Supply Next Three Years

	2016	2017	2018
Available Water Supply	1,170	1,170	1,170
NOTES: Units of measure in this UWMP are acre-feet (AF).			

Chapter 9

DEMAND MANAGEMENT MEASURES

This chapter presents details of the demand management measures (DMMs) contained in the Urban Water Management Planning Act (UWMPA), as well as the City of Shasta Lake's (City's) existing and planned efforts to further develop their water conservation program. The City is committed to water conservation and has implemented several policies and on-going programs that promote and encourage water conservation. In addition, the City has several drought-specific programs that can be implemented if water supplies become limited and the need for more intensive water conservation becomes necessary.

The California Urban Water Conservation Council (CUWCC) was created to increase efficient water use statewide. CUWCC's goal is to integrate urban water conservation Best Management Practices (BMPs) into the planning and management of California's water resources. A Memorandum of Understanding Regarding Urban Water Conservation in California (MOU) was developed and has been signed by over 150 water suppliers and other concerned parties. The City became a signatory to the MOU in 1994 and is therefore a member of the CUWCC. The purpose of the MOU was to expedite implementation of reasonable water conservation measures in urban areas and to establish appropriate assumptions for use in calculating estimates of reliable future water conservation savings. The MOU includes definitions, implementation, requirements, and water savings assumptions for each BMP (another term for DMM). In accordance with the MOU, the City files annual reports to the CUWCC outlining progress towards implementing the BMPs. Council members can submit their most recent BMP Report with their Urban Water Management Plan (UWMP) to address the urban water conservation issues in the UWMPA. The City's CUWCC Annual Report for 2015 is contained in Appendix I.

The UWMPA was amended in 2014 to streamline DMMs from 14 specific measures to 6 more general requirements and an "other" category. Brief descriptions of the City's current and planned implementation of DMMs are included in the following sections.

9.1 WATER WASTE PREVENTION ORDINANCES

This DMM involves adoption of an ordinance prohibiting water waste. The City Municipal Code contains the Water Waste Prevention Ordinance (15.10.160) (see Appendix J). This Water Waste Prevention Ordinance is in place at all times and is not dependent upon a water shortage for implementation. See Chapter 8 for detailed information on stages of action, prohibitions of end uses, and penalties.

9.1.1 Implementation over the Past Five Years

The effectiveness of this DMM can be determined by a decrease in violators. The City issued two warnings based on two submitted violations in 2015.

9.1.2 Planned Implementation

The City will continue to enforce this DMM. The effectiveness of this DMM will be evaluated by monitoring the number of warnings and offenses. If an area is determined to have excessive violations, the City would implement a specific public outreach program informing the public about the Water Waste Prevention Ordinance.

9.2 METERING

Installing water meters and billing for actual water use provides a strong incentive for customers to use less water and equalizes service cost for each customer to their actual use (high water users would pay a more equitable share of the system costs). Water metering can reduce exterior landscape water use and can also achieve a modest reduction in interior water use.

9.2.1 Implementation over the Past Five Years

All of the City customers are metered and are billed volumetrically.

9.2.2 Planned Implementation

The best way to evaluate the effectiveness of metering is periodic review of customer water use.

9.3 CONSERVATION PRICING

Water conservation is encouraged through a pricing system that rewards customers who use less water with financial incentives, while high water users are charged a higher rate. Often this is implemented through a tiered pricing system.

9.3.1 Implementation over the Past Five Years

The City has an increasing-tier water rate schedule. These metered water rates consist of a monthly rate based on meter size as well as a rate per 100 cubic feet (CF) based on usage (see Appendix K).

9.3.2 Planned Implementation

Annually through 2018, the approved water rates will be subject to an annual inflationary adjustment of 2.5 percent. A comprehensive rate study is under way with new rates due to be adopted in October 2016.

Annually through 2018, the approved wastewater rates will be subject to an annual inflationary adjustment of 3.5 percent. The City may consider charging a sewer service rate based on water consumption.

9.4 PUBLIC EDUCATION AND OUTREACH

Examples for public education and outreach for water demand management can include coordination with other agencies and provision of programs promoting water conservation, speakers for the media or community groups, school education programs, public service announcements, water conservation bill inserts, information booths at public events, websites, newsletters and newspaper articles, rebates, and daily water use comparisons on customer's bills.

9.4.1 Implementation over the Past Five Years

The City has implemented this DMM through the provision of flyers/brochures to customers, as well as providing bill inserts promoting water conservation, providing information on the City website, conducting a "Water Awareness Week," and providing tours of the Water and Wastewater Treatment Plants. The City also implemented an active school education program in 2014, which includes provision of education materials, instructional assistance, and classroom presentations.

The City also supplies plumbing retrofit materials and education in conjunction with water surveys and audits. Indoor and outdoor water conservation kits with retrofit materials are available at the Utility Customer Service Department and also in the Planning/Building Division. The indoor kits include low-flow showerheads, pipe tape, a swivel faucet aerator, a standard faucet aerator, a "Toilet Tummy," and leak detection dye tablets. The outdoor water conservation kits include a moisture meter, rain and sprinkler gauge, garden hose repair kits, 7-spray hose nozzle, and a hose timer. The kits are available to anyone, regardless of the age of the home. In 2015, the City distributed 68 indoor conservation kits and 52 outdoor conservation kits. In addition to these kits, the City gave away additional individual items for indoor and outdoor conservation.

Table 9-1 reports the public education and school education program budgets over the past five years.

Table 9-1 Public Education Implementation Over Past Five Years

Year	Public Education Budget	School Education Budget
2011	$1,020	$0
2012	$6,000	$0
2013	$6,000	$0
2014	$8,000	$400
2015	$1,000	$1,000

The public education portion of the water conservation budget is $1,000 for 2015 and beyond. However, public education expenditures can be much higher. The City has spent the majority of the water conservation budget on kits, surveys, audits, and rebates.

9.4.2 Planned Implementation

Public information can be one of the best tools to conserve water. The Water Conservation Coordinator could optimize the program by coordinating additional opportunities for community speakers and special events. Additionally, the Building Department could provide information/coordination during building permit phase for new and older homes. The Water Conservation Coordinator could enhance the school education program by meeting with school principals and educators to promote classroom presentations and field trips. Educational water conservation projects could be undertaken by the Eagle Scouts, City Youth Committee, and other groups to educate children about water conservation.

The City annually collects information on the number of single-family residential (SFR) and multi-family residential (MFR) accounts in the service area, the number of SFR and MFR accounts offered water surveys and the number that completed surveys. The City's program began in October 2000, with the intent to target new customers, customers that complain about billing, and customers with unusually high water bills first. The water usage for customers that completed the survey process can be compared to previous years to evaluate effectiveness. Evaluation of the data collected and contacting more customers would help the City to improve the effectiveness.

9.5 PROGRAMS TO ASSESS AND MANAGE DISTRIBUTION SYSTEM REAL LOSS

This DMM focuses on the water distribution system itself, and includes water audits, leak detection, and repair. The first step in a water audit is relatively straightforward, involving comparison of the amount of water produced with the amount of water delivered to customers. The difference is termed "unaccounted water," which includes actual losses (leaks) in the distribution system, authorized but unmetered use (e.g., hydrant flushing and firefighting), unauthorized water use, and meter error.

9.5.1 Implementation over the Past Five Years

The City has completed and submitted results of the American Water Works Association (AWWA) water audits and loss control with its CUWCC reports. The entire City is metered which allows the City to routinely calculate water losses.

When a complaint is lodged regarding a potential water leak, the City takes swift action to identify and repair the given leak as warranted. In lieu of active leak detection programs, the City has opted to replace one percent of distribution system lines each year. The number of repaired leaks and length of pipeline surveyed over the past five years is reported in

Table 9-2. The replacement scope, schedule, and financing of aging distribution components are currently under evaluation in the Water Master Plan 2016 update.

Table 9-2 Loss Management Implementation Over Past Five Years		
Year	Number of Repaired Leaks	Pipeline Surveyed (miles)
2011	53	0
2012	34	0
2013	49	30
2014	36	30
2015	44	30

9.5.2 Planned Implementation

The best way to evaluate the effectiveness of this program is to compare water production data at the water treatment plant (WTP) with water consumption from the City's customers. To improve the effectiveness, the City should continue to review data and identify leaks for repair, perform an annual review of the AWWA audit information to determine if a full-scale system audit is warranted, and perform distribution leak detection when warranted and cost-effective.

9.6 WATER CONSERVATION PROGRAM COORDINATION AND STAFFING SUPPORT

This DMM entails designating a Water Conservation Coordinator responsible for managing water conservation efforts, preparing CUWCC reports, promoting water conservation to agency staff, and evaluating the results of efforts. The Water Conservation Coordinator tasks may include, but are not limited to monthly tracking of production versus consumption, enforcement of water use restrictions, and implementation of conservation programs.

9.6.1 Implementation over the Past Five Years

As of 2014, the City has a designated Water Conservation Coordinator (Tony Thomasy, tthomasy@cityofshastalake.org) that supervises BMP implementation, evaluates effectiveness, and communicates program goals to the community. The water conservation program budget over the past five years is reported in Table 9-3.

Table 9-3 Water Conservation Program Over Past Five Years	
Year	Program Budget
2011	$8,000
2012	$8,000
2013	$8,000
2014	$8,000
2015	$39,000

9.6.2 Planned Implementation

The effectiveness of this DMM is determined by the work performed by the Water Conservation Coordinator. The City should set up performance standards and goals, and compare them with the results. The City could educate community volunteers to aid the City in water conservation efforts.

9.7 OTHER DEMAND MANAGEMENT MEASURES

The City will continue to evaluate implementation of new DMMs in the future.

9.7.1 Efficiency and Rebates

The City manages a comprehensive energy efficiency incentive program for residential and commercial customers focusing on peak load reduction and energy conservation. For residential customers, rebates are offered for the installation of various energy efficiency measures. For commercial customers, rebates are available for upgraded lighting, heating, ventilation, and air conditioning (HVAC) equipment, and in cases where an analysis is performed rebates can be offered for additional equipment that reduces energy use and/or demand.

Typically, a high-efficiency washing machine rebate program is offered by the electric provider. Shasta Lake is the energy provider for the service area. For customers, the washer rebate is $150 per installation if the high-efficiency washing machine meets requirements (Energy Star Modified Energy Factor 2.2 or greater, and Water Factor of 6.0 or less) and the hot water is supplied by an electric water heater.

The City's website has a link to the rebate program and the City of Shasta Lake Water Conservation page that provides water conservation tips and recommends use of front-loading washing machines. Notifying customers of the rebate as a method of increasing the

number of water efficient washing machines could improve water conservation within the City. The City additionally offers rebates for water efficient toilets.

9.8 PLANNED IMPLEMENTATION TO ACHIEVE WATER USE TARGETS

The City has met their 2015 interim target of 215 gallons per capita per day (gpcd). If the City can maintain water consumption rates, it will meet 2020 conservation goals.

PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

The City of Shasta Lake (City) prepared this Draft 2015 Urban Water Management Plan (UWMP) during the spring of 2016. A completed UWMP checklist will be included in Appendix L of the Final UWMP.

10.1 INCLUSION OF ALL 2015 DATA

The 2015 UWMPs must include the water use and planning data for the entire year of 2015. The City is reporting on a calendar year basis and therefore, 2015 data includes the months of January to December 2015.

10.2 NOTICE OF PUBLIC HEARING

A public hearing will be held on August 16, 2016, prior to adoption of the UWMP at City Council Chambers, 4488 Red Bluff Street. Notices were provided to cities and counties, and the public. The public hearing provides an opportunity for the public to provide input to the plan before it is adopted. Additionally, the public hearing provides an opportunity for the City's customers, residents, and employees to learn and ask questions about the current and future water supply of the City.

10.2.1 Notice to Cities and Counties

The cities and counties to which the City provides water supplies, as shown in Table 10-1, were provided 60 day notification (prior to the public hearing) that the City is in process of preparing the 2015 UWMP. The 60 Day Notification letters are included in Appendix A. The cities and counties were provided a notice of public hearing, including the time and location. The notice of public hearing to cities and counties is included in Appendix A.

10.2.2 Notice to the Public

The Urban Water Management Planning Act (UWMPA) requires that the UWMP show the water agency solicited public participation. The notice to the public is to be included in a local newspaper as prescribed in Government Code 6066. This notice will include the time and location of the public hearing, in addition to the location of where the UWMP is available for public inspection. The notice of public hearing to the public is included in Appendix A.

On August 2, 2016 and August 9, 2016, the City placed a notice in the Redding Record Searchlight (local newspaper) stating that its UWMP was being updated and that a public hearing would be conducted to address comments and concerns from members of the community. The notice stated that a public review period would be scheduled through August 16, 2016.

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
City of Redding	☑	☑
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
Shasta County	☑	☑
NOTES: Shasta County refers to Shasta County Water Agency and Shasta County Public Works.		

The Draft 2015 UWMP is available for public inspection at the City of Shasta Lake City Hall, located at 1650 Stanton Drive, Shasta Lake Gateway Library, 1646 Stanton Drive, as well as the City's website (www.cityofshastalake.org).

10.2.3 Notice to Agencies and Organizations

The following agencies and organizations were provided notice that the City is in the process of preparing the 2015 UWMP:

- Anderson-Cottonwood Irrigation District
- Bella Vista Water District

The agencies and organizations were provided 60 day notification (prior to the public hearing) and a notice of public hearing, including the time and location. The 60 Day Notification letters are included in Appendix A and the notice of public hearing are included in Appendix A.

10.3 PUBLIC HEARING AND ADOPTION

The plan adoption by City Council is anticipated to occur at a public hearing on August 16, 2016. The City Resolution will be included in Appendix M of the Final UWMP. The hearing will provide an opportunity for the City's customers, residents, and employees to learn and ask questions about the current and future water supply of the City. At the hearing, the UWMP, water use targets, and conservation implementation plan will be discussed.

10.3.1 Adoption

After the public hearing, the 2015 UWMP shall be adopted as prepared or as modified after the hearing.

10.4 PLAN SUBMITTAL

The public hearing will be followed by submittal of the UWMP to the California Department of Water Resources (DWR), the California State Library, and Cities and Counties (see Commitment to Distribute in Appendix A).

10.4.1 Submission to DWR

The 2015 UWMP will be submitted to DWR within 30 days of adoption.

10.4.2 Electronic Data Submission

The 2015 UWMP, in addition to tabular data, will be submitted using WUEdata submittal tool.

10.4.3 Submission to the California State Library

The 2015 UWMP will be submitted in CD or hardcopy format to the California State Library within 30 days of adoption.

10.4.4 Submission to Cities and Counties

The 2015 UWMP, which includes the City's Water Shortage Contingency Plan, will be submitted in electronic format to cities and counties within 30 days of adoption.

10.5 PUBLIC AVAILABILITY

Within 30 days of submitting the UWMP to DWR, the adopted UWMP will be available for public review during normal business hours at the locations specified herein.

10.6 AMENDING AN ADOPTED UWMP

The plan may be updated at any time when the urban water supplier believes significant changes have occurred in population, land use, and/or water sources that may affect the contents of the plan. Copies of amendments or changes to the plan shall be submitted electronically to DWR, the California State Library, and any cities or counties which the City provides water supplies within 30 days of adoption.

Appendix A

OUTREACH DOCUMENTS

June 2, 2016

Anderson-Cottonwood Irrigation District
2810 Silver St.
Anderson, CA 96007

Attention: Stan Wangberg

Subject: **Notice of Preparation of the 2015 City of Shasta Lake Urban Water Management Plan**

Dear Stan:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 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 Section 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.

This letter is intended to notify your agency that the City of Shasta Lake (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the District's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in June/July 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the District in anticipation of the development of the 2015 UWMP, please submit written copies to:

Tony Thomasy
City of Shasta Lake
Water Plant Superintendent
P.O. Box 777
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

June 2, 2016

Bella Vista Water District
11368 E. Stillwater Way
Redding, CA 96003

Attention: David Coxey

Subject: **Notice of Preparation of the 2015 City of Shasta Lake Urban Water Management Plan**

Dear David:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 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 Section 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.

This letter is intended to notify your agency that the City of Shasta Lake (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the District's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in June/July 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the District in anticipation of the development of the 2015 UWMP, please submit written copies to:

Tony Thomasy
City of Shasta Lake
Water Plant Superintendent
P.O. Box 777
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

June 2, 2016

City of Redding
777 Cypress Ave.
Redding, CA 96001

Attention: Brian Crane

Subject: **Notice of Preparation of the 2015 City of Shasta Lake Urban Water Management Plan**

Dear Brian:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 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 Section 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.

This letter is intended to notify your agency that the City of Shasta Lake (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the District's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in June/July 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the District in anticipation of the development of the 2015 UWMP, please submit written copies to:

Tony Thomasy
City of Shasta Lake
Water Plant Superintendent
P.O. Box 777
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

June 2, 2016

Shasta County Public Works
1855 Placer St.
Redding, CA 96001

Attention: Eric Wedemeyer

Subject: **Notice of Preparation of the 2015 City of Shasta Lake Urban Water Management Plan**

Dear Eric:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 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 Section 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.

This letter is intended to notify your agency that the City of Shasta Lake (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the District's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in June/July 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the District in anticipation of the development of the 2015 UWMP, please submit written copies to:

Tony Thomasy
City of Shasta Lake
Water Plant Superintendent
P.O. Box 777
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

June 2, 2016

Shasta County Water Agency
1855 Placer St.
Redding, CA 96001

Attention: Pat Minturn

Subject: **Notice of Preparation of the 2015 City of Shasta Lake Urban Water Management Plan**

Dear Pat:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 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 Section 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.

This letter is intended to notify your agency that the City of Shasta Lake (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the District's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in June/July 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the District in anticipation of the development of the 2015 UWMP, please submit written copies to:

Tony Thomasy
City of Shasta Lake
Water Plant Superintendent
P.O. Box 777
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

June 2, 2016

U.S. Bureau of Reclamation
16349 Shasta Dam Blvd.
Shasta Lake, CA 96019

Attention: Federico Barajas

Subject: **Notice of Preparation of the 2015 City of Shasta Lake Urban Water Management Plan**

Dear Federico:

Pursuant to the requirements of the California Water Code, Division 6, Part 2.6 Urban Water Management Planning, Section 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 Section 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.

This letter is intended to notify your agency that the City of Shasta Lake (City) is in process of preparing the 2015 Urban Water Management Plan (UWMP). Based on the District's current schedule, we expect to have a public review draft of the 2015 UWMP available for review in June/July 2016, at which point your agency will receive a notification letter that the draft UWMP is available for public review.

If your agency would like to submit comments or provide input to the District in anticipation of the development of the 2015 UWMP, please submit written copies to:

Tony Thomasy
City of Shasta Lake
Water Plant Superintendent
P.O. Box 777
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

July 18, 2016

Anderson-Cottonwood Irrigation District
2810 Silver St.
Anderson, CA 96007

Attention: Stan Wangberg

Subject: **Public Hearing Notice**

Dear Stan:

Pursuant to the California Water Code section 10642, the City Council of the City of Shasta Lake will conduct a Public Hearing to take testimony regarding the adoption of the updated Urban Water Management Plan for the City of Shasta Lake. The hearing is scheduled for August 16, 2016 at 6 pm or as soon thereafter as possible on the following in the council chambers at the Council Chambers 4488 Red Bluff Street, Shasta Lake. A copy of the Urban Water Management Plan can be reviewed by visiting the City's web site at http://www.cityofshastalake.org. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 275-7407. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. Council Chambers are handicapped accessible.

For questions concerning the document, please contact:
Tony Thomasy
City of Shasta Lake
tthomasy@cityofshastalake.org
Phone: (530)-275-7488

Written comments are requested by the close of business on August 1, 2016.
Send written comments to:
Urban Water Management Plan
c/o Tony Thomasy
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

July 18, 2016

Bella Vista Water District
11368 E. Stillwater Way
Redding, CA 96003

Attention: David Coxey

Subject: **Public Hearing Notice**

Dear David:

Pursuant to the California Water Code section 10642, the City Council of the City of Shasta Lake will conduct a Public Hearing to take testimony regarding the adoption of the updated Urban Water Management Plan for the City of Shasta Lake. The hearing is scheduled for August 16, 2016 at 6 pm or as soon thereafter as possible on the following in the council chambers at the Council Chambers 4488 Red Bluff Street, Shasta Lake. A copy of the Urban Water Management Plan can be reviewed by visiting the City's web site at http://www.ci.shasta-lake.ca.us/. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 275-7407. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. Council Chambers are handicapped accessible.

For questions concerning the document, please contact:
Tony Thomasy
City of Shasta Lake
tthomasy@cityofshastalake.org
Phone: (530)-275-7488

Written comments are requested by the close of business on August 1, 2016.
Send written comments to:
Urban Water Management Plan
c/o Tony Thomasy
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

July 18, 2016

City of Redding
777 Cypress Ave.
Redding, CA 96001

Attention: Brian Crane

Subject: **Public Hearing Notice**

Dear Brian:

Pursuant to the California Water Code section 10642, the City Council of the City of Shasta Lake will conduct a Public Hearing to take testimony regarding the adoption of the updated Urban Water Management Plan for the City of Shasta Lake. The hearing is scheduled for August 16, 2016 at 6 pm or as soon thereafter as possible on the following in the council chambers at the Council Chambers 4488 Red Bluff Street, Shasta Lake. A copy of the Urban Water Management Plan can be reviewed by visiting the City's web site at http://www.ci.shasta-lake.ca.us/. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 275-7407. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. Council Chambers are handicapped accessible.

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Phone: (530)-275-7488

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Send written comments to:
Urban Water Management Plan
c/o Tony Thomasy
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

July 18, 2016

Shasta County Public Works
1855 Placer St.
Redding, CA 96001

Attention: Eric Wedemeyer

Subject: **Public Hearing Notice**

Dear Eric:

Pursuant to the California Water Code section 10642, the City Council of the City of Shasta Lake will conduct a Public Hearing to take testimony regarding the adoption of the updated Urban Water Management Plan for the City of Shasta Lake. The hearing is scheduled for August 16, 2016 at 6 pm or as soon thereafter as possible on the following in the council chambers at the Council Chambers 4488 Red Bluff Street, Shasta Lake. A copy of the Urban Water Management Plan can be reviewed by visiting the City's web site at http://www.ci.shasta-lake.ca.us/. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 275-7407. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. Council Chambers are handicapped accessible.

For questions concerning the document, please contact:
Tony Thomasy
City of Shasta Lake
tthomasy@cityofshastalake.org
Phone: (530)-275-7488

Written comments are requested by the close of business on August 1, 2016.
Send written comments to:
Urban Water Management Plan
c/o Tony Thomasy
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

July 18, 2016

Shasta County Water Agency
1855 Placer St.
Redding, CA 96001

Attention: Pat Minturn

Subject: **Public Hearing Notice**

Dear Pat:

Pursuant to the California Water Code section 10642, the City Council of the City of Shasta Lake will conduct a Public Hearing to take testimony regarding the adoption of the updated Urban Water Management Plan for the City of Shasta Lake. The hearing is scheduled for August 16, 2016 at 6 pm or as soon thereafter as possible on the following in the council chambers at the Council Chambers 4488 Red Bluff Street, Shasta Lake. A copy of the Urban Water Management Plan can be reviewed by visiting the City's web site at http://www.ci.shasta-lake.ca.us/. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 275-7407. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. Council Chambers are handicapped accessible.

For questions concerning the document, please contact:
Tony Thomasy
City of Shasta Lake
tthomasy@cityofshastalake.org
Phone: (530)-275-7488

Written comments are requested by the close of business on August 1, 2016.
Send written comments to:
Urban Water Management Plan
c/o Tony Thomasy
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

July 18, 2016

U.S. Bureau of Reclamation
16349 Shasta Dam Blvd.
Shasta Lake, CA 96019

Attention: Federico Barajas

Subject: **Public Hearing Notice**

Dear Federico:

Pursuant to the California Water Code section 10642, the City Council of the City of Shasta Lake will conduct a Public Hearing to take testimony regarding the adoption of the updated Urban Water Management Plan for the City of Shasta Lake. The hearing is scheduled for August 16, 2016 at 6 pm or as soon thereafter as possible on the following in the council chambers at the Council Chambers 4488 Red Bluff Street, Shasta Lake. A copy of the Urban Water Management Plan can be reviewed by visiting the City's web site at http://www.ci.shasta-lake.ca.us/. Interested persons are invited to attend. In compliance with the ADA, if you need assistance to participate in this meeting, you should contact the City Clerk at 275-7407. Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to assure accessibility to this meeting. Council Chambers are handicapped accessible.

For questions concerning the document, please contact:
Tony Thomasy
City of Shasta Lake
tthomasy@cityofshastalake.org
Phone: (530)-275-7488

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Send written comments to:
Urban Water Management Plan
c/o Tony Thomasy
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Sincerely,

CITY OF SHASTA LAKE

Tony Thomasy
Water Plant Superintendent

cc: Nicola Fontaine, Carollo Engineers, Inc.

Commitment to Distribute the 2015 Urban Water Management Plan (UWMP)

The documentation currently included in these appendices satisfies California Water Code (CWC) parts 10621(b) and 10642.

Two other sections of the CWC specify UWMP documentation that must take place after the submission of the supplier's UWMP to the California Department of Water Resources (DWR). These parts are as follows:

- Part 10644(a), requiring documentation that within 30 days of submitting the UWMP to DWR, the adopted UWMP has been or will be submitted to the California State Library and any city or county to which the supplier provides water.
- Part 10645, requiring documentation that the supplier will make the UWMP available for public review no later than 30 days after submission to DWR.

In order to satisfy these requirements, the City will perform the following actions:

- The City will submit its 2015 UWMP to DWR.
- The City will send a printed or electronic copy of its 2015 UWMP to the California State Library and to the cities and counties within which it provides water. The City will do this within 30 days from filing with DWR.
- The City will make their 2015 UWMP available for public review within 30 days from filing with DWR.

Appendix B

CLIMATE CHANGE VULNERABILITY ASSESSMENT

The Climate Change Vulnerability Assessment is taken from the Climate Change Handbook for Regional Water Planning, USEPA and DWR, 2011. The vulnerability assessment highlights those water-related resources that are important to a region and are sensitive to climate change.

I. Water Demand

☒ *Are there major industries that require cooling/process water in your planning region?*

- As average temperatures increase, cooling water needs may also increase.
- Identify major industrial water users in your region and assess their current and projected needs for cooling and process water.

☒ *Does water use vary by more than 50% seasonally in parts of your region?*

- Seasonal water use, which is primarily outdoor water use, is expected to increase as average temperatures increase and droughts become more frequent.
- Where water use records are available, look at total monthly water uses averaged over the last five years (if available). If maximum and minimum monthly water uses vary by more than 25%, then the answer to this question is "yes"
- Where no water use records exist, is crop irrigation responsible for a significant (say >50%) percentage of water demand in parts of your region?

☐ *Are crops grown in your region climate-sensitive? Would shifts in daily heat patterns, such as how long heat lingers before night-time cooling, be prohibitive for some crops?*

- Fruit and nut crops are climate-sensitive and may require additional water as the climate warms.

☐ *Do groundwater supplies in your region lack resiliency after drought events?*

- Droughts are expected to become more frequent and more severe in the future. Areas with a more hardened demand may be particularly vulnerable to droughts and may become more dependent on groundwater pumping.

☒ *Are water use curtailment measures effective in your region?*

- Droughts are expected to become more frequent and more severe in the future. Areas with a more hardened demand may be particularly vulnerable to droughts.

☐ *Are some instream flow requirements in your region either currently insufficient to support aquatic life, or occasionally unmet?*

- Changes in snowmelt patterns in the future may make it difficult to balance water demands. Vulnerabilities for ecosystems and municipal/agricultural water needs may be exacerbated by instream flow requirements that are:
    1. not quantified,
    2. not accurate for ecosystem needs under multiple environmental conditions including droughts, and
    3. not met by regional water managers.

II. Water Supply

☒ *Does a portion of the water supply in your region come from snowmelt?*

- Snowmelt is expected to decrease as the climate warms. Water systems supplied by snowmelt are therefore potentially vulnerable to climate change.
- Where watershed planning documents are available, refer to these in identifying parts of your region that rely on surface water for supplies; if your region contains surface water supplies originating in watersheds where snowpack accumulates, the answer to this question is "Yes."
- Where planning documents are not available, identify major rivers in your region with large users. Identify whether the river's headwaters are fed by snowpack.

☐ *Does part of your region rely on water diverted from the Delta, imported from the Colorado River, or imported from other climate-sensitive systems outside your region?*

- Some imported or transferred water supplies are sources from climate-sensitive watersheds, such as water imported from the Delta and the Colorado River.

☐ *Does part of your region rely on coastal aquifers? Has salt intrusion been a problem in the past?*

- Coastal aquifers are susceptible to salt intrusion as sea levels rise, and many have already observed salt intrusion due to over-extraction, such as the West Coast Basin in southern California.

☐ *Would your region have difficulty in storing carryover supply surpluses from year to year?*

- Droughts are expected to become more severe in the future. Systems that can store more water may be more resilient to droughts.

☒ *Has your region faced a drought in the past during which it failed to meet local water demands?*

- Droughts are expected to become more severe in the future. Systems that have already come close to their supply thresholds may be especially vulnerable to droughts in the future.

☐ *Does your region have invasive species management issues at your facilities, along conveyance structures, or in habitat areas?*

- As invasive species are expected to become more prevalent with climate change, existing invasive species issues may indicate an ecological vulnerability to climate change.

III. Water Quality

☒ *Are increased wildfires a threat in your region? If so, does your region include reservoirs with fire-susceptible vegetation nearby which could pose a water quality concern from increased erosion?*

- Some areas are expected to become more vulnerable to wildfires over time. To identify whether this is the case for parts of your region, the California Public Interest Energy Research (PIER)Program has posted wildfire susceptibility projections as a Google Earth application at: *http://cal-adapt.org/fire/*. These projections are only the results of a single study and are not intended for analysis, but can aid in qualitatively answering this question. Read the application's disclaimers carefully to be aware of its limitations.

☐ *Does part of your region rely on surface water bodies with current or recurrent water quality issues related to eutrophication, such as low dissolved oxygen or algal blooms? Are there other water quality constituents potentially exacerbated by climate change?*

- Warming temperatures will result in lower dissolved oxygen levels in water bodies, which are exacerbated by algal blooms and in turn enhance eutrophication. Changes in streamflows may alter pollutant concentrations in water bodies.

☐ *Are seasonal low flows decreasing for some waterbodies in your region? If so, are the reduced low flows limiting the waterbodies' assimilative capacity?*

- In the future, low flow conditions are expected to be more extreme and last longer. This may result in higher pollutant concentrations where loadings increase or remain constant.

☐ *Are there beneficial uses designated for some water bodies in your region that cannot always be met due to water quality issues?*

- In the future, low flows are expected decrease, and to last longer. This may result in higher pollutant concentrations where loadings increase or remain constant.

☐ *Does part of your region currently observe water quality shifts during rain events that impact treatment facility operation?*

- While it is unclear how average precipitation will change with temperature, it is generally agreed that storm severity will probably increase. More intense, severe storms may lead to increased erosion, which will increase turbidity in surface waters. Areas that already observe water quality responses to rainstorm intensity may be especially vulnerable.

IV. Sea Level Rise

☐ *Has coastal erosion already been observed in your region?*

- Coastal erosion is expected to occur over the next century as sea levels rise.

☐ *Are there coastal structures, such as levees or breakwaters, in your region?*

- Coastal structures designed for a specific mean sea level may be impacted by sea level rise.

☐ *Is there significant coastal infrastructure, such as residences, recreation, water and wastewater treatment, tourism, and transportation) at less than six feet above mean sea level in your region?*

- Coastal flooding will become more common, and will impact a greater extent of property, as sea levels rise. Critical infrastructure in the coastal floodplain may be at risk.
- Digital elevation maps should be compared with locations of coastal infrastructure.

☐ *Are there climate-sensitive low-lying coastal habitats in your region?*

- Low-lying coastal habitats that are particularly vulnerable to climate change include estuaries and coastal wetlands that rely on a delicate balance of freshwater and salt water.

☐ *Are there areas in your region that currently flood during extreme high tides or storm surges?*

- Areas that are already experiencing flooding during storm surges and very high tides, are more likely to experience increased flooding as sea levels rise.

☐ *Is there land subsidence in the coastal areas of your region?*

- Land subsidence may compound the impacts of sea level rise.

☐ *Do tidal gauges along the coastal parts of your region show an increase over the past several decades?*

- Local sea level rise may be higher or lower than state, national, or continental projections.
- Planners can find information on local tidal gauges at *http://tidesandcurrents.noaa.gov/sltrends/sltrends_states.shtml?region=ca*

V. Flooding

☐ *Does critical infrastructure in your region lie within the 200-year floodplain? DWR's best available floodplain maps are available at: http://www.water.ca.gov/floodmgmt/lrafmo/fmb/fes/best_available_maps/*

- While it is unclear how average precipitation will change with temperature, it is generally agreed that storm severity will probably increase. More intense, severe storms may lead to higher peak flows and more severe floods.
- Refer to FEMA floodplain maps and any recent FEMA, US Army Corps of Engineers, or DWR studies that might help identify specific local vulnerabilities for your region. Other follow-up questions that might help answer this question:

    1. What public safety issues could be affected by increased flooding events or intensity? For example, evacuation routes, emergency personnel access, hospitals, water treatment and wastewater treatment plants, power generation plants and fire stations should be considered.
    2. Could key regional or economic functions be impacted from more frequent and/or intense flooding?

☐ *Does part of your region lie within the Sacramento-San Joaquin Drainage District?*

- The SSJDD contains lands that are susceptible to overflows from the Sacramento and San Joaquin Rivers, and are a key focus of the Central Valley Flood Protection Plan. (*http://www.water.ca.gov/cvfmp/program.cfm*).

☐ *Does aging critical flood protection infrastructure exist in your region?*

- Levees and other flood protection facilities across the state of California are aging and in need of repair. Due to their overall lowered resiliency, these facilities may be particularly vulnerable to climate change impacts.
- DWR is evaluating more than 300 miles of levees in the San Joaquin and Sacramento Rivers Valleys and the Delta (*http://www.water.ca.gov/levees/*).

☐ *Have flood control facilities (such as impoundment structures) been insufficient in the past?*

- Reservoirs and other facilities with impoundment capacity may be insufficient for severe storms in the future. Facilities that have been insufficient in the past may be particularly vulnerable.

☒ *Are wildfires a concern in parts of your region?*

- Wildfires alter the landscape and soil conditions, increasing the risk of flooding within the burn and downstream areas. Some areas are expected to become more vulnerable to wildfires over time. To identify whether this is the case for parts of your region, the California Public Interest Energy Research Program (PIER) has posted wildfire susceptibility projections as a Google Earth application at: *http://cal-adapt.org/fire/*. These projections are the results of only a single study and are not intended for analysis, but can aid in qualitatively answering this question. Read the application's disclaimers carefully to be aware of its limitations.

VI. Ecosystem and Habitat Vulnerability

☐ *Does your region include inland or coastal aquatic habitats vulnerable to erosion and sedimentation issues?*

- Erosion is expected to increase with climate change, and sedimentation is expected to shift. Habitats sensitive to these events may be particularly vulnerable to climate change.

☐ *Does your region include estuarine habitats which rely on seasonal freshwater flow patterns?*

- Seasonal high and low flows, especially those originating from snowmelt, are already shifting in many locations.

☐ *Do climate-sensitive fauna or flora populations live in your region?*

- Some specific species are more sensitive to climate variations than others.

☐ *Do endangered or threatened species exist in your region? Are changes in species distribution already being observed in parts of your region?*

- Species that are already threatened or endangered may have a lowered capacity to adapt to climate change.

☒ *Does the region rely on aquatic or water-dependent habitats for recreation or other economic activities?*

- Economic values associated with natural habitat can influence prioritization.

☒ *Are there rivers in your region with quantified environmental flow requirements or known water quality/quantity stressors to aquatic life?*

- Constrained water quality and quantity requirements may be difficult to meet in the future.

☐ *Do estuaries, coastal dunes, wetlands, marshes, or exposed beaches exist in your region? If so, are coastal storms possible/frequent in your region?*

- Storm surges are expected to result in greater damage in the future due to sea level rise. This makes fragile coastal ecosystems vulnerable.

☐ *Does your region include one or more of the habitats described in the Endangered Species Coalition's Top 10 habitats vulnerable to climate change http://www.endangered.org/its-getting-hot-out-there/ ?*

- These ecosystems are particularly vulnerable to climate change.

☐ *Are there areas of fragmented estuarine, aquatic, or wetland wildlife habitat within your region? Are there movement corridors for species to naturally migrate? Are there infrastructure projects planned that might preclude species movement?*

- These ecosystems are particularly vulnerable to climate change.

VII. Hydropower

☒ *Is hydropower a source of electricity in your region?*

- As seasonal river flows shift, hydropower is expected to become less reliable in the future.

☐ *Are energy needs in your region expected to increase in the future? If so, are there future plans for hydropower generation facilities or conditions for hydropower generation in your region?*

- Energy needs are expected to increase in many locations as the climate warms. This increase in electricity demand may compound decreases in hydropower production, increasing its priority for a region.

SB X7-7 VERIFICATION FORM

SB X7-7 Table 0: Units of Measure Used in UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges			
Baseline	**Parameter**	**Value**	**Units**
10- to 15-year baseline period	2008 total water deliveries	2,853	Acre Feet
	2008 total volume of delivered recycled water	684	Acre Feet
	2008 recycled water as a percent of total deliveries	23.97%	Percent
	Number of years in baseline period[1, 2]	15	Years
	Year beginning baseline period range	1996	
	Year ending baseline period range[3]	2010	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2006	
	Year ending baseline period range[4]	2010	

[1] If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period. *[2] The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*

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

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

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population (may check more than one)	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population		
Year		**Population**
10 to 15 Year Baseline Population		
Year 1	1996	8,953
Year 2	1997	8,910
Year 3	1998	8,968
Year 4	1999	8,946
Year 5	2000	9,008
Year 6	2001	9,260
Year 7	2002	9,472
Year 8	2003	9,818
Year 9	2004	9,964
Year 10	2005	10,084
Year 11	*2006*	10,095
Year 12	*2007*	10,142
Year 13	*2008*	10,148
Year 14	*2009*	10,151
Year 15	*2010*	10,164
5 Year Baseline Population		
Year 1	2006	10,095
Year 2	2007	10,142
Year 3	2008	10,148
Year 4	2009	10,151
Year 5	2010	10,164
2015 Compliance Year Population		
2015		10,020
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *

Baseline Year *Fm SB X7-7 Table 3*		Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	Deductions					Annual Gross Water Use
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1996	2,713	54	-	-	-	-	2,658
Year 2	1997	2,561	47	-	-	-	-	2,514
Year 3	1998	2,470	43	-	-	-	-	2,427
Year 4	1999	2,810	55	-	-	-	-	2,755
Year 5	2000	2,760	56	-	-	-	-	2,705
Year 6	2001	2,917	58	-	-	-	-	2,859
Year 7	2002	3,181	140	-	-	-	-	3,042
Year 8	2003	3,079	57	-	-	-	-	3,022
Year 9	2004	3,369	16	-	-	-	-	3,353
Year 10	2005	3,187	48	-	-	-	-	3,139
Year 11	2006	3,305	29	-	-	-	-	3,276
Year 12	2007	3,029	28	-	-	-	-	3,001
Year 13	2008	2,903	31	-	-	-	-	2,872
Year 14	2009	3,028	37	-	-	-	-	2,991
Year 15	2010	2,572	22	-	-	-	-	2,550
10 - 15 year baseline average gross water use								**2,878**
5 Year Baseline - Gross Water Use								
Year 1	2006	3,305	29	-	-	-	-	3,276
Year 2	2007	3,029	28	-	-	-	-	3,001
Year 3	2008	2,903	31	-	-	-	-	2,872
Year 4	2009	3,028	37	-	-	-	-	2,991
Year 5	2010	2,572	22	-	-	-	-	2,550
5 year baseline average gross water use								**2,938**
2015 Compliance Year - Gross Water Use								
2015		1,679	-	-	-	-	-	**1,679**

* NOTE that the units of measure must remain consistent throughout the UWMP, as reported in Table 2-3

NOTES: Units of measure are acre-feet (AF). Source: Large Water System Annual Reports to the Drinking Water Program. Exported water as reported by the City for 2003 and 2005 to 2010.

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Complete one table for each source.

Name of Source	Shasta Lake
This water source is:	
☐	The supplier's own water source
☑	A purchased or imported source

Baseline Year *Fm SB X7-7 Table 3*		Volume Entering Distribution System	Meter Error Adjustment* *Optional (+/-)*	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1996	2,713	-	2,713
Year 2	1997	2,561	-	2,561
Year 3	1998	2,470	-	2,470
Year 4	1999	2,810	-	2,810
Year 5	2000	2,760	-	2,760
Year 6	2001	2,917	-	2,917
Year 7	2002	3,181	-	3,181
Year 8	2003	3,079	-	3,079
Year 9	2004	3,369	-	3,369
Year 10	2005	3,187	-	3,187
Year 11	2006	3,305	-	3,305
Year 12	2007	3,029	-	3,029
Year 13	2008	2,903	-	2,903
Year 14	2009	3,028	-	3,028
Year 15	2010	2,572	-	2,572
5 Year Baseline - Water into Distribution System				
Year 1	2006	3,305	-	3,305
Year 2	2007	3,029	-	3,029
Year 3	2008	2,903	-	2,903
Year 4	2009	3,028	-	3,028
Year 5	2010	2,572	-	2,572
2015 Compliance Year - Water into Distribution System				
2015		1,679	-	1,679

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES: Units are acre-feet (AF). Sources: Annual Report to the Drinking Water Program and AWWA Water Audit Wksht.

SB X7-7 Table 4-B: Indirect Recycled Water Use Deduction *(For use only by agencies that are deducting indirect recycled water)*

Baseline Year *Fm SB X7-7 Table 3*		Surface Reservoir Augmentation					Groundwater Recharge			**Total Deductible Volume of Indirect Recycled Water Entering the Distribution System**
		Volume Discharged from Reservoir for Distribution System Delivery	Percent Recycled Water	Recycled Water Delivered to Treatment Plant	Transmission/ Treatment Loss	Recycled Volume Entering Distribution System from Surface Reservoir Augmentation	Recycled Water Pumped by Utility*	Transmission/ Treatment Losses	Recycled Volume Entering Distribution System from Groundwater Recharge	
10-15 Year Baseline - Indirect Recycled Water Use										
Year 1	1996			-		-			-	-
Year 2	1997			-		-			-	-
Year 3	1998			-		-			-	-
Year 4	1999			-		-			-	-
Year 5	2000			-		-			-	-
Year 6	2001			-		-			-	-
Year 7	2002			-		-			-	-
Year 8	2003			-		-			-	-
Year 9	2004			-		-			-	-
Year 10	2005			-		-			-	-
Year 11	2006			-		-			-	-
Year 12	2007			-		-			-	-
Year 13	2008			-		-			-	-
Year 14	2009			-		-			-	-
Year 15	2010			-		-			-	-
5 Year Baseline - Indirect Recycled Water Use										
Year 1	2006			-		-			-	-
Year 2	2007			-		-			-	-
Year 3	2008			-		-			-	-
Year 4	2009			-		-			-	-
Year 5	2010			-		-			-	-
2015 Compliance - Indirect Recycled Water Use										
2015				-		-			-	-

**Suppliers will provide supplemental sheets to document the calculation for their input into "Recycled Water Pumped by Utility". The volume reported in this cell must be less than total groundwater pumped - See Methodology 1, Step 8, section 2.c.*

NOTES:

SB X7-7 Table 4-C: Process Water Deduction Eligibility *(For use only by agencies that are deducting process water) Choose Only One*	
☐	**Criteria 1**- Industrial water use is equal to or greater than 12% of gross water use. Complete SB X7-7 Table 4-C.1
☐	**Criteria 2** - Industrial water use is equal to or greater than 15 GPCD. Complete SB X7-7 Table 4-C.2
☐	**Criteria 3** - Non-industrial use is equal to or less than 120 GPCD. Complete SB X7-7 Table 4-C.3
☑	**Criteria 4** - Disadvantaged Community. Complete SB x7-7 Table 4-C.4
NOTES:	

SB X7-7 Table 4-C.1: Process Water Deduction Eligibility

Criteria 1

Industrial water use is equal to or greater than 12% of gross water use

Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction	Industrial Water Use	Percent Industrial Water	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1996	2,658		0%	NO
Year 2	1997	2,514		0%	NO
Year 3	1998	2,427		0%	NO
Year 4	1999	2,755		0%	NO
Year 5	2000	2,705		0%	NO
Year 6	2001	2,859		0%	NO
Year 7	2002	3,042		0%	NO
Year 8	2003	3,022		0%	NO
Year 9	2004	3,353		0%	NO
Year 10	2005	3,139		0%	NO
Year 11	2006	3,276		0%	NO
Year 12	2007	3,001		0%	NO
Year 13	2008	2,872		0%	NO
Year 14	2009	2,991		0%	NO
Year 15	2010	2,550		0%	NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2006	3,276		0%	NO
Year 2	2007	3,001		0%	NO
Year 3	2008	2,872		0%	NO
Year 4	2009	2,991		0%	NO
Year 5	2010	2,550		0%	NO
2015 Compliance Year - Process Water Deduction Eligiblity					
2015		1,679		0%	NO

NOTES:

SB X7-7 Table 4-C.2: Process Water Deduction Eligibility					
Criteria 2 Industrial water use is equal to or greater than 15 GPCD					
Baseline Year *Fm SB X7-7 Table 3*		Industrial Water Use	Population	Industrial GPCD	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility					
Year 1	1996		8,953	-	NO
Year 2	1997		8,910	-	NO
Year 3	1998		8,968	-	NO
Year 4	1999		8,946	-	NO
Year 5	2000		9,008	-	NO
Year 6	2001		9,260	-	NO
Year 7	2002		9,472	-	NO
Year 8	2003		9,818	-	NO
Year 9	2004		9,964	-	NO
Year 10	2005		10,084	-	NO
Year 11	2006		10,095	-	NO
Year 12	2007		10,142	-	NO
Year 13	2008		10,148	-	NO
Year 14	2009		10,151	-	NO
Year 15	2010		10,164	-	NO
5 Year Baseline - Process Water Deduction Eligibility					
Year 1	2006		10,095	-	NO
Year 2	2007		10,142	-	NO
Year 3	2008		10,148	-	NO
Year 4	2009		10,151	-	NO
Year 5	2010		10,164	-	NO
2015 Compliance Year - Process Water Deduction Eligibility					
2015			10,020	-	NO
NOTES:					

SB X7-7 Table 4-C.3: Process Water Deduction Eligibility							
Criteria 3 Non-industrial use is equal to or less than 120 GPCD							
Baseline Year *Fm SB X7-7 Table 3*		Gross Water Use Without Process Water Deduction *Fm SB X7-7 Table 4*	Industrial Water Use	Non-industrial Water Use	Population *Fm SB X7-7 Table 3*	Non-Industrial GPCD	**Eligible for Exclusion Y/N**
10 to 15 Year Baseline - Process Water Deduction Eligibility							
Year 1	1996	2,658		2,658	8,953	265	NO
Year 2	1997	2,514		2,514	8,910	252	NO
Year 3	1998	2,427		2,427	8,968	242	NO
Year 4	1999	2,755		2,755	8,946	275	NO
Year 5	2000	2,705		2,705	9,008	268	NO
Year 6	2001	2,859		2,859	9,260	276	NO
Year 7	2002	3,042		3,042	9,472	287	NO
Year 8	2003	3,022		3,022	9,818	275	NO
Year 9	2004	3,353		3,353	9,964	300	NO
Year 10	2005	3,139		3,139	10,084	278	NO
Year 11	2006	3,276		3,276	10,095	290	NO
Year 12	2007	3,001		3,001	10,142	264	NO
Year 13	2008	2,872		2,872	10,148	253	NO
Year 14	2009	2,991		2,991	10,151	263	NO
Year 15	2010	2,550		2,550	10,164	224	NO
5 Year Baseline - Process Water Deduction Eligibility							
Year 1	2006	3,276		3,276	10,095	290	NO
Year 2	2007	3,001		3,001	10,142	264	NO
Year 3	2008	2,872		2,872	10,148	253	NO
Year 4	2009	2,991		2,991	10,151	263	NO
Year 5	2010	2,550		2,550	10,164	224	NO
2015 Compliance Year - Process Water Deduction Eligiblity							
2015		1,679		1,679	10,020	150	NO
NOTES:							

SB X7-7 Table 4-C.4: Process Water Deduction Eligibility

Criteria 4

Disadvantaged Community. A "Disadvantaged Community" (DAC) is a community with a median household income less than 80 percent of the statewide average.

SELECT ONE

"Disadvantaged Community" status was determined using one of the methods listed below:

☐ **1. IRWM DAC Mapping tool**
http://www.water.ca.gov/irwm/grants/resources_dac.cfm

If using the IRWM DAC Mapping Tool, include a screen shot from the tool showing that the service area is considered a DAC.

☑ **2. 2010 Median Income**

	California Median Household Income		Service Area Median Household Income	Percentage of Statewide Average	**Eligible for Exclusion? Y/N**
2015 Compliance Year - Process Water Deduction Eligibility					
	2010	$60,883	$43,895	72%	YES

NOTES:

SB X7-7 Table 4-D: Process Water Deduction - Volume *Complete a separate table for each industrial customer with a process water exclusion*						
Name of Industrial Customer		*Industrial Customer 1*				
Baseline Year *Fm SB X7-7 Table 3*		Industrial Customer's Total Water Use	Total Volume Supplied by Water Agency	% of Water Supplied by Water Agency	Customer's Total Process Water Use	Volume of Process Water Eligible for Exclusion for this Customer
10 to 15 Year Baseline - Process Water Deduction						
Year 1	1996					-
Year 2	1997					-
Year 3	1998					-
Year 4	1999					-
Year 5	2000					-
Year 6	2001					-
Year 7	2002					-
Year 8	2003					-
Year 9	2004					-
Year 10	2005					-
Year 11	2006					-
Year 12	2007					-
Year 13	2008					-
Year 14	2009					-
Year 15	2010					-
5 Year Baseline - Process Water Deduction						
Year 1	2006					-
Year 2	2007					-
Year 3	2008					-
Year 4	2009					-
Year 5	2010					-
2015 Compliance Year - Process Water Deduction						
2015						-
NOTES:						

SB X7-7 Table 5: Gallons Per Capita Per Day (GPCD)				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Annual Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1996	8,953	2,658	265
Year 2	1997	8,910	2,514	252
Year 3	1998	8,968	2,427	242
Year 4	1999	8,946	2,755	275
Year 5	2000	9,008	2,705	268
Year 6	2001	9,260	2,859	276
Year 7	2002	9,472	3,042	287
Year 8	2003	9,818	3,022	275
Year 9	2004	9,964	3,353	300
Year 10	2005	10,084	3,139	278
Year 11	2006	10,095	3,276	290
Year 12	2007	10,142	3,001	264
Year 13	2008	10,148	2,872	253
Year 14	2009	10,151	2,991	263
Year 15	2010	10,164	2,550	224
10-15 Year Average Baseline GPCD				**267**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		Service Area Population *Fm SB X7-7 Table 3*	Gross Water Use *Fm SB X7-7 Table 4*	Daily Per Capita Water Use
Year 1	2006	10,095	3,276	290
Year 2	2007	10,142	3,001	264
Year 3	2008	10,148	2,872	253
Year 4	2009	10,151	2,991	263
Year 5	2010	10,164	2,550	224
5 Year Average Baseline GPCD				**259**
2015 Compliance Year GPCD				
2015		10,020	1,679	**150**

NOTES: Units of measure are acre-feet (AF).

SB X7-7 Table 6: Gallons per Capita per Day *Summary From Table SB X7-7 Table 5*	
10-15 Year Baseline GPCD	267
5 Year Baseline GPCD	259
2015 Compliance Year GPCD	150
NOTES: Units are gallons per capita per day (GPCD).	

SB X7-7 Table 7: 2020 Target Method *Select Only One*		
Target Method		Supporting Documentation
☐	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☑	Method 4	Method 4 Calculator
NOTES:		

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	**2020 Target GPCD**
267	**214**
NOTES: Units are gallons per capita per day (GPCD).	

SB X7-7 Table 7-B: Target Method 2 Target Landscape
Water Use

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or gwen.huff@water.ca.gov

SB X7-7 Table 7-C: Target Method 2

Target CII Water Use

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or gwen.huff@water.ca.gov

SB X7-7 Table 7-D: Target Method 2 Summary

Tables for Target Method 2 (SB X7-7 Tables 7-B, 7-C, and 7-D) are not included in the SB X7-7 Verification Form, but are still required for water suppliers using Target Method 2. These water suppliers should contact Gwen Huff at (916) 651-9672 or gwen.huff@water.ca.gov

SB X7-7 Table 7-E: Target Method 3				
Agency May Select More Than One as Applicable	Percentage of Service Area in This Hydrological Region	Hydrologic Region	"2020 Plan" Regional Targets	Method 3 Regional Targets (95%)
☐		North Coast	137	130
☐		North Lahontan	173	164
☑	100%	Sacramento River	176	167
☐		San Francisco Bay	131	124
☐		San Joaquin River	174	165
☐		Central Coast	123	117
☐		Tulare Lake	188	179
☐		South Lahontan	170	162
☐		South Coast	149	142
☐		Colorado River	211	200
Target *(If more than one region is selected, this value is calculated.)*				**167**

NOTES: Units are gallons per capita per day (GPCD).

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target			
5 Year Baseline GPCD *From SB X7-7 Table 5*	Maximum 2020 Target[1]	Calculated 2020 Target[2]	**Confirmed 2020 Target**
259	246	215	**215**

[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD *[2] 2020 Target is calculated based on the selected Target Method, see SB X7-7 Table 7 and corresponding tables for agency's calculated target.*

NOTES: Units are gallons per capita per day (GPCD).

SB X7-7 Table 8: 2015 Interim Target GPCD		
Confirmed 2020 Target *Fm SB X7-7 Table 7-F*	10-15 year Baseline GPCD *Fm SB X7-7 Table 5*	**2015 Interim Target GPCD**
215	267	**241**
NOTES: Units are gallons per capita per day (GPCD).		

SB X7-7 Table 9: 2015 Compliance								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)* Enter "0" if Adjustment Not Used: Extraordinary Events	Weather Normalization	Economic Adjustment	TOTAL Adjustments	Adjusted 2015 GPCD	2015 GPCD *(Adjusted if applicable)*	**Did Supplier Achieve Targeted Reduction for 2015?**
150	241	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	*From Methodology 8 (Optional)*	-	150	150	**YES**

NOTES: Units are gallons per capita per day (GPCD).

Appendix D

CALCULATING PROVISIONAL METHOD 4 URBAN WATER USE TARGETS

User Input -- Provisional Method 4 Target

Target Calculation Option (select one): * Calculate Targets Using Default Indoor Residential Savings

* = Required Data

Water Supplier Name: * City of Shasta Lake

10-15 Year Baseline Water Use Information

Baseline Period: * 1996-2010

Midpoint of Baseline Period: 2003

Baseline Water Use GPCD: * 267.0

Population in Midpoint Year: * 9,818

5 Year Baseline Water Use Information

Baseline Period: * 2006-2010

Baseline Water Use GPCD: * 259.0

95% of 5-Year Baseline GPCD: 246.1

Unmetered Connections

Number of Unmetered Connections in 2003: * 0

Water Use By Unmetered Connections In 2003: * 0 Acre-Feet

Baseline CII Water Use[1]

CII Water Use in 2003: * 518 Acre-Feet

Per Capita Use: 47.1 GPCD

[1]CII = Commercial, Industrial, Institutional.

If you have chosen to calculate targets using the Default Indoor Residential Savings, you do not need to complete the remaining tables.
Go to the "Calculated Targets" worksheet.

Optional Data Needed to Calculate Targets Using the Indoor Residential Savings Calculators

NOTE: You only need to complete the tables below if you have chosen to calculate targets using the indoor residential savings calculators.
The data you enter here is used to calculate the 2020 water saving values for residential toilets, washers, and showerheads.
If you are using the Default Indoor Residential Savings you do not need to enter this data.

Persons and Plumbing Fixtures Per Household

Units Per Household:	Single Family	Multi Family
Persons		
Toilets		
Showers		

The table below shows average shower and toilet counts per household for major metropolitan areas. The table is based on 2003 data published by the American Housing Survey.

SMSA Code	SMSA name	Single Family		Multi Family	
		Showers	Toilets	Showers	Toilets
360	Anaheim-Santa Ana	1.92	2.33	1.25	1.44
680	Bakersfield	1.64	1.96	1.38	1.48
2840	Fresno	1.62	1.91	1.19	1.29
4480	Los Angeles-Long Beach	1.58	1.93	1.19	1.34
5170	Modesto	1.79	1.99	1.23	1.58
5775	Oakland	1.77	2.07	1.17	1.36
6000	Oxnard-Ventura	1.87	2.22	1.16	1.37
6780	Riverside-San Bernardino	1.81	2.05	1.37	1.51
6920	Sacramento	1.69	1.99	1.14	1.21
7120	Salinas-Seaside-Monterey	1.72	2.09	1.00	1.15
7320	San Diego	1.92	2.21	1.25	1.39
7360	San Francisco	1.79	2.20	1.15	1.25
7400	San Jose	1.98	2.33	1.24	1.39
7480	Santa Barbara-Santa Maria-Lompoc	1.60	1.80	1.00	1.10
7500	Santa Rosa-Petaluma	2.26	2.43	1.00	1.20
8120	Stockton	1.58	1.87	1.11	1.11
8720	Vallejo-Fairfield-Napa	1.91	2.31	1.11	1.26
	CA urban average	1.75	2.08	1.20	1.35

Residential Housing Units

Year		Single Family	Multi Family
1991			
1992			
1993			
1994			
1995			
1996			
1997			
1998			
1999			
2000			
2001			
2002			
2003			
2004	Row Not Used -->		
2005	Row Not Used -->		

Imputed Service Area Population 2003

NOTE: If imputed service area population differs by more than 5% from the service area population entered above, you should revise your persons per household or dwelling unit estimates.

Enter Group Quarters Population in 2003:		*(estimate using census data)*
Imputed Single Family Population in 2003:	0	*(persons per household x dwelling units)*
Imputed Multi Family Population in 2003:	0	*(persons per household x dwelling units)*
Imputed Service Area Population in 2003:	0	

Service Area Population Entered Above: 9,818

WARNING: Imputed service area population differs from service area population you entered above by more than 5%!

Toilet Saturation In 2003

NOTE: You can enter toilet saturation levels in 2003 or let the model calculate them. Select which method the calculator should use.

Toilet Saturation Estimation Option (select one): 1. Enter my own saturation estimates

OPTION 1: Complete the following table if you selected Option 1 -- Enter my own saturation estimate.

	Estimated % of Toilets in 2003 by Flush Volume				
	5 gpf	3.5 gpf	1.6 gpf	1.28 gpf	Total
Single Family					0.0%
Multi Family					0.0%

How was saturation estimated?

{Use this field to describe how toilet saturation was estimated}

WARNING: Saturation does not sum to 100%!

OPTION 2: Complete the following table if you selected Option 2 -- Have calculator estimate saturation.

	Conservation Program Toilet Replacements			
	Single Family		Multi Family	
Year	ULFT	HET	ULFT	HET
1991				
1992				
1993				
1994				
1995				
1996				
1997				
1998				
1999				
2000				
2001				
2002				
2003				
2004				
2005				

Showerhead Saturation In 2003

NOTE: You can enter showerhead saturation levels in 2003 or let the model calculate them. Select which method the calculator should use.

Showerhead Saturation Estimation Option (select one): 1. Enter my own saturation estimates

OPTION 1: Complete the following table if you selected Option 1 -- Enter my own saturation estimate.

	LF	Non LF	Total
Estimated % of Low Flow Showerheads in Residential Homes in 2003:		100.0%	100.0%

How was saturation estimated?

{Use this field to describe how showerhead saturation was estimated}

OPTION 2: Complete the following table if you selected Option 2 -- Have calculator estimate saturation.

Year	*Number of Residential Showerheads Distributed/Installed*
1991	
1992	
1993	
1994	
1995	
1996	
1997	
1998	
1999	
2000	
2001	
2002	
2003	
2004	
2005	

Clothes Washer Average Water Factor (WF) In 2003

NOTE: You can enter average WF for residential clothes washers in 2003 or let the model calculate it. Select which method the calculator should use.

Clothes Washer WF Estimation Option (select one): 1. Enter my own WF estimate

OPTION 1: Complete the following table if you selected Option 1 -- Enter my own WF estimate.

How was average WF estimated?

	Single Family	Multi Family
Average clothes washer WF in 2003:		

{Use this field to describe how average WF was estimated}

OPTION 2: Complete the following table if you selected Option 2 -- Have calculator estimate the average WF.

Number of Clothes Washer Incentives by WF

Year	8.5-9.5 WF	6.0-8.5 WF	< 6.0 WF
1999			
2000			
2001			
2002			
2003			
2004			
2005			

Target Calculation -- Provisional Method 4 Target

Step 1. Calculation of Landscape Water Use and System Water Loss

Urban Supplier	1996-2010 Baseline GPCD	—	Assumed Indoor Residential per Capita Water Use GPCD	—	CII per Capita Water Use GPCD	=	Estimated Landscape Water Use and System Water Loss GPCD
City of Shasta Lake	267.0		70.0		47.1		149.9

Step 2. Calculation of Savings Using BMP Calculators

(Alternate) STEP 2 BEING USED TO CALCULATE TARGET

Urban Supplier	Indoor Residential Savings Calculators					+	Metering Savings BMP 1.3	+	CII Savings BMP 4	+	Land-scape + Water Loss Savings 21.6%	=	Total Savings GPCD
	Single Family Toilets	Multi Family Toilets	Resi-dential Washers	Resi-dential Showers	Total IR Savings								
City of Shasta Lake	XXXX	XXXX	XXXX	XXXX	XXXX		XXXX		XXXX		XXXX		XXXX

(Alternate) Step 2. Calculation of Savings Using Default Indoor Residential Savings

Urban Supplier	Default Resi-dential Indoor Savings	+	Metering Savings BMP 1.3	+	CII Savings BMP 4	+	Land-scape + Water Loss Savings 21.6%	=	(alt) Total Savings GPCD
City of Shasta Lake	15.0		0.0		4.7		32.4		52.1

Step 3. Calculation of Urban Water Use Targets

Urban Supplier	1996-2010 Baseline GPCD	—	Total Savings GPCD	=	**Computed 2020 Target GPCD**	⇒	**Less Than 95% of 5-Year Baseline**	⇒	**Final 2020 Target**	⇒	**Final 2015 Target**
City of Shasta Lake	267.0		52.1		**214.9**		**TRUE**		**214.9**		**241.0**

BMP 1.3 Metering Savings Calculator

Water Supplier: City of Shasta Lake

Color Key

User Input
Model Assumption
Model Calculation

Midpoint of Base Period:	2003	
Service Area Pop. In 2003:	9,818	
Unmetered Connections in 2003:	0	
Deliveries to Unmetered Connections 2003 (AF):	0	
Deliveries/Connection (GPD):	0	
Meter Savings (%):	20%	*<<From Exhibit 1 of MOU*
Savings Per Connection (GPD):	0	
Total Savings (MGD):	0.00	
GPCD Savings:	0.00	

BMP 4 CII Savings Calculator

Water Supplier: City of Shasta Lake

Color Key

User Input
Model Assumption
Model Calculation

Midpoint of Base Period:	2003	
Service Area Pop. In 2003:	9,818	
Baseline CII Use (AF)	518	
CII Savings (%):	10%	*<< MOU Exhibit 1*
Total Savings (MGD):	0.05	
GPCD Savings:	4.71	

Single Family Toilet Savings Calculator

Water Supplier: City of Shasta Lake

Color Key

User Input
Model Assumption
Model Calculation

Midpoint of Base Period: 2001
Service Area Pop. In 2001: 9,810

SF Dwelling Units in 2003: 0
Persons Per Household: 0.00
Toilets Per Household: 0.00
Per Capita Flush Rate (Flushes/Person/Day): 5.00 <=REU-WS
Natural Replacement (%/Yr): 4% <=SWP database default assumption
ULFT Free Rider Rate (% Distributed): 25% <=SWP database default assumption

Distribution of Toilet Stock

	% by Flush Volume (Gal)					Ave
Year	5.00	3.50	1.60	1.28	Total	Flush Vol.
User Estimates	0.0%	0.0%	0.0%	0.0%	0.0%	0.00
Calculator Estimates	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2030	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Based on User Estimates >>

Savings Per Flush (Gal): #DIV/0!
Total Savings (MGD): #DIV/0!

G/PCD Savings: #DIV/0!

Default Estimated Toilet Distribution in 2003

	SF		Toilets at Start of Year						ULFT Proeram						HET Proeram						Natural Replacement						New Construction						Toilets at End of Year						% of Toilets by Flush Volume					
			% by Flush Volume in 1991						Program						Program																													
			50%	50%	0%	0%																																						
Year	Dwellings	Toilets	5.00	3.50	1.60	1.28	Total		Toilets	5.00	3.50	1.60	1.28		Toilets	5.00	3.50	1.60	1.28		Toilets	5.00	3.50	1.60	1.28		Toilets	5.00	3.50	1.60	1.28		5.00	3.50	1.60	1.28	Total	5.00	3.50	1.60	1.28	Total
1991	0	0	0	0	0	0	0		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1992	0	0	#DIV/0!	#DIV/0!	0	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1993	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1994	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1995	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1996	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2000	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2001	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2002	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2003	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2004	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2005	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!		0	#DIV/0!	#DIV/0!	0	0		0	#DIV/0!	#DIV/0!	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0		0	0	0	0	0		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Base Period Midpoint

Multi Family Toilet Savings Calculator

Water Supplier: City of Shasta Lake

Color Key

User Input
Model Assumptions
Model Calculations

Midpoint of Base Period: 2002
Service Area Pop. in 2000: 9,018

MF Dwelling Units in 2000: 0
Persons Per Household: 0.0
Toilets Per Household: 0
Per Capita Flush Rate (Flushes/Person/Day): 5.00 <<REVUWS
Natural Replacement (N/Yr): 4% <<BMP database default assumption
ULFT Free Rider Rate (%Distributed): 20% <<BMP database default assumption

Distribution of Toilet Stock

	% by Flush Volume (Gal)					Ave
Year	5.00	3.50	1.60	1.28	Total	Flush Vol.
2001	0.0%	0.0%	0.0%	0.0%	0.0%	0.00
2003	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2020	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Based on User Estimates >>

Savings Per Flush (Gal): #DIV/0!
Total Savings (MGD): #DIV/0!

GPCD Savings: #DIV/0!

Default Estimated Toilet Distribution in 2003

Year	MF Dwelling Units	Toilets	Toilets at Start of Year: % by Flush Volume in 1991: 50% 5.00	50% 3.50	0% 1.60	0% 1.28	Total	ULFT Program: Toilets	5.00	3.50	1.60	1.28	HET Program: Toilets	5.00	3.50	1.60	1.28	Natural Replacement: Toilets	5.00	3.50	1.60	1.28	New Construction: Toilets	5.00	3.50	1.60	1.28	Toilets at End of Year: 5.00	3.50	1.60	1.28	Total	% of Toilets by Flush Volume: 5.00	3.50	1.60	1.28	Total
1991	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	0	0	0	#DIV/0!	#DIV/0!	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1992	0	0	#DIV/0!	#DIV/0!	0	0	#DIV/0!	0	#DIV/0!	#DIV/0!	0	0	0	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	0	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1993	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1994	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1995	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1996	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1997	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1998	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
1999	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2000	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2001	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2002	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2003	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2004	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
2005	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	0	0	#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

Base Period Midpoint>

Residential Washer Savings Calculator

Water Supplier: City of Rhode Island

Color Key

Input Values
Model Assumptions
Model Calculations

Mid-point of Base Period	2015	
Service Area Pop. in 2020	4,000	
SF Pop. in 2020	3,000	*SF Units in SF PPH*
MF Pop. in 2020	1,000	*MF Units in MF PPH*
SF_PPH	3.00	
MF_PPH	2.00	
SF Dwelling Units with Washers (%)	90%	*U.S. Census Bureau, American Housing Survey, 2020 National Avg.*
Washer Natural Replacement (%/Yr)	5.56%	*2.56% SF default assumption*
1998-99 Avg Gal Per Cycle	40.0	*=RESAVE*
Avg Washer Capacity	3.5	*Industry average*
1998-99 Avg Water Factor	11.4	
Washer Free Rider Rate (% Would-Have-Bought)	10%	*10% SF default assumption*

Average Clothes Washer WF in 2035

	SF	MF
User Estimates	4.5	4.5
Calculator Estimates	#DIV/0!	#DIV/0!
	SF	MF
1998-99 Washer Use (GPCD)	11.4	11.4
2020 Washer Use (GPCD)	11.4	11.4
E-MF Washer Use (GPCD)	11.4	11.4

=If Estimated using RESAVE data on GPCD and PPH

<=Based on User Estimates

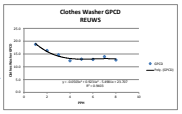
Total Washer Water Use (MGD)

	SF	MF
Aug 2020 WF	0.1	0.0
2014-16 WF, 15% Aug 2020 WF	0.1	0.0
GPCD Savings	0.0	0.0
Total Savings	0.0	

Base Period Midpoint

RESAVE Washer Use

PPH	GPCD
1	18.8
2	15.4
3	14.7
4	12.4
5	13.6
6	13.0
7	14.0
8	12.7



Default Estimated Washer Distribution in 2035

Year	SF Dwelling Units	SF Washers
2020	0	0
2021	0	0
2022	0	0
2023	0	0
2024	0	0
2025	0	0

Washers at Start of Year

By MF

0 UEF	0.1-0.5	0.6 - 0.7	>0.8	Total
0	0	0	0	0
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!

Washer Program

0.1-0.5 MF

Incentives	0 UEF	0.1-0.5	0.6 - 0.7	>0.8
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Washer Program

0.2-0.5 MF

Incentives	0 to 70	0.1-0.5	0.6 - 0.7	>0.8
0	#DIV/0!	#DIV/0!	0	0
0	#DIV/0!	#DIV/0!	0	0
0	#DIV/0!	#DIV/0!	0	0
0	#DIV/0!	#DIV/0!	0	0
0	#DIV/0!	#DIV/0!	0	0
0	#DIV/0!	#DIV/0!	0	0

Washer Program

> 0.6 MF

Incentives	0 to 70	0.1-0.5	0.6 - 0.7	>0.8
0	#DIV/0!	#DIV/0!	#DIV/0!	0
0	#DIV/0!	#DIV/0!	#DIV/0!	0
0	#DIV/0!	#DIV/0!	#DIV/0!	0
0	#DIV/0!	#DIV/0!	#DIV/0!	0
0	#DIV/0!	#DIV/0!	#DIV/0!	0
0	#DIV/0!	#DIV/0!	#DIV/0!	0

Assume 15% of washers convert to MEW with WF >= 8.5
Assume 5% converted to 0.5-9.5, 12% to 6.0-8.5
Source: Lit
Natural Replacement
Washers | 0 to 70 | 0.1-0.5 | 0.6 - 0.7 | >0.8
0 | #DIV/0! | #DIV/0! | #DIV/0! | 0
0 | #DIV/0! | #DIV/0! | #DIV/0! | 0
0 | #DIV/0! | #DIV/0! | #DIV/0! | 0
0 | #DIV/0! | #DIV/0! | #DIV/0! | 0
0 | #DIV/0! | #DIV/0! | #DIV/0! | 0
0 | #DIV/0! | #DIV/0! | #DIV/0! | 0

Assume 85% of washers are not HEW
Assume 15% of washers convert to HEW with WF >= 8.5
Assume 5% converted to 0.5-9.5, 12% to 6.0-8.5
Source: Lit
Code
Conversion
Washers | 0 to 70 | 0.1-0.5 | 0.6 - 0.7 | >0.8
0 | 0 | 0 | 0 | 0
0 | 0 | 0 | 0 | 0
0 | 0 | 0 | 0 | 0
0 | 0 | 0 | 0 | 0
0 | 0 | 0 | 0 | 0
0 | 0 | 0 | 0 | 0

Washers at End of Year

0 to 70	0.1-0.5	0.6 - 0.7	>0.8	Total
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	0	#DIV/0!

% of Washers by WF

0 to 70	0.1-0.5	0.6 - 0.7	>0.8	Total	Avg WF
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!
#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

MF: 0.0 0.0 0.0 0.0 0.0

UTGMCC Projected Water Demand Reductions Derived from DSC Proposed Water Factor Standards, January 21, 2016.

Residential Showerhead Savings Calculator

Water Supplier: City of Shasta Lake

Color Key

User Input
Model Assumption
Model Calculation

Midpoint of Base Period: 2003
Service Area Pop. In 2003: 9,818

	SF	MF
Avg Showers Per Household:	0.00	0.00

Showerhead Natural Replacement (%/Yr): 10% *<< CAUWCD Comp. Eval. Assumption*
Distributed Showerheads Installed (%): 55% *<<CUWCC BMP Database Default Assumption*

Shower Use, Non-LF Homes (GPCD): 13.3 *<<RIEUWS, Table 5.21*
Shower Use, LF Homes (GPCD): 8.8 *<<RIEUWS, Table 5.21*

LF Showerhead Saturation in 2003

User Estimates: 0.0%
Calculator Estimates: #DIV/0!

Total Residential Shower Water Use (MGD)

2003 % LF: 0.0 *<< Based on User Estimates*
95% LF, 5% Non-LF: 0.0

GPCD Savings: 0.0

Default Estimated Showerhead Distribution in 2003

Year	SF Dwelling Units	MF Dwelling Units	Residential Showers	Showerheads at Start of Year: Non-LF	LF	Total	Showerhead Program: Distributed	Non-LF	LF	Natural Replacement: Showers	Non-LF	LF	New Construction: Showers	Non-LF	LF	Showerheads at End of Year: Non-LF	LF	Total	% of Showerheads at End of Year: Non-LF	LF	Total
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1998	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
1999	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
2000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
2001	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
2002	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
Base Period Midpoint> 2003	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
2004	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	#DIV/0!	#DIV/0!	#DIV/0!

Model Parameters	
Landscape + Water Loss Savings (%)	21.6%
Default Indoor Use (gpcd)	70
Default Indoor Savings (gpcd)	15
Meter Savings (% of unmetered use)	20%
CII Savings (% of baseline CII use)	10%
Toilet Flushes Per Person Per Day	5.05
Toilet Natural Replacement Rate (%)	4%
Toilet Program Freerider Rate (%)	25%
5 gpf toilet saturation in 1991 (%)	50%
3.5 gpf toilet saturation in 1991 (%)	50%
ULF toilet saturation in 1991 (%)	0%
HET toilet saturation in 1991 (%)	0%
HET toilet saturation in 2020 (%)	85%
Pct of SF Households with Washers (%)	96%
Washer Natural Replacement Rate (%)	7.1%
Washer Water Use/Cycle 1998-99 (gal)	40.9
Average Washer Capacity (cu. ft.)	3.5
Washer Program Freerider Rate (%)	10%
Showerhead Natural Replacement (%)	10%
Showerhead Install Rate (%)	55%
LF Showerhead Use (GPCD)	8.8
Non LF Showerhead Use (GPCD)	13.3

Model Lists ------>>>

10-15 Year Baseline Period List	
1990-2004	
1991-2005	
1992-2006	
1993-2007	
1994-2008	
1995-2009	
1996-2010	
1991-2004	
1992-2005	
1993-2006	
1994-2007	
1995-2008	
1996-2009	
1997-2010	
1992-2004	
1993-2005	
1994-2006	
1995-2007	
1996-2008	
1997-2009	
1998-2010	
1993-2004	
1994-2005	
1995-2006	
1996-2007	
1997-2008	
1998-2009	
1999-2010	
1994-2004	
1995-2005	
1996-2006	
1997-2007	
1998-2008	
1999-2009	
2000-2010	
1995-2004	
1996-2005	
1997-2006	
1998-2007	
1999-2008	
2000-2009	
2001-2010	

Selected	7
Value	1996-2010
First Year	1996
Last Year	2010
Midpoint	2003

5-Year Baseline Period List	
2003-2007	
2004-2008	
2005-2009	
2006-2010	

Selected	4
Value	2006-2010

Target Calc Option List
Calculate Targets Using Indoor Residential Savings Calculators
Calculate Targets Using Default Indoor Residential Savings

Selected 2

Saturation Calc Option List
1. Enter my own saturation estimates
2. Have calculator estimate saturation

Toilet Selected 1
Showerhead Selected 1

Clothese Washer WF Calc Option List
1. Enter my own WF estimate
2. Have calculator estimate the average WF

WF Option Selected 1

Appendix E

WATER CONTRACTS AND AGREEMENTS

U-072-909-3 ?

John D.

United States Department of the Interior

BUREAU OF RECLAMATION
Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, California 95825-1898

IN REPLY
REFER TO:

MAR 07 2005

MP-440
WTR-4.00

City Council
City of Shasta Lake
P. O. Box 777
Shasta Lake, California 96019

Subject: Long-Term Renewal Contract No. 4-07-20-W1134-LTR1 Between the United States and the City of Shasta Lake (City) Providing for Project Water Service From the Shasta Division - Central Valley Project, California

Dear Council Members:

Enclosed is an executed original of the subject contract for your records. This contract is effective March 1, 2005, through February 28, 2045. The Bureau of Reclamation appreciates the effort expended by the City and its representatives relative to this contract.

If there are any questions, please contact Mr. Don Bultema, Supervisory Repayment Specialist, at 530-934-1361 (TDD 530-934-1345).

Sincerely,

Kirk C. Rodgers
Regional Director

Enclosure

cc: Mr. Walt McNeil
280 Hemsted Drive
Redding, California 96003
(w/c encl)

M&I Only
Contract No.
4-07-20-W1134-LTR1

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

LONG-TERM RENEWAL CONTRACT BETWEEN THE UNITED STATES AND CITY OF SHASTA LAKE PROVIDING FOR PROJECT WATER SERVICE FROM SHASTA DIVISION

Table of Contents

Table of Contents - continued

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
Central Valley Project, California

LONG-TERM RENEWAL CONTRACT BETWEEN THE UNITED STATES
AND
CITY OF SHASTA LAKE
PROVIDING FOR PROJECT WATER SERVICE
FROM SHASTA DIVISION

THIS CONTRACT, made this 25th day of February, 2005, in pursuance generally of the Act of June 17, 1902 (32 Stat. 388), and acts amendatory or supplementary thereto, including, but not limited to, the Acts of August 26, 1937 (50 Stat. 844), as amended and supplemented, August 4, 1939 (53 Stat. 1187), as amended and supplemented, July 2, 1956 (70 Stat. 483), June 21, 1963 (77 Stat. 68), October 12, 1982 (96 Stat. 1263), October 27, 1986 (100 Stat. 3050), as amended, and Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706), all collectively hereinafter referred to as Federal Reclamation law, between THE UNITED STATES OF AMERICA, hereinafter referred to as the United States, and CITY OF SHASTA LAKE, hereinafter referred to as the Contractor, an incorporated City of the State of California, duly organized, existing, and acting pursuant to the laws thereof;

WITNESSETH, That:

EXPLANATORY RECITALS

[1st] WHEREAS, the United States has constructed and is operating the Central Valley Project (Project), California, for diversion, storage, carriage, distribution and beneficial use, for flood control, irrigation, municipal, domestic, industrial, fish and wildlife mitigation, protection

and restoration, generation and distribution of electric energy, salinity control, navigation and other beneficial uses, of waters of the Sacramento River, the American River, the Trinity River, and the San Joaquin River and their tributaries; and

[2nd] WHEREAS, the United States constructed the Shasta Dam pumping facilities and the Toyon Pipeline, hereinafter collectively referred to as the Shasta Division facilities, which will be used in part for the furnishing of water to the Contractor pursuant to the terms of this Contract; and

[3rd] WHEREAS, the rights to Project Water were acquired by the United States pursuant to California law for operation of the Project; and

[4th] WHEREAS, the Contractor is the successor in interest by assignment of long term water service contracts designated Contract No. I1r-1515, originally entered with the United States on August 12, 1948, by the Shasta Dam Public Utility District, and amendatory Contract No. I1r-1523, entered with the United States on December 5, 1975, by the Summit City Public Utility District, which contracts were together subsumed in a single temporary contract that was renewed successively as Contract Nos. 8-07-20-W0715, 0-07-20-W0885, 2-07-20-W1024, and No. 4-07-20-W1134, that established terms for the delivery to the Contractor of Project Water from the Shasta Division facilities from August 22, 1988, through February 28, 1994; and

[5th] WHEREAS, the Contractor and the United States have pursuant to subsection 3404(c)(1) of the Central Valley Project Improvement Act (CVPIA), subsequently entered into interim renewal contract(s) identified as Contract No(s). 4-07-20-W1134, 4-07-20-W1134-IR2, 4-07-20-W1134-IR3, 4-07-20-W1134-IR4, 4-07-20-W1134-IR5, 4-07-20-W1134-IR6, 4-07-20-W1134-IR7, 4-07-20-W1134-IR8, 4-07-20-W1134-IR9, and 4-07-20-W1134-IR10, the current of which is hereinafter referred to as the "Existing Contract," which provided for the continued water service to the Contractor from March 1, 2004, through February, 28, 2006; and

[6th] WHEREAS, Section 3404(c) of the CVPIA provides for long-term renewal of the Existing Contract following completion of appropriate environmental documentation, including a

programmatic environmental impact statement (PEIS) pursuant to the National Environmental Policy Act (NEPA), analyzing the direct and indirect impacts and benefits of implementing the CVPIA and the potential renewal of all existing contracts for Project Water; and

[7th] WHEREAS, the United States has completed the PEIS and all other appropriate environmental review necessary to provide for long-term renewal of the Existing Contract; and

[8th] WHEREAS, the Contractor has requested the long-term renewal of the Existing Contract, pursuant to the terms of the Existing Contract, Federal Reclamation law, and the laws of the State of California, for water service from the Project; and

[9th] WHEREAS, the United States has determined that the Contractor has fulfilled all of its obligations under the Existing Contract; and

[10th] WHEREAS, the Contractor has demonstrated to the satisfaction of the Contracting Officer that the Contractor has utilized the Project Water supplies available to it for reasonable and beneficial use and, based upon a needs analysis cooperatively prepared by the Contracting Officer and the Contractor, has demonstrated projected future demand for water use that exceeds the Contract Total to be made available to it pursuant to this Contract; and

[11th] WHEREAS, water obtained from the Project has been relied upon by urban and agricultural areas within California for more than 50 years, and is considered by the Contractor as an essential portion of its water supply; and

[12th] WHEREAS, the economies of regions within the Project, including the Contractor's, depend upon the continued availability of water, including water service from the Project; and

[12.1] WHEREAS, Contractor has made and will continue to make substantial capital investments in diversion and treatment facilities, and requires a consistent, predictable quality of raw water in order to meet Safe Drinking Water Act requirements for its municipal customers, and to provide a consistent and predictable quality of water for its industrial customers; and

[13th] WHEREAS, the Secretary intends through coordination, cooperation, and partnerships to pursue measures to improve water supply, water quality, and reliability of the Project for all Project purposes; and

[13.1] WHEREAS, the Contractor is located in the region of the Redding Groundwater Basin, and it is the desire of both the United States and the Contractor to facilitate the cooperative efforts of local water service agencies to develop the Redding Groundwater Basin for conjunctive management and use with Project Water supplies, to maximize the reasonable beneficial use of water for the water service agencies and their customers in the region; and

[14th] WHEREAS, the mutual goals of the United States and the Contractor include: to provide for reliable Project Water supplies; to control costs of those supplies; to achieve repayment of the Project as required by law; to guard reasonably against Project Water shortages; to achieve a reasonable balance among competing demands for use of Project Water; and to comply with all applicable environmental statutes, all consistent with the legal obligations of the United States relative to the Project; and

[15th] WHEREAS, the parties intend by this Contract to develop a more cooperative relationship in order to achieve their mutual goals; and

[16th] WHEREAS, the United States and the Contractor are willing to enter into this Contract pursuant to Federal Reclamation law on the terms and conditions set forth below;

NOW, THEREFORE, in consideration of the mutual and dependent covenants herein contained, it is hereby mutually agreed by the parties hereto as follows:

DEFINITIONS

1. When used herein unless otherwise distinctly expressed, or manifestly incompatible with the intent of the parties as expressed in this Contract, the term:

(a) "Calendar Year" shall mean the period January 1 through December 31, both dates inclusive;

(b) "Charges" shall mean the payments required by Federal Reclamation law in addition to the Rates and Tiered Pricing Component specified in this Contract as determined annually by the Contracting Officer pursuant to this Contract;

(c) "Condition of Shortage" shall mean a condition respecting the Project during any Year such that the Contracting Officer is unable to deliver sufficient water to meet the Contract Total;

(d) "Contracting Officer" shall mean the Secretary of the Interior's duly authorized representative acting pursuant to this Contract or applicable Federal Reclamation law or regulation;

(e) "Contract Total" shall mean the maximum amount of water to which the Contractor is entitled under subdivision (a) of Article 3 of this Contract;

(f) "Contractor's Service Area" shall mean the area to which the Contractor is permitted to provide Project Water under this Contract as described in Exhibit "A" attached hereto, which may be modified from time to time in accordance with Article 35 of this Contract without amendment of this Contract;

(g) "CVPIA" shall mean the Central Valley Project Improvement Act, Title XXXIV of the Act of October 30, 1992 (106 Stat. 4706);

(h) Omitted;

(i) Omitted;

(j) "Full Cost Rate" shall mean an annual rate as determined by the Contracting Officer that shall amortize the expenditures for construction properly allocable to the Project irrigation or M&I functions, as appropriate, of facilities in service including all O&M deficits funded, less payments, over such periods as may be required under Federal Reclamation law, or applicable contract provisions. Interest will accrue on both the construction expenditures and funded O&M deficits from October 12, 1982, on costs outstanding at that date, or from the

date incurred in the case of costs arising subsequent to October 12, 1982, and shall be calculated in accordance with subsections 202(3)(B) and (3)(C) of the Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), as amended, hereinafter referred to as RRA. The Full Cost Rate includes actual operation, maintenance, and replacement costs consistent with Section 426.2 of the Rules and Regulations for the RRA;

(k) Omitted;

(l) Omitted;

(m) Omitted;

(n) Omitted;

(o) "Municipal and Industrial (M&I) Water" shall mean Project Water made available to the Contractor for purposes other than the commercial production of agricultural crops or livestock;

(p) "M&I Full Cost Water Rate" shall mean the Full Cost Rate applicable to the delivery of M&I Water;

(q) "Operation and Maintenance" or "O&M" shall mean normal and reasonable care, control, operation, repair, replacement (other than capital replacement), and maintenance of Project facilities;

(r) Omitted;

(s) "Project" shall mean the Central Valley Project owned by the United States and managed by the Department of the Interior, Bureau of Reclamation;

(t) "Project Contractors" shall mean all parties who have water service contracts for Project Water from the Project with the United States pursuant to Federal Reclamation law;

(u) "Project Water" shall mean all water that is developed, diverted, stored, or delivered by the Secretary in accordance with the statutes authorizing the Project and in accordance with the terms and conditions of water rights acquired pursuant to California law;

(v) "Rates" shall mean the payments determined annually by the Contracting Officer in accordance with the then-current applicable water ratesetting policies for the Project, as described in subdivision (a) of Article 7 of this Contract;

(w) "Recent Historic Average" shall mean the most recent five-year average of the final forecast of Water Made Available to the Contractor pursuant to this Contract or its preceding contract(s);

(x) "Secretary" shall mean the Secretary of the Interior, a duly appointed successor, or an authorized representative acting pursuant to any authority of the Secretary and through any agency of the Department of the Interior;

(y) "Tiered Pricing Component" shall be the incremental amount to be paid for each acre-foot of Water Delivered as described in subdivision (j) of Article 7 of this Contract;

(z) "Water Delivered" or "Delivered Water" shall mean Project Water diverted for use by the Contractor at the point(s) of delivery approved by the Contracting Officer;

(aa) "Water Made Available" shall mean the estimated amount of Project Water that can be delivered to the Contractor for the upcoming Year as declared by the Contracting Officer, pursuant to subdivision (a) of Article 4 of this Contract;

(bb) "Water Scheduled" shall mean Project Water made available to the Contractor for which times and quantities for delivery have been established by the Contractor and Contracting Officer, pursuant to subdivision (b) of Article 4 of this Contract; and

(cc) "Year" shall mean the period from and including March 1 of each Calendar Year through the last day of February of the following Calendar Year.

TERM OF CONTRACT

2. (a) This Contract shall be effective March 1, 2005, through February 28, 2045, and supersedes the Existing Contract. In the event the Contractor wishes to renew this

Contract beyond February 28, 2045, the Contractor shall submit a request for renewal in writing to the Contracting Officer no later than two years prior to the date this Contract expires.

(b) Omitted.

(c) This Contract shall be renewed for successive periods of up to 40 years each, which periods shall be consistent with then-existing Reclamation-wide policy, under terms and conditions mutually agreeable to the parties and consistent with Federal and State law. The Contractor shall be afforded the opportunity to comment to the Contracting Officer on the proposed adoption and application of any revised policy applicable to the delivery of M&I Water that would limit the term of any subsequent renewal contract with the Contractor for the furnishing of M&I Water to less than 40 years.

(d) The Contracting Officer shall make a determination ten years after the date of execution of this Contract, and every five years thereafter during the term of this Contract, of whether a conversion to a contract under subsection (c)(1) of Section 9 of the Reclamation Project Act of 1939 can be accomplished. The Contracting Officer anticipates that during the term of this Contract, all authorized Project construction expected to occur will have occurred, and on that basis the Contracting Officer agrees upon such completion to allocate all costs that are properly assignable to the Contractor, and agrees further that, at any time after such allocation is made, and subject to satisfaction of the condition set out in this subdivision, this Contract shall, at the request of the Contractor, be converted to a contract under said subsection 9(c)(1), of the Reclamation Project Act of 1939, subject to applicable Federal law and under stated terms and conditions mutually agreeable to the Contractor and the Contracting Officer. A condition for such conversion to occur shall be a determination by the Contracting Officer that, account being taken of the amount credited to return by the Contractor as provided for under Federal Reclamation law, the remaining amount of construction costs assignable for ultimate return by the Contractor can probably be repaid to the United States within the term of a contract under said subsection 9(c)(1). If the remaining amount of costs that are properly assignable to

the Contractor cannot be determined during the term of this Contract, the Contracting Officer shall notify the Contractor, and provide the reason(s) why such a determination could not be made. Further, the Contracting Officer shall make such a determination as soon thereafter as possible so as to permit, upon request of the Contractor and satisfaction of the condition set out above, conversion to a contract under said subsection 9(c)(1). In the event such determination of costs has not been made at a time which allows conversion of this Contract during the term of this Contract or the Contractor has not requested conversion of this Contract within such term, the parties shall incorporate in any subsequent renewal contract as described in subdivision (c) of this Article a provision that carries forth in substantially identical terms the provisions of this subdivision.

WATER TO BE MADE AVAILABLE AND DELIVERED TO THE CONTRACTOR

3. (a) During each Year, consistent with all applicable State water rights, permits, and licenses, Federal law, and subject to the provisions set forth in Articles 11 and 12 of this Contract, the Contracting Officer shall make available for delivery to the Contractor 4,400 acre-feet of Project Water for M&I purposes. Water Delivered to the Contractor in accordance with this subdivision shall be scheduled and paid for pursuant to the provisions of Articles 4 and 7 of this Contract.

(b) Because the capacity of the Project to deliver Project Water has been constrained in recent years and may be constrained in the future due to many factors including hydrologic conditions and implementation of Federal and State laws, the likelihood of the Contractor actually receiving the amount of Project Water set out in subdivision (a) of this Article in any given Year is uncertain. The Contracting Officer's modeling referenced in the PEIS projected that the Contract Total set forth in this Contract will not be available to the Contractor in many years. During the most recent five years, the Recent Historic Average of water made available to the Contractor was 2,530 acre-feet. Nothing in subdivision (b) of this Article shall affect the rights and obligations of the parties under any provision of this Contract.

(c) The Contractor shall utilize the Project Water in accordance with all applicable legal requirements.

(d) The Contractor shall make reasonable and beneficial use of all water furnished pursuant to this Contract. Groundwater recharge programs (direct, indirect, or in lieu), groundwater banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted within the Contractor's Service Area which are consistent with applicable State law and result in use consistent with Federal Reclamation law will be allowed; Provided, That any direct recharge program(s) is (are) described in the Contractor's water conservation plan submitted pursuant to Article 26 of this Contract; Provided, further, That such water conservation plan demonstrates sufficient lawful uses exist in the Contractor's Service Area so that using a long-term average, the quantity of Delivered Water is demonstrated to be reasonable for such uses and in compliance with Federal Reclamation law. Groundwater recharge programs, groundwater banking programs, surface water storage programs, and other similar programs utilizing Project Water or other water furnished pursuant to this Contract conducted outside the Contractor's Service Area may be permitted upon written approval of the Contracting Officer, which approval will be based upon environmental documentation, Project Water rights, and Project operational concerns. The Contracting Officer will address such concerns in regulations, policies, or guidelines.

(e) The Contractor shall comply with requirements applicable to the Contractor in biological opinion(s) prepared as a result of a consultation regarding the execution of this Contract undertaken pursuant to Section 7 of the Endangered Species Act of 1973 (ESA), as amended, that are within the Contractor's legal authority to implement. The Existing Contract, which evidences in excess of 54 years of diversions for M&I purposes of the quantities of water provided in subdivision (a) of Article 3 of this Contract, will be considered in developing an appropriate baseline for biological assessment(s) prepared pursuant to the ESA,

and any other needed environmental review. Nothing herein shall be construed to prevent the Contractor from challenging or seeking judicial relief in a court of competent jurisdiction with respect to any biological opinion or other environmental documentation referred to in this Article.

(f) As soon as possible following each declaration of Water Made Available under Article 4 of this Contract, the Contracting Officer will make a determination whether Project Water, or other water available to the Project, can be made available to the Contractor in addition to the Contract Total under Article 3 of this Contract during the Year without adversely impacting other Project Contractors. At the request of the Contractor, the Contracting Officer will consult with the Contractor prior to making such a determination. If the Contracting Officer determines that Project Water, or other water available to the Project, can be made available to the Contractor, the Contracting Officer will announce the availability of such water and shall so notify the Contractor as soon as practical. The Contracting Officer will thereafter meet with the Contractor and other Project Contractors capable of taking such water to determine the most equitable and efficient allocation of such water. If the Contractor requests the delivery of any quantity of such water, the Contracting Officer shall make such water available to the Contractor in accordance with applicable statutes, regulations, guidelines, and policies.

(g) The Contractor may request permission to reschedule for use during the subsequent Year some or all of the Water Made Available to the Contractor during the current Year, referred to as "carryover." The Contractor may request permission to use during the current Year a quantity of Project Water which may be made available by the United States to the Contractor during the subsequent Year, referred to as "preuse." The Contracting Officer's written approval may permit such uses in accordance with applicable statutes, regulations, guidelines, and policies.

(h) The Contractor's right pursuant to Federal Reclamation law and applicable State law to the reasonable and beneficial use of Water Delivered pursuant to this Contract

during the term thereof and any subsequent renewal contracts, as described in Article 2 of this Contract, during the terms thereof shall not be disturbed so long as the Contractor shall fulfill all of its obligations under this Contract and any renewals thereof. Nothing in the preceding sentence shall affect the Contracting Officer's ability to impose shortages under Article 11 or subdivision (b) of Article 12 of this Contract or applicable provisions of any subsequent renewal contracts.

(i) Project Water furnished to the Contractor pursuant to this Contract may be delivered for other than M&I purposes upon written approval by the Contracting Officer in accordance with the terms and conditions of such approval.

(j) The Contracting Officer shall make reasonable efforts to protect the water rights necessary for the Project and to provide the water available under this Contract. The Contracting Officer shall not object to participation by the Contractor, in the capacity and to the extent permitted by law, in administrative proceedings related to the Project Water rights; Provided, That the Contracting Officer retains the right to object to the substance of the Contractor's position in such a proceeding; Provided further, That in such proceedings the Contracting Officer shall recognize the Contractor has a legal right under the terms of this Contract to use Project Water.

TIME FOR DELIVERY OF WATER

4. (a) On or about February 20 of each Calendar Year, the Contracting Officer shall announce the Contracting Officer's expected declaration of the Water Made Available. Such declaration will be expressed in terms of both Water Made Available and the Recent Historic Average and will be updated monthly, and more frequently if necessary, based on then-current operational and hydrologic conditions and a new declaration with changes, if any, to the Water Made Available will be made. The Contracting Officer shall provide forecasts of Project operations and the basis of the estimate, with relevant supporting information, upon the written request of the Contractor. Concurrently with the declaration of the Water Made

Available, the Contracting Officer shall provide the Contractor with the updated Recent Historic Average.

(b) On or before each March 1 and at such other times as necessary, the Contractor shall submit to the Contracting Officer a written schedule, satisfactory to the Contracting Officer, showing the monthly quantities of Project Water to be delivered by the United States to the Contractor pursuant to this Contract for the Year commencing on such March 1. The Contracting Officer shall use all reasonable means to deliver Project Water according to the approved schedule for the Year commencing on such March 1.

(c) The Contractor shall not schedule Project Water in excess of the quantity of Project Water the Contractor intends to put to reasonable and beneficial use within the Contractor's Service Area or to sell, transfer, or exchange pursuant to Article 9 of this Contract during any Year.

(d) Subject to the conditions set forth in subdivision (a) of Article 3 of this Contract, the United States shall deliver Project Water to the Contractor in accordance with the initial schedule submitted by the Contractor pursuant to subdivision (b) of this Article, or any written revision(s), satisfactory to the Contracting Officer, thereto submitted within a reasonable time prior to the date(s) on which the requested change(s) is/are to be implemented.

POINT OF DIVERSION AND RESPONSIBILITY FOR DISTRIBUTION OF WATER

5. (a) Project Water scheduled pursuant to subdivision (b) of Article 4 of this Contract shall be delivered to the Contractor at the 16-inch water meter located at the interconnection of the pumping plant discharge line at the water treatment facilities which are located adjacent to the Shasta Dam visitor area, and any additional point or points of delivery either on Project facilities or another location or locations mutually agreed to in writing by the Contracting Officer and the Contractor.

(b) The Contracting Officer or other appropriate entity as designated by the Contracting Officer (hereinafter referred to as the "Other Appropriate Entity") shall make all

reasonable efforts to maintain sufficient flows to deliver Project Water to the Contractor at the design capacity of the pumping plant minus losses due to the Contractor's treatment facilities and delivery pipe sizes.

(c) Omitted.

(d) All Water Delivered to the Contractor pursuant to this Contract shall be measured and recorded with equipment furnished, installed, operated, and maintained by the Contractor at the point or points of delivery established pursuant to subdivision (a) of this Article. Upon the request of either party to this Contract, the Contracting Officer shall investigate the accuracy of such measurements and shall take any necessary steps to adjust any errors appearing therein. For any period of time when accurate measurements have not been made, the Contracting Officer shall consult with the Contractor prior to making a final determination of the quantity delivered for that period of time.

(e) The Contracting Officer shall not be responsible for the control, carriage, handling, use, disposal, or distribution of Water Delivered to the Contractor pursuant to this Contract beyond the delivery points specified in subdivision (a) of this Article. The Contractor shall indemnify the United States, its officers, employees, agents, and assigns on account of damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury, or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such Water Delivered beyond such delivery points, except for any damage or claim arising out of (i) acts or omissions of the Contracting Officer or any of its officers, employees, agents, or assigns with the intent of creating the situation resulting in any damage or claim, (ii) willful misconduct of the Contracting Officer or any of its officers, employees, agents, or assigns, (iii) negligence of the Contracting Officer or any of its officers, employees, agents, or assigns, or (iv) damage or claims resulting from a malfunction of facilities owned and/or operated by the United States.

MEASUREMENT OF WATER WITHIN THE CONTRACTOR'S SERVICE AREA

6. (a) The Contractor has established a measuring program satisfactory to the Contracting Officer. The Contractor shall ensure that all surface water delivered for M&I purposes is measured at each M&I service connection. The water measuring devices or water measuring methods of comparable effectiveness must be acceptable to the Contracting Officer. The Contractor shall be responsible for installing, operating, and maintaining and repairing all such measuring devices and implementing all such water measuring methods at no cost to the United States. The Contractor shall use the information obtained from such water measuring devices or water measuring methods to ensure its proper management of the water, to bill water users for water delivered by the Contractor; and, if applicable, to record water delivered for M&I purposes by customer class as defined in the Contractor's water conservation plan provided for in Article 26 of this Contract. Nothing herein contained, however, shall preclude the Contractor from establishing and collecting any charges, assessments, or other revenues authorized by California law. The Contractor shall include a summary of all its annual surface water deliveries in the annual report described in subdivision (c) of Article 26.

(b) To the extent the information has not otherwise been provided, upon execution of this Contract, the Contractor shall provide to the Contracting Officer a written report describing the measurement devices or water measuring methods being used or to be used to implement subdivision (a) of this Article and identifying the agricultural turnouts and the M&I service connections or alternative measurement programs approved by the Contracting Officer, at which such measurement devices or water measuring methods are being used, and, if applicable, identifying the locations at which such devices and/or methods are not yet being used including a time schedule for implementation at such locations. The Contracting Officer shall advise the Contractor in writing within 60 days as to the adequacy and necessary modifications, if any, of the measuring devices or water measuring methods identified in the Contractor's report and if the Contracting Officer does not respond in such time, they shall be deemed adequate. If

the Contracting Officer notifies the Contractor that the measuring devices or methods are inadequate, the parties shall within 60 days following the Contracting Officer's response, negotiate in good faith the earliest practicable date by which the Contractor shall modify said measuring devices and/or measuring methods as required by the Contracting Officer to ensure compliance with subdivision (a) of this Article.

(c) All new surface water delivery systems installed within the Contractor's Service Area after the effective date of this Contract shall also comply with the measurement provisions described in subdivision (a) of this Article.

(d) The Contractor shall inform the Contracting Officer and the State of California in writing by April 30 of each Year of the monthly volume of surface water delivered within the Contractor's Service Area during the previous Year.

(e) The Contractor shall inform the Contracting Officer on or before the 10th calendar day of each month of the quantity of M&I Water taken during the preceding month.

RATES AND METHOD OF PAYMENT FOR WATER

7. (a) The Contractor shall pay the United States as provided in this Article for all Delivered Water at Rates, Charges, and the Tiered Pricing Component established in accordance with (i) the Secretary's then-existing ratesetting policy for M&I Water. Such ratesetting policy shall be amended, modified, or superseded only through a public notice and comment procedure; (ii) applicable Federal Reclamation law and associated rules and regulations, or policies; and (iii) other applicable provisions of this Contract. Payments shall be made by cash transaction, electronic funds transfer, or any other mechanism as may be agreed to in writing by the Contractor and the Contracting Officer. The Rates, Charges, and Tiered Pricing Component applicable to the Contractor upon execution of this Contract are set forth in Exhibit "B," as may be revised annually.

(b) The Contracting Officer shall notify the Contractor of the Rates, Charges, and Tiered Pricing Component as follows:

(1) Prior to July 1 of each Calendar Year, the Contracting Officer shall provide the Contractor an estimate of the Charges for Project Water that will be applied to the period October 1, of the current Calendar Year, through September 30, of the following Calendar Year, and the basis for such estimate. The Contractor shall be allowed not less than two months to review and comment on such estimates. On or before September 15 of each Calendar Year, the Contracting Officer shall notify the Contractor in writing of the Charges to be in effect during the period October 1 of the current Calendar Year, through September 30, of the following Calendar Year, and such notification shall revise Exhibit "B."

(2) Prior to October 1 of each Calendar Year, the Contracting Officer shall make available to the Contractor an estimate of the Rates and Tiered Pricing Component for Project Water for the following Year and the computations and cost allocations upon which those Rates are based. The Contractor shall be allowed not less than two months to review and comment on such computations and cost allocations. By December 31 of each Calendar Year, the Contracting Officer shall provide the Contractor with the final Rates and Tiered Pricing Component to be in effect for the upcoming Year, and such notification shall revise Exhibit "B."

(c) At the time the Contractor submits the initial schedule for the delivery of Project Water for each Year pursuant to subdivision (b) of Article 4 of this Contract, the Contractor shall make an advance payment to the United States equal to the total amount payable pursuant to the applicable Rate(s) set under subdivision (a) of this Article, for the Project Water scheduled to be delivered pursuant to this Contract during the first two calendar months of the Year. Before the end of the first month and before the end of each calendar month thereafter, the Contractor shall make an advance payment to the United States, at the Rate(s) set under subdivision (a) of this Article, for the Water Scheduled to be delivered pursuant to this Contract during the second month immediately following. Adjustments between advance payments for Water Scheduled and payments at Rates due for Water Delivered shall be made before the end of the following month; Provided, That any revised schedule submitted by the Contractor pursuant

to Article 4 of this Contract which increases the amount of Water Delivered pursuant to this Contract during any month shall be accompanied with appropriate advance payment, at the Rates then in effect, to assure that Project Water is not delivered to the Contractor in advance of such payment. In any month in which the quantity of Water Delivered to the Contractor pursuant to this Contract equals the quantity of Water Scheduled and paid for by the Contractor, no additional Project Water shall be delivered to the Contractor unless and until an advance payment at the Rates then in effect for such additional Project Water is made. Final adjustment between the advance payments for the Water Scheduled and payments for the quantities of Water Delivered during each Year pursuant to this Contract shall be made as soon as practicable, but no later than April 30th of the following Year, or 60 days after the delivery of Project Water carried over under subdivision (g) of Article 3 of this Contract if such water is not delivered by the last day of February.

(d) The Contractor shall also make a payment in addition to the Rate(s) in subdivision (c) of this Article to the United States for Water Delivered, at the Charges and the appropriate Tiered Pricing Component then in effect, before the end of the month following the month of delivery. The payments shall be consistent with the quantities of M&I Water Delivered as shown in the water delivery report for the subject month prepared by the Contracting Officer. The water delivery report shall be deemed a bill for the payment of Charges and the applicable Tiered Pricing Component for Water Delivered. Adjustment for overpayment or underpayment of Charges shall be made through the adjustment of payments due to the United States for Charges for the next month. Any amount to be paid for past due payment of Charges and the Tiered Pricing Component shall be computed pursuant to Article 20 of this Contract.

(e) The Contractor shall pay for any Water Delivered under subdivision (a), (f), or (g) of Article 3 of this Contract as determined by the Contracting Officer pursuant to applicable statutes, associated regulations, any applicable provisions of guidelines or ratesetting policies; Provided, That the Rate for Water Delivered under subdivision (f) of Article 3 of this

Contract shall be no more than the otherwise applicable Rate for M&I Water under subdivision (a) of this Article.

(f) Payments to be made by the Contractor to the United States under this Contract may be paid from any revenues available to the Contractor.

(g) All revenues received by the United States from the Contractor relating to the delivery of Project Water or the delivery of non-Project water through Project facilities shall be allocated and applied in accordance with Federal Reclamation law and the associated rules or regulations, and the then-current Project ratesetting policy for M&I Water.

(h) The Contracting Officer shall keep its accounts pertaining to the administration of the financial terms and conditions of its long-term contracts, in accordance with applicable Federal standards, so as to reflect the application of Project costs and revenues. The Contracting Officer shall, each Year upon request of the Contractor, provide to the Contractor a detailed accounting of all Project and Contractor expense allocations, the disposition of all Project and Contractor revenues, and a summary of all water delivery information. The Contracting Officer and the Contractor shall enter into good faith negotiations to resolve any discrepancies or disputes relating to accountings, reports, or information.

(i) The parties acknowledge and agree that the efficient administration of this Contract is their mutual goal. Recognizing that experience has demonstrated that mechanisms, policies, and procedures used for establishing Rates, Charges, and the Tiered Pricing Component, and/or for making and allocating payments, other than those set forth in this Article may be in the mutual best interest of the parties, it is expressly agreed that the parties may enter into agreements to modify the mechanisms, policies, and procedures for any of those purposes while this Contract is in effect without amending this Contract.

(j) (1) Beginning at such time as deliveries of Project Water in a Year exceed 80 percent of the Contract Total, then before the end of the month following the month of delivery the Contractor shall make an additional payment to the United States equal to the

applicable Tiered Pricing Component. The Tiered Pricing Component for the amount of Water Delivered in excess of 80 percent of the Contract Total, but less than or equal to 90 percent of the Contract Total, shall equal one-half of the difference between the Rate established under subdivision (a) of this Article and the M&I Full Cost Water Rate. The Tiered Pricing Component for the amount of Water Delivered which exceeds 90 percent of the Contract Total shall equal the difference between (i) the Rate established under subdivision (a) of this Article and (ii) the M&I Full Cost Water Rate.

(2) Omitted.

(3) For purposes of determining the applicability of the Tiered Pricing Component pursuant to this Article, Water Delivered shall include Project Water that the Contractor transfers to others but shall not include Project Water transferred to the Contractor, nor shall it include the additional water provided to the Contractor under the provisions of subdivision (f) of Article 3 of this Contract.

(k) For the term of this Contract, Rates under the respective ratesetting policies will be established to recover only reimbursable O&M (including any deficits) and capital costs of the Project, as those terms are used in the then-current Project ratesetting policies, and interest, where appropriate, except in instances where a minimum Rate is applicable in accordance with the relevant Project ratesetting policy. Changes of significance in practices which implement the Contracting Officer's ratesetting policies will not be implemented until the Contracting Officer has provided the Contractor an opportunity to discuss the nature, need, and impact of the proposed change.

(l) Except as provided in subsections 3405(a)(1)(B) and 3405(f) of the CVPIA, the Rates for Project Water transferred by the Contractor shall be the Contractor's Rates adjusted upward or downward to reflect the changed costs, if any, incurred by the Contracting Officer in the delivery of the transferred Project Water to the transferee's point of delivery in accordance with the then applicable Project ratesetting policy. If the Contractor is receiving

lower Rates and Charges because of inability to pay and is transferring Project Water to another entity whose Rates and Charges are not adjusted due to inability to pay, the Rates and Charges for transferred Project Water shall not be adjusted to reflect the Contractor's inability to pay.

(m) Omitted.

(n) With respect to the Rates for M&I Water, the Contractor asserts that it is not legally obligated to pay any Project deficits claimed by the United States to have accrued as of the date of this Contract or deficit-related interest charges thereon. By entering into this Contract, the Contractor does not waive any legal rights or remedies that it may have with respect to such disputed issues. Notwithstanding the execution of this Contract and payments made hereunder, the Contractor may challenge in the appropriate administrative or judicial forums: (1) the existence, computation, or imposition of any deficit charges accruing during the term of the Existing Contract and any preceding interim renewal contracts, if applicable; (2) interest accruing on any such deficits; (3) the inclusion of any such deficit charges or interest in the Rates; (4) the application by the United States of payments made by the Contractor under its Existing Contract and any preceding interim renewal contracts, if applicable; and (5) the application of such payments in the Rates. The Contracting Officer agrees that the Contractor shall be entitled to the benefit of any administrative or judicial ruling in favor of any Project M&I contractor on any of these issues, and credits for payments heretofore made, Provided, That the basis for such ruling is applicable to the Contractor.

NON-INTEREST BEARING OPERATION AND MAINTENANCE DEFICITS

8. The Contractor and the Contracting Officer concur that, as of the effective date of this Contract, the Contractor has no non-interest bearing O&M deficits and shall have no further liability therefor.

SALES, TRANSFERS, OR EXCHANGES OF WATER

9. (a) The right to receive Project Water provided for in this Contract may be sold, transferred, or exchanged to others for reasonable and beneficial uses within the State of

California if such sale, transfer, or exchange is authorized by applicable Federal and State laws, and applicable guidelines or regulations then in effect. No sale, transfer, or exchange of Project Water under this Contract may take place without the prior written approval of the Contracting Officer, except as provided for in subdivision (b) of this Article, and no such sales, transfers, or exchanges shall be approved absent all appropriate environmental documentation, including but not limited to documents prepared pursuant to NEPA and ESA. Such environmental documentation should include, as appropriate, an analysis of groundwater impacts and economic and social effects, including environmental justice, of the proposed water transfers on both the transferor and transferee.

(b) In order to facilitate efficient water management by means of water transfers of the type historically carried out among Project Contractors located within the same geographical area and to allow the Contractor to participate in an accelerated water transfer program during the term of this Contract, the Contracting Officer shall prepare, as appropriate, all necessary environmental documentation including, but not limited to, documents prepared pursuant to NEPA and ESA, analyzing annual transfers within such geographical areas, and the Contracting Officer shall determine whether such transfers comply with applicable law. Following the completion of the environmental documentation, such transfers addressed in such documentation shall be conducted with advance notice to the Contracting Officer, but shall not require prior written approval by the Contracting Officer. Such environmental documentation and the Contracting Officer's compliance determination shall be reviewed every five years and updated, as necessary, prior to the expiration of the then-existing five-year period. All subsequent environmental documentation shall include an alternative to evaluate not less than the quantity of Project Water historically transferred within the same geographical area.

(c) For a water transfer to qualify under subdivision (b) of this Article, such water transfer must: (i) be for irrigation purposes for lands irrigated within the previous three years, for M&I use, groundwater recharge, water banking, similar groundwater activities, surface

water storage, or fish and wildlife resources; not lead to land conversion; and be delivered to established cropland, wildlife refuges, groundwater basins or M&I use; (ii) occur within a single Year; (iii) occur between a willing seller and a willing buyer; (iv) convey water through existing facilities with no new construction or modifications to facilities and be between existing Project Contractors and/or the Contractor and the United States, Department of the Interior; and (v) comply with all applicable Federal, State, and local or tribal laws and requirements imposed for protection of the environment and Indian Trust Assets, as defined under Federal law.

(d) For the purpose of determining whether Section 3405(a)(1)(M) of the CVPIA applies to the Contractor as a transferor or transferee of Project Water, the Contracting Officer acknowledges that the Contractor is within a county, watershed, or other area of origin, as those terms are utilized under California law, of water that constitutes the natural flow of the Sacramento River and its tributaries above the confluence of the American and Sacramento Rivers.

APPLICATION OF PAYMENTS AND ADJUSTMENTS

10. (a) The amount of any overpayment by the Contractor of the Contractor's O&M, capital, and deficit (if any) obligations for the Year shall be applied first to any current liabilities of the Contractor arising out of this Contract then due and payable. Overpayments of more than $1,000 shall be refunded at the Contractor's request. In lieu of a refund, any amount of such overpayment, at the option of the Contractor, may be credited against amounts to become due to the United States by the Contractor. With respect to overpayment, such refund or adjustment shall constitute the sole remedy of the Contractor or anyone having or claiming to have the right to the use of any of the Project Water supply provided for herein. All credits and refunds of overpayments shall be made within 30 days of the Contracting Officer obtaining direction as to how to credit or refund such overpayment in response to the notice to the Contractor that it has finalized the accounts for the Year in which the overpayment was made.

(b) All advances for miscellaneous costs incurred for work requested by the Contractor pursuant to Article 25 of this Contract shall be adjusted to reflect the actual costs when the work has been completed. If the advances exceed the actual costs incurred, the difference will be refunded to the Contractor. If the actual costs exceed the Contractor's advances, the Contractor will be billed for the additional costs pursuant to Article 25.

TEMPORARY REDUCTIONS--RETURN FLOWS

11. (a) Subject to: (i) the authorized purposes and priorities of the Project and the requirements of Federal law; and (ii) the obligations of the United States under existing contracts, or renewals thereof, providing for water deliveries from the Project, the Contracting Officer shall make all reasonable efforts to optimize Project Water deliveries to the Contractor as provided in this Contract.

(b) The Contracting Officer may temporarily discontinue or reduce the quantity of Water Delivered to the Contractor as herein provided for the purposes of investigation, inspection, maintenance, repair, or replacement of any of the Project facilities or any part thereof necessary for the delivery of Project Water to the Contractor, but so far as feasible the Contracting Officer will give the Contractor due notice in advance of such temporary discontinuance or reduction, except in case of emergency, in which case no notice need be given; Provided, That the United States shall use its best efforts to avoid any discontinuance or reduction in such service. Upon resumption of service after such reduction or discontinuance, and if requested by the Contractor, the United States will, if possible, deliver the quantity of Project Water which would have been delivered hereunder in the absence of such discontinuance or reduction.

(c) The United States reserves the right to all seepage and return flow water derived from Water Delivered to the Contractor hereunder which escapes or is discharged beyond the Contractor's Service Area; Provided, That this shall not be construed as claiming for the United States any right to seepage or return flow being put to reasonable and beneficial use

pursuant to this Contract within the Contractor's Service Area by the Contractor or those claiming by, through, or under the Contractor.

CONSTRAINTS ON THE AVAILABILITY OF WATER

12. (a) In its operation of the Project, the Contracting Officer will use all reasonable means to guard against a Condition of Shortage in the quantity of water to be made available to the Contractor pursuant to this Contract. In the event the Contracting Officer determines that a Condition of Shortage appears probable, the Contracting Officer will notify the Contractor of said determination as soon as practicable.

(b) If there is a Condition of Shortage because of errors in physical operations of the Project, drought, other physical causes beyond the control of the Contracting Officer or actions taken by the Contracting Officer to meet legal obligations then, except as provided in subdivision (a) of Article 18 of this Contract, no liability shall accrue against the United States or any of its officers, agents, or employees for any damage, direct or indirect, arising therefrom.

(c) Omitted.

(d) Project Water furnished under this Contract will be allocated in accordance with the then-existing Project M&I Water Shortage Policy. Such policy shall be amended, modified, or superseded only through a public notice and comment procedure.

(e) By entering into this Contract, the Contractor does not waive any legal rights or remedies it may have to file or participate in any administrative or judicial proceeding contesting (i) the sufficiency of the manner in which any Project M&I Water Shortage Policy adopted after the effective date of this Contract was promulgated; (ii) the substance of such a policy; or (iii) the applicability of such a policy. By agreeing to the foregoing, the Contracting Officer does not waive any legal defenses or remedies that it may then have to assert in such a proceeding.

13. Omitted.

RULES AND REGULATIONS

14. The parties agree that the delivery of Project Water or use of Federal facilities pursuant to this Contract is subject to Federal Reclamation law, as amended and supplemented, and the rules and regulations promulgated by the Secretary of the Interior under Federal Reclamation law.

WATER AND AIR POLLUTION CONTROL

15. The Contractor, in carrying out this Contract, shall comply with all applicable water and air pollution laws and regulations of the United States and the State of California, and shall obtain all required permits or licenses from the appropriate Federal, State, or local authorities.

QUALITY OF WATER

16. (a) Project facilities used to deliver Project Water to the Contractor pursuant to this Contract shall be operated and maintained to enable the United States to deliver Project Water to the Contractor in accordance with the water quality standards specified in subsection 2(b) of the Act of August 26, 1937 (50 Stat. 865), as added by Section 101 of the Act of October 27, 1986 (100 Stat. 3050) or other existing Federal laws. The United States is under no obligation to construct or furnish water treatment facilities to maintain or to improve the quality of Water Delivered to the Contractor pursuant to this Contract. The United States does not warrant the quality of Water Delivered to the Contractor pursuant to this Contract.

(b) The O&M of Project facilities shall be performed in such manner as is practicable to maintain the quality of raw water made available through such facilities at the highest level reasonably attainable as determined by the Contracting Officer. The Contractor shall be responsible for compliance with all State and Federal water quality standards applicable to surface and subsurface agricultural drainage discharges generated through the use of Federal or Contractor facilities or Project Water provided by the Contractor within the Contractor's Service Area.

WATER ACQUIRED BY THE CONTRACTOR OTHER THAN FROM THE UNITED STATES

17. (a) Omitted.

(b) Water or water rights now owned or hereafter acquired by the Contractor, other than from the United States, may be stored, conveyed, and/or diverted through Project facilities, subject to the completion of appropriate environmental documentation, with the approval of the Contracting Officer and the execution of any contract determined by the Contracting Officer to be necessary, consistent with the following provisions:

(1) The Contractor may introduce non-Project water into Project facilities and deliver said water to lands within the Contractor's Service Area subject to payment to the United States of an appropriate rate as determined by the applicable Project ratesetting policy, the RRA, and the Project use power policy, if Project use power policy is applicable, each as amended, modified, or superseded from time to time.

(2) Delivery of such non-Project water in and through Project facilities shall only be allowed to the extent such deliveries do not: (i) interfere with other Project purposes as determined by the Contracting Officer; (ii) reduce the quantity or quality of water available to other Project Contractors; (iii) interfere with the delivery of contractual water entitlements to any other Project Contractors; or (iv) interfere with the physical maintenance of the Project facilities.

(3) The United States shall not be responsible for control, care, or distribution of the non-Project water before it is introduced into or after it is delivered from the Project facilities. The Contractor hereby releases and agrees to defend and indemnify the United States and its respective officers, agents, and employees, from any claim for damage to persons or property, direct or indirect, resulting from acts of the Contractor, its officers', employees', agents', or assigns', act(s) in (i) extracting or diverting non-Project water from any source, or (ii) diverting such non-Project water into Project facilities.

(4) Diversion of such non-Project water into Project facilities shall be consistent with all applicable laws, and if involving groundwater, consistent with any applicable groundwater management plan for the area from which it was extracted.

(5) After Project purposes are met, as determined by the Contracting Officer, the United States and the Contractor shall share priority to utilize the remaining capacity of the facilities declared to be available by the Contracting Officer for conveyance and transportation of non-Project water prior to any such remaining capacity being made available to non-Project contractors.

OPINIONS AND DETERMINATIONS

18. (a) Where the terms of this Contract provide for actions to be based upon the opinion or determination of either party to this Contract, said terms shall not be construed as permitting such action to be predicated upon arbitrary, capricious, or unreasonable opinions or determinations. Both parties, notwithstanding any other provisions of this Contract, expressly reserve the right to seek relief from and appropriate adjustment for any such arbitrary, capricious, or unreasonable opinion or determination. Each opinion or determination by either party shall be provided in a timely manner. Nothing in subdivision (a) of Article 18 of this Contract is intended to or shall affect or alter the standard of judicial review applicable under Federal law to any opinion or determination implementing a specific provision of Federal law embodied in statute or regulation.

(b) The Contracting Officer shall have the right to make determinations necessary to administer this Contract that are consistent with the provisions of this Contract, the laws of the United States and of the State of California, and the rules and regulations promulgated by the Secretary of the Interior. Such determinations shall be made in consultation with the Contractor to the extent reasonably practicable.

COORDINATION AND COOPERATION

19. (a) In order to further their mutual goals and objectives, the Contracting Officer and the Contractor shall communicate, coordinate, and cooperate with each other, and with other affected Project Contractors, in order to improve the operation and management of the Project. The communication, coordination, and cooperation regarding operations and management shall include, but not be limited to, any action which will or may materially affect the quantity or quality of Project Water supply, the allocation of Project Water supply, and Project financial matters including, but not limited to, budget issues. The communication, coordination, and cooperation provided for hereunder shall extend to all provisions of this Contract. Each party shall retain exclusive decision making authority for all actions, opinions, and determinations to be made by the respective party.

(b) Within 120 days following the effective date of this Contract, the Contractor, other affected Project Contractors, and the Contracting Officer shall arrange to meet with interested Project Contractors to develop a mutually agreeable, written Project-wide process, which may be amended as necessary separate and apart from this Contract. The goal of this process shall be to provide, to the extent practicable, the means of mutual communication and interaction regarding significant decisions concerning Project operation and management on a real-time basis.

(c) In light of the factors referred to in subdivision (b) of Article 3 of this Contract, it is the intent of the Secretary to improve water supply reliability. To carry out this intent:

(1) The Contracting Officer will, at the request of the Contractor, assist in the development of integrated resource management plans for the Contractor. Further, the Contracting Officer will, as appropriate, seek authorizations for implementation of partnerships to improve water supply, water quality, and reliability.

(2) The Secretary will, as appropriate, pursue program and project implementation and authorization in coordination with Project Contractors to improve the water supply, water quality, and reliability of the Project for all Project purposes.

(3) The Secretary will coordinate with Project Contractors and the State of California to seek improved water resource management.

(3.1) The Secretary and the Contractor desire to work together to maximize the reasonable beneficial use of water for their mutual benefit. As a consequence, the Secretary and the Contractor will work in partnership and with others in the region of the Redding Groundwater Basin, including other Contractors in the Shasta and Trinity Divisions of the Project, to facilitate the better integration with the region of the Redding Groundwater Basin of all water supplies including, but not limited to, the better management and integration of surface water and groundwater, transfers and exchanges of water, the development and better utilization of surface water storage, the effective utilization of waste, seepage and return flow water, and other operational and management options that may be identified in the future.

(4) The Secretary will coordinate actions of agencies within the Department of the Interior that may impact the availability of water for Project purposes.

(5) The Contracting Officer shall periodically, but not less than annually, hold division level meetings to discuss Project operations, division level water management activities, and other issues as appropriate.

(d) Without limiting the contractual obligations of the Contracting Officer under the other Articles of this Contract nothing in this Article shall be construed to limit or constrain the Contracting Officer's ability to communicate, coordinate, and cooperate with the Contractor or other interested stakeholders or to make decisions in a timely fashion as needed to protect health, safety, or the physical integrity of structures or facilities.

CHARGES FOR DELINQUENT PAYMENTS

20. (a) The Contractor shall be subject to interest, administrative and penalty charges on delinquent installments or payments. When a payment is not received by the due

date, the Contractor shall pay an interest charge for each day the payment is delinquent beyond the due date. When a payment becomes sixty (60) days delinquent, the Contractor shall pay an administrative charge to cover additional costs of billing and processing the delinquent payment. When a payment is delinquent ninety (90) days or more, the Contractor shall pay an additional penalty charge of six (6%) percent per year for each day the payment is delinquent beyond the due date. Further, the Contractor shall pay any fees incurred for debt collection services associated with a delinquent payment.

(b) The interest charge rate shall be the greater of the rate prescribed quarterly in the Federal Register by the Department of the Treasury for application to overdue payments, or the interest rate of one-half of one (0.5%) percent per month prescribed by Section 6 of the Reclamation Project Act of 1939 (Public Law 76-260). The interest charge rate shall be determined as of the due date and remain fixed for the duration of the delinquent period.

(c) When a partial payment on a delinquent account is received, the amount received shall be applied, first to the penalty, second to the administrative charges, third to the accrued interest, and finally to the overdue payment.

EQUAL OPPORTUNITY

21. During the performance of this Contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination, rates of payment or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without discrimination because of race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under Section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by said amended Executive Order and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the Contracting Officer and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of the said rules, regulations, or orders, this Contract may be canceled, terminated, or suspended, in whole or in part, and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in said amended Executive Order, and such other sanctions may be imposed and remedies invoked as provided in said Executive Order, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (a) through (g) in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of said amended Executive Order, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

GENERAL OBLIGATION--BENEFITS CONDITIONED UPON PAYMENT

22. (a) The obligation of the Contractor to pay the United States as provided in this Contract is a general obligation of the Contractor notwithstanding the manner in which the obligation may be distributed among the Contractor's water users and notwithstanding the default of individual water users in their obligations to the Contractor.

(b) The payment of charges becoming due hereunder is a condition precedent to receiving benefits under this Contract. The United States shall not make water available to the Contractor through Project facilities during any period in which the Contractor may be in arrears in the advance payment of water rates due the United States. The Contractor shall not furnish water made available pursuant to this Contract for lands or parties which are in arrears in the advance payment of water rates levied or established by the Contractor.

(c) With respect to subdivision (b) of this Article, the Contractor shall have no obligation to require advance payment for water rates which it levies.

COMPLIANCE WITH CIVIL RIGHTS LAWS AND REGULATIONS

23. (a) The Contractor shall comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d), Section 504 of the Rehabilitation Act of 1975 (P.L. 93-112, as amended), the Age Discrimination Act of 1975 (42 U.S.C. 6101, et seq.) and any other applicable civil rights laws, as well as with their respective implementing regulations and guidelines imposed by the U.S. Department of the Interior and/or Bureau of Reclamation.

(b) These statutes require that no person in the United States shall, on the grounds of race, color, national origin, handicap, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving financial assistance from the Bureau of Reclamation. By executing this Contract, the Contractor agrees to immediately take any measures necessary to implement this obligation, including permitting officials of the United States to inspect premises, programs, and documents.

(c) The Contractor makes this agreement in consideration of and for the purpose of obtaining any and all Federal grants, loans, contracts, property discounts, or other Federal financial assistance extended after the date hereof to the Contractor by the Bureau of Reclamation, including installment payments after such date on account of arrangements for Federal financial assistance which were approved before such date. The Contractor recognizes and agrees that such Federal assistance will be extended in reliance on the representations and agreements made in this Article, and that the United States reserves the right to seek judicial enforcement thereof.

24. Omitted.

CONTRACTOR TO PAY CERTAIN MISCELLANEOUS COSTS

25. In addition to all other payments to be made by the Contractor pursuant to this Contract, the Contractor shall pay to the United States, within 60 days after receipt of a bill and detailed statement submitted by the Contracting Officer to the Contractor for such specific items of direct cost incurred by the United States for work requested by the Contractor associated with this Contract plus indirect costs in accordance with applicable Bureau of Reclamation policies and procedures. All such amounts referred to in this Article shall not exceed the amount agreed to in writing in advance by the Contractor. This Article shall not apply to costs for routine contract administration.

WATER CONSERVATION

26. (a) Prior to the delivery of water provided from or conveyed through Federally constructed or Federally financed facilities pursuant to this Contract, the Contractor

shall be implementing an effective water conservation and efficiency program based on the Contractor's water conservation plan that has been determined by the Contracting Officer to meet the conservation and efficiency criteria for evaluating water conservation plans established under Federal law. The water conservation and efficiency program shall contain definite water conservation objectives, appropriate economically feasible water conservation measures, and time schedules for meeting those objectives. Continued Project Water delivery pursuant to this Contract shall be contingent upon the Contractor's continued implementation of such water conservation program. In the event the Contractor's water conservation plan or any revised water conservation plan completed pursuant to subdivision (d) of Article 26 of this Contract have not yet been determined by the Contracting Officer to meet such criteria, due to circumstances which the Contracting Officer determines are beyond the control of the Contractor, water deliveries shall be made under this Contract so long as the Contractor diligently works with the Contracting Officer to obtain such determination at the earliest practicable date, and thereafter the Contractor immediately begins implementing its water conservation and efficiency program in accordance with the time schedules therein.

(b) Should the amount of M&I Water delivered pursuant to subdivision (a) of Article 3 of this Contract equal or exceed 2,000 acre-feet per Year, the Contractor shall implement the Best Management Practices identified by the time frames issued by the California Urban Water Conservation Council for such M&I Water unless any such practice is determined by the Contracting Officer to be inappropriate for the Contractor.

(c) The Contractor shall submit to the Contracting Officer a report on the status of its implementation of the water conservation plan on the reporting dates specified in the then existing conservation and efficiency criteria established under Federal law.

(d) At five-year intervals, the Contractor shall revise its water conservation plan to reflect the then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law and submit such revised water management

plan to the Contracting Officer for review and evaluation. The Contracting Officer will then determine if the water conservation plan meets Reclamation's then-current conservation and efficiency criteria for evaluating water conservation plans established under Federal law.

(e) If the Contractor is engaged in direct groundwater recharge, such activity shall be described in the Contractor's water conservation plan.

EXISTING OR ACQUIRED WATER OR WATER RIGHTS

27. Except as specifically provided in Article 17 of this Contract, the provisions of this Contract shall not be applicable to or affect non-Project water or water rights now owned or hereafter acquired by the Contractor or any user of such water within the Contractor's Service Area. Any such water shall not be considered Project Water under this Contract. In addition, this Contract shall not be construed as limiting or curtailing any rights which the Contractor or any water user within the Contractor's Service Area acquires or has available under any other contract pursuant to Federal Reclamation law.

28. Omitted.

CONTINGENT ON APPROPRIATION OR ALLOTMENT OF FUNDS

29. The expenditure or advance of any money or the performance of any obligation of the United States under this Contract shall be contingent upon appropriation or allotment of funds. Absence of appropriation or allotment of funds shall not relieve the Contractor from any obligations under this Contract. No liability shall accrue to the United States in case funds are not appropriated or allotted.

BOOKS, RECORDS, AND REPORTS

30. (a) The Contractor shall establish and maintain accounts and other books and records pertaining to administration of the terms and conditions of this Contract, including: the Contractor's financial transactions, water supply data, and Project land and right-of-way agreements; the water users' land-use (crop census), land ownership, land-leasing and water use data; and other matters that the Contracting Officer may require. Reports thereon shall be furnished to the Contracting Officer in such form and on such date or dates as the Contracting Officer may require. Subject to applicable Federal laws and regulations, each party to this Contract shall have the right during office hours to examine and make copies of the other party's books and records relating to matters covered by this Contract.

(b) Notwithstanding the provisions of subdivision (a) of this Article, no books, records, or other information shall be requested from the Contractor by the Contracting Officer unless such books, records, or information are reasonably related to the administration or performance of this Contract. Any such request shall allow the Contractor a reasonable period of time within which to provide the requested books, records, or information.

(c) Omitted.

ASSIGNMENT LIMITED--SUCCESSORS AND ASSIGNS OBLIGATED

31. (a) The provisions of this Contract shall apply to and bind the successors and assigns of the parties hereto, but no assignment or transfer of this Contract or any right or interest therein shall be valid until approved in writing by the Contracting Officer.

(b) The assignment of any right or interest in this Contract by either party shall not interfere with the rights or obligations of the other party to this Contract absent the written concurrence of said other party.

(c) The Contracting Officer shall not unreasonably condition or withhold his approval of any proposed assignment.

SEVERABILITY

32. In the event that a person or entity who is neither (i) a party to a Project contract, nor (ii) a person or entity that receives Project Water from a party to a Project contract, nor (iii) an association or other form of organization whose primary function is to represent parties to Project contracts, brings an action in a court of competent jurisdiction challenging the legality or enforceability of a provision included in this Contract and said person, entity, association, or organization obtains a final court decision holding that such provision is legally invalid or unenforceable and the Contractor has not intervened in that lawsuit in support of the plaintiff(s), the parties to this Contract shall use their best efforts to (i) within 30 days of the date of such final court decision identify by mutual agreement the provisions in this Contract which must be revised, and (ii) within three months thereafter promptly agree on the appropriate revision(s). The time periods specified above may be extended by mutual agreement of the parties. Pending

the completion of the actions designated above, to the extent it can do so without violating any applicable provisions of law, the United States shall continue to make the quantities of Project Water specified in this Contract available to the Contractor pursuant to the provisions of this Contract which were not found to be legally invalid or unenforceable in the final court decision.

RESOLUTION OF DISPUTES

33. Should any dispute arise concerning any provisions of this Contract, or the parties' rights and obligations thereunder, the parties shall meet and confer in an attempt to resolve the dispute. Prior to the Contractor commencing any legal action, or the Contracting Officer referring any matter to Department of Justice, the party shall provide to the other party 30 days' written notice of the intent to take such action; Provided, That such notice shall not be required where a delay in commencing an action would prejudice the interests of the party that intends to file suit. During the 30-day notice period, the Contractor and the Contracting Officer shall meet and confer in an attempt to resolve the dispute. Except as specifically provided, nothing herein is intended to waive or abridge any right or remedy that the Contractor or the United States may have.

OFFICIALS NOT TO BENEFIT

34. No Member of or Delegate to Congress, Resident Commissioner, or official of the Contractor shall benefit from this Contract other than as a water user or landowner in the same manner as other water users or landowners.

CHANGES IN CONTRACTOR'S SERVICE AREA

35. (a) While this Contract is in effect, no change may be made in the Contractor's Service Area, by inclusion or exclusion of lands, dissolution, consolidation, merger, or otherwise, except upon the Contracting Officer's written consent.

(b) Within 30 days of receipt of a request for such a change, the Contracting Officer will notify the Contractor of any additional information required by the Contracting Officer for processing said request, and both parties will meet to establish a mutually agreeable schedule for timely completion of the process. Such process will analyze whether the proposed change is likely to: (i) result in the use of Project Water contrary to the terms of this Contract;

(ii) impair the ability of the Contractor to pay for Project Water furnished under this Contract or to pay for any Federally-constructed facilities for which the Contractor is responsible; and (iii) have an impact on any Project Water rights applications, permits, or licenses. In addition, the Contracting Officer shall comply with the NEPA and the ESA. The Contractor will be responsible for all costs incurred by the Contracting Officer in this process, and such costs will be paid in accordance with Article 25 of this Contract.

FEDERAL LAWS

36. By entering into this Contract, the Contractor does not waive its rights to contest the validity or application in connection with the performance of the terms and conditions of this Contract of any Federal law or regulation; Provided, That the Contractor agrees to comply with the terms and conditions of this Contract unless and until relief from application of such Federal law or regulation to the implementing provision of the Contract is granted by a court of competent jurisdiction.

NOTICES

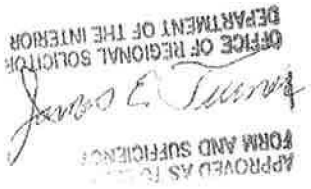
37. Any notice, demand, or request authorized or required by this Contract shall be deemed to have been given, on behalf of the Contractor, when mailed, postage prepaid, or delivered to the Area Manager, Bureau of Reclamation, Northern California Area Office, 16349 Shasta Dam Boulevard, Shasta Lake, California 96019, and on behalf of the United States, when mailed, postage prepaid, or delivered to the City Mayor of the City of Shasta Lake, P. O. Box 777, 1650 Stanton Drive, Shasta Lake, California 96019. The designation of the addressee or the address may be changed by notice given in the same manner as provided in this Article for other notices.

CONFIRMATION OF CONTRACT

38. The Contractor, after the execution of this Contract, shall furnish to the Contracting Officer evidence that pursuant to the laws of the State of California, the Contractor is a legally constituted entity and the Contract is lawful, valid, and binding on the Contractor. This Contract shall not be binding on the United States until such evidence has been provided to the Contracting Officer's satisfaction.

IN WITNESS WHEREOF, the parties hereto have executed this Contract as of the day and year first above written.

THE UNITED STATES OF AMERICA



By: _____
Regional Director, Mid-Pacific Region
Bureau of Reclamation

(SEAL)

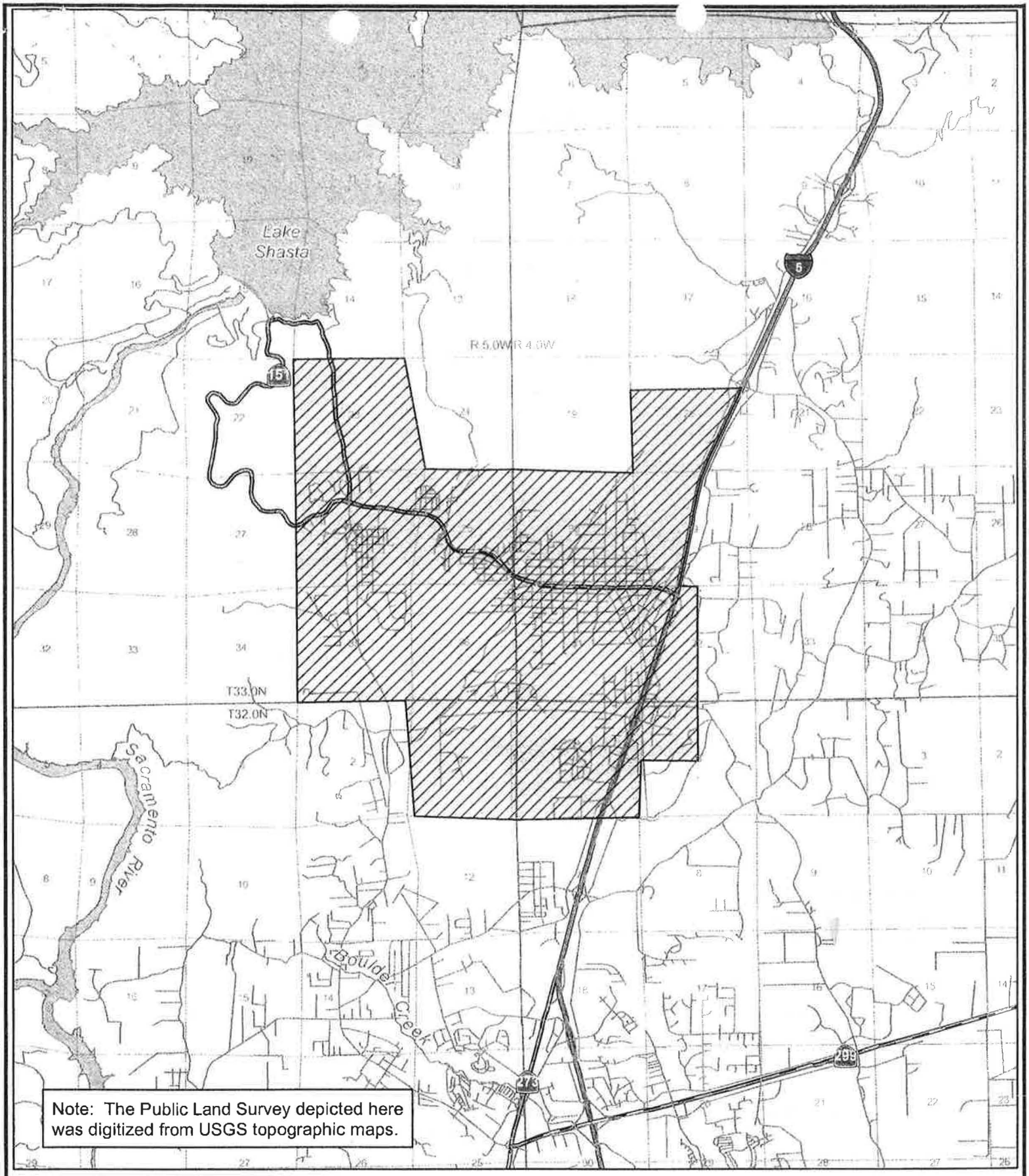
CITY OF SHASTA LAKE

By: _____
~~Mayor~~
CITY MANAGER

Attest:

By: _____
City Clerk

(H:\public\Willows Final LTRC's\2005-01-31 City of Shasta Lake LTRC Final Draft Contract.doc)



City of Shasta Lake

Contractor's Service Area

Contractor's Service Area

Contract No. 4-07-20-W1134-LTR1

Exhibit A

Miles

0 0.5 1 2

Date: October 12, 2004

File Name: N:\districts\contracts\shasta_lake\shasta_lake.mxd

214-202-10

EXHIBIT B

CITY OF SHASTA LAKE
2005 Water Rates and Charges per Acre-Foot

COST OF SERVICE RATES:	M&I
Capital Rate	($ 2.33)
O&M Rates:	
Water Marketing	3.89
Storage	6.67
Direct Pumping	8.58
Deficit Rate:	0.00
CFO/PRF Adjustment Rate 1/	$ 0.00
TOTAL	$16.81
FULL COST RATE	$16.81
TIERED PRICING COMPONENTS:	
Tiered Pricing Component >80% <=90% of Contract Total [Full Cost Rate – COS Rate / 2]	$ 0.00
Tiered Pricing Component >90% of Contract Total [Full Cost Rate – COS Rate]	$ 0.00
CHARGES UNDER P.L. 102-575 TO THE RESTORATION FUND 2/	
Restoration Charges (3407(d)(2)(A))	$15.87

1/ Chief Financial Officer (CFO) adjustment and Provision for Replacement (PFR) expense is being distributed over a 5-year period beginning in FY 2003 for those contractors that requested those costs be deferred.

2/ Restoration fund charges are payments in addition to the water rates and were determined pursuant to Title XXXIV of Public Law 102-575. Restoration fund charges are on a fiscal year basis (10/1 - 9/30).

Recent Historic Use, as defined in the CVP M&I Water Shortage Policy, is _____ acre-feet.

RESOLUTION CC 05-17

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SHASTA LAKE AUTHORIZING THE CITY MANAGER TO ENTER INTO CONTRACTS FOR THE PURCHASE, SALE AND/OR ACQUISITION OF WATER WITH THE UNITED STATES BUREAU OF RECLAMATION.

WHEREAS, the City of Shasta Lake has negotiated a long-term contract for water supply with the United States Bureau of Reclamation; and

WHEREAS, the City of Shasta Lake provides water service to the residents and businesses of the City of Shasta Lake; and

WHEREAS, it is necessary to enter into contracts with the United States Bureau of Reclamation; and

WHEREAS, the United States Bureau of Reclamation is requesting that a resolution be adopted authorizing an official to sign water contracts; and

NOW THEREFORE, BE IT RESOLVED by the City Council of the City of Shasta Lake that, that the City Manager be authorized to enter into contracts with the United Sates Bureau of Reclamation.

PASSED, APPROVED AND ADOPTED this 1st day of March 2005 by the following vote.

AYES: DURYEE, FARR, HURLHEY, SINER, GOEKLER
NOES: NONE
ABSENT: NONE

DEAN GOEKLER, Mayor

ATTEST:

RAE MORROW, City Clerk

I Certify That This is a True
and Correct Copy of
the Original On File
By: Rae Morrow
Office of the City Clerk

WATER DELIVERY AGREEMENT

BETWEEN

THE CITY OF REDDING

AND THE

CITY OF SHASTA LAKE

THIS AGREEMENT is made at Redding, California, by and between the City of Redding (Redding), a Municipal Corporation, whose address is 777 Cypress Avenue, Redding Ca. 96001 and the City of Shasta Lake (Shasta Lake), a Municipal Corporation, whose address is 1650 Stanton Drive, Shasta Lake, Ca. 96019 for a Water Delivery Agreement (Agreement).

RECITALS

A. "Redding is presently providing water service to residents in the area known as the "Summit City Pressure Zone" described on Exhibit "A", attached and incorporated herein.

B. A portion of the Summit City Pressure Zone lies within the incorporated boundaries of Shasta Lake and a portion lies within the unincorporated area of the County of Shasta, but in Redding's sphere of influence.

C. The water purchased from the Bureau of Reclamation (Bureau) by Redding to provide residential water service in the Summit City Pressure Zone is treated at Shasta Lake's Water Treatment Facility and is supplied through a master water meter located at the intersection of Nellie Bell Lane and Lake Blvd.

D. Redding and Shasta Lake desire to amend their service areas so that Shasta Lake will provide residential water service to all residences within its incorporated boundaries. Shasta Lake will in turn continue to provide such water service to the unincorporated area in the Summit City Pressure Zone operated and maintained by Redding.

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. **Boundary Change:** Shasta Lake will provide water service for all areas in the Summit City pressure zone that lie within the boundaries of Shasta Lake. Redding will continue to provide water service for the remainder of the Summit City Pressure Zone.

2. **Master Meter Relocation:** Redding will relocate the six-inch master water meter presently located at Nellie Bell Lane to the southern edge of the Shasta Lake City Limits to 12982 Beltline Road. The new master water meter location is shown on Exhibit "A". In conformity with Redding's Central Valley Project (CVP), Contract No.

Approved 7/6/04

C-4186

14-06-00-5272A (Buckeye Contract), with the Bureau , Redding will continue to be responsible for the maintenance of the master water meter.

3. **Water Purchase:** Redding shall continue to pay to Shasta Lake for water delivered through the master water meter at the tiered residential rate Shasta Lake charges its residential customers within its water contract service area, less the Bureau's contract water costs for CVP water charged to Redding.

4. **Transfer of Facilities:** Redding shall transfer to Shasta Lake ownership of all water delivery facilities and appurtenances used by Redding to provide service to customers who will be served by Shasta Lake as a result of this Agreement.

5. **New Customers:** Redding shall notify, no sooner than upon issuance of a water connection application, of any new water services that will be added to the water system that will be serviced through the newly relocated master water meter.

6. **Plant and Facilities Capacity Charges:** Redding will impose the same Water Connection Fee it charges for new water connections within the water service area of the City of Redding. The water connection fee, used to accommodate future growth and the needs of the infrastructure associated with that growth, will be divided seventy-five percent (75%) to Shasta Lake and twenty-five percent (25%) to Redding. Should Redding determine that it will be able to provide water service from its Buckeye Pressure Zone to the remainder of the Summit City Pressure Zone there will be no division of the connection fee.

7. **Water Assignment:** Redding will assign to Shasta Lake 30 acre-feet of the 40 acre-feet of CVP water allocated to the Summit City Zone in Redding's Buckeye Contract, subject to approval by the Bureau. Shasta Lake will obtain, with the Bureau's approval of the assignment of 30 acre-feet of CVP water in the Buckeye Contract to Shasta Lake.

8. **Customer Notification:** Redding shall notify all customers affected within the Summit City pressure zone of the proposed date of transfer of all water delivery facilities, appurtenances and services to Shasta Lake, and including the new water rates to be charged by Shasta Lake.

9. **Transfer Date:** The utility staff of Redding and Shasta Lake will agree on the mutually convenient transfer date.

10. **Transfer of Documents:** Redding will transfer to Shasta Lake all billing documents and records showing historical use and maintenance records fo the portion of the system to be transferred. Included in the transfer of documents will be maps showing the system transfer, including easements, valve locations and reference points.

11. **Complete Assignment:** This Agreement constitutes the total understanding between the parties regarding this matter and supercedes all previous agreements or understandings in conflict herewith.

12. **Mutual Hold Harmless:** Each party shall indemnify and save harmless the other and its elected officials, officers, employees, agents, and volunteers and each and every one of them, from and against all actions, damages, penalties, costs liability, claims,

losses and expenses of any type and description including attorneys's fees and costs to which either may be subjected by reason of, or resulting from, directly or indirectly, the negligent performance of this agreement by the other.

13. **Disputes:** If any action or arbitration is commenced to enforce any of the terms or conditions herein, or to enforce collection of monies due pursuant to this Agreement, the prevailing party shall be entitled to reasonable attorneys' fees and costs.

14. **Date of Agreement:** The effective date of this Agreement shall be the date it is signed by the second party to sign.

IN WITNESS WHEREOF, City of Redding and the City of Shasta Lake have executed this Agreement on the days and year set forth below:

CITY OF REDDING
A Municipal Corporation

Date: 7-14-, 2004

By: _____
Michael J. Pohlmeyer, Mayor

Attest

_____
Connie Strohmayer, City Clerk

Form Approved:

_____
FOR Brad L. Fuller, City Attorney
BARRY E. DeWALT

CITY OF SHASTA LAKE
A Municipal Corporation

Date: 7/6, 2004

By: _____
Larry Farr, Mayor

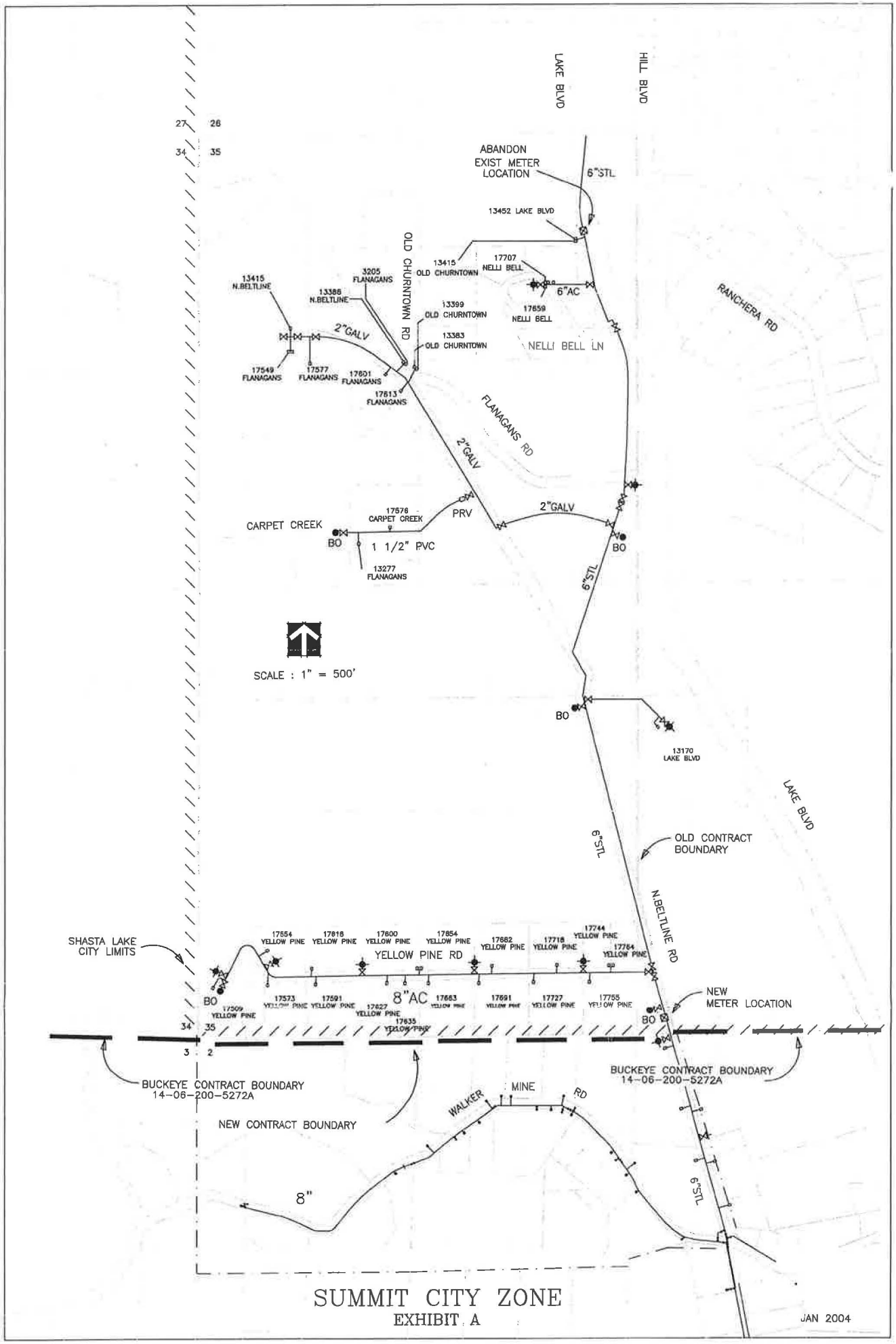
Attest

_____
Rae Morrow, City Clerk

Form Approved:

_____
John Kenney, City Attorney

attachment
Location map



SUMMIT CITY ZONE

EXHIBIT A

JAN 2004

SHASTA COUNTY WATER AGENCY
Redding, California

CONTRACT FOR PROJECT WATER

This contract, made the 3rd day of March, 1998, by and between SHASTA COUNTY WATER AGENCY, a public agency of the State of California, hereinafter referred to as the "Agency," and City of Shasta Lake, hereinafter referred to as the "Contractor,"

WITNESSETH, That:

WHEREAS, the Agency has entered into a contract with the United State of America entitled "Contract Between the United States of America and Shasta County Water Agency Providing for Water Service," Contract No. 14-06-2003367A, dated June 30, 1967, hereinafter referred to as the "Master Contract," which contract will permit the diversion of water from Shasta Lake, Keswick Reservoir, and Whiskeytown Lake by the Agency and its contractors in such quantities and at such times as best suits their needs; and

WHEREAS, the Agency has the power to enter into contracts with any public corporation, person, district, municipality, or political subdivision of the State for the purchase and sale of water; and

WHEREAS, the Contractor desires to divert Project Water from the Sacramento River for municipal, industrial, or domestic purposes; and

WHEREAS, the U.S. Bureau of Reclamation has approved the point of diversion;

NOW, THEREFORE, IT IS AGREED:

1. The Master Contract is hereby made a part of this contract and the terms thereof and any determination or actions taken thereunder shall be binding upon the parties as if said contract were fully set out herein. Unless expressly stated or unless manifestly inconsistent with the context in which used, definitions contained in said Master Contract shall apply in this contract.

2. This contract shall be effective on the date set forth above. This contract shall remain in effect through the period of the Master Contract and any extension thereof. This contract may be terminated at any time upon consent of both parties.

3. The Contractor is entitled to divert water at such points of diversion as may be agreed upon in writing between the Agency and the Contractor for use within the Contractor's service area. The quantity of water the Contractor may divert shall not exceed 50 acre feet per year. If the Contractor wishes to divert less than the maximum amount of water permitted under this contract, he shall initially upon execution of this contract and for each subsequent calendar year submit by December 15th a schedule of diversion satisfactory to the Agency and approved by it for the water to be diverted during the following calendar year or portion thereof provided that no schedule will be approved for a lesser amount of water than the average amount diverted during the previous five year period.

4. The Contractor shall install, operate and maintain, at its sole expense, measuring equipment satisfactory to the Agency. In the event such equipment is found by the Agency to be faulty or not operating properly, it shall be repaired or replaced by the Contractor. In the event the Contractor fails to make such repairs or replacement within a reasonable time as determined by the Agency, it may be done by the Agency and the cost thereof shall be paid by the Contractor to the Agency within sixty (60) days following the date a statement of such cost is furnished by the Agency. During the time such measuring equipment is not operating properly, as determined by the Agency, the Agency shall estimate water usage during such time and bill the Contractor on the basis of said estimate.

5. The Contractor shall pay to the Agency all sums due under this contract in accordance with the rates of water service established by the Agency. These rates will be established to, as nearly as practicable, recover the actual costs incurred by the Agency under the Master Contract and the cost of administration involved. The rate currently established by the Agency for Project Water is Thirty-Seven Dollars ($37.00) per acre foot for water delivered and Four Dollars ($4.00) per acre foot for water under contract but not delivered. "Water under contract" shall mean the quantity of water the contractor is entitled to divert as shown in paragraph 3. This rate shall remain in effect unless the Contractor is notified of its revision at least sixty (60) days prior to

the beginning of any calendar year. Payment shall be due on January 31 of each year for water diverted or contracted for during the previous year, and shall be delinquent after thirty (30) days. A penalty of one (1) percent of the amount of any delinquency shall be charged for each month, or fraction thereof, of said delinquency. As a minimum, payment shall be due the Agency for the amount of water specified in the schedule submitted in accordance with Section 3 above, unless more water is actually diverted.

6. In accordance with Article 9 of the Master Contract, there may occur shortages in the quantity of water available to the Agency under said contract. The Agency reserves the right to allocate the available supply to all or some of its water users in such amounts as the Agency in its sole discretion may determine, and no liability shall accrue to the Agency or any of its officers or employees on the basis of said shortage or the Agency's decision to reduce water allocation to Contractor or any other purchaser of Agency water. Such shortage shall not relieve the Contractor of his obligation to make the payments required in this contract.

7. The Agency assumes no responsibility with respect to the quality of water which is made available under this contract.

8. The Contractor assumes all responsibility for the control, distribution and disposal of water diverted under this contract and holds the Agency harmless from damage connected herewith.

9. If the Contractor is in default under this contract the Agency may refuse delivery of water and may terminate this contract on ten (10) days written notice to the Contractor. If the Agency withholds termination in the event of default to afford the Contractor an opportunity to cure its default, or for any other reason, the Agency may nevertheless terminate this contract at any later time unless the default is cured prior to the date of termination.

10. The Contractor agrees that it will comply fully with all applicable federal laws, orders and regulations, and the laws of the State of California, all as administered by appropriate authority, concerning the pollution of streams, reservoirs, or water courses

with respect to the discharge of refuse, garbage, sewage effluent, industrial waste, oil, mine tailings, or other pollutants.

11. The Contractor agrees as follows:

(a) To comply with Title VI (Section 601) of the Civil Rights Act of July 2, 1964 (78 Stat. 241) which provides that "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subject to discrimination under any program or activity receiving federal financial assistance," and be bound by the regulations of the Department of the Interior for the effectuation thereof, as set forth in 43 CFR 17.

(b) To obligate its subcontractors, subgrantees, transferees, successors in interest, or any other participants, receiving federal financial assistance hereunder, to comply with the requirements of this provision.

12. The Contractor shall not transfer or assign his rights under this contract without the written consent of the Agency.

IN WITNESS WHEREOF, the parties hereto have executed this contract the day and year first above written.

SHASTA COUNTY WATER AGENCY

Patricia A Clarke MAR 17 1998

Patricia A. Clarke, Chairman
Board of Directors

ATTEST:
CAROLYN TAYLOR
Clerk of the Board

By Lynn Ceraglino
Deputy

CITY OF SHASTA LAKE

Linda Hunt

City Council

APPROVED AS TO FORM
KAREN KEATING JAHR
County Counsel

By Catherine Beard, Deputy

AMENDED
WATER TRANSFER AGREEMENT
05-03

This Amended Water Transfer Agreement ("Agreement") is made and entered into between the City of Shasta Lake ("City") and Anderson-Cottonwood Irrigation District ("ACID").

RECITALS

1.0 ACID is an irrigation district duly authorized and existing under the laws of the State of California.

2.0 The City is a duly incorporated general law city organized and existing under the laws of the State of California.

3.0 The City seeks water to be used for its general municipal and industrial purposes.

4.0 ACID has 2,000 acre feet of CVP ("Project") water under Contract Number 14-06-2000-3346A-R-1 between ACID and the United States Bureau of Reclamation ("Bureau") which ACID desires to sell and transfer to the City.

IN WITNESS of the foregoing Recitals and in accordance with the terms and conditions set forth below, the parties agree as follows:

5.0 This Agreement shall be effective when last signed by the parties below and shall continue until February 28, 2045, or until termination, for reasons beyond ACID's control, of Contract No. 14-06-2000-3346A-R-1, under which the water to be made available for this Agreement is being made available, whichever is earlier.

6.0 Water to Be Transferred. ACID shall make available for transfer to the City up to a maximum of 2,000 acre-feet per year of Project Water subject to the terms of Contract No. 14-06-2000-3346A-R-1.

6.1. Retransfer. For the years 2008 through 2012, ACID may retransfer up to 500 acre-feet of the transferrable water, with the retransfer proceeds going to ACID. The City shall not be obligated to pay Bureau charges or ACID administrative fees for the re-transferred water. No portion of the amount received from any re-transferee shall

Transfer available April 1 to Oct. 31

be paid or credited to the City. For purposes of Section 12, the "water available to the City" subject to proportionate reduction shall be 1500 acre feet.

7.0 Notice of Water Availability; Notice of Intent to Take. Not later than February 15 of each year during the term of this Agreement, ACID shall provide written notice of the quantity of water available for transfer and the cost per acre-foot. The City shall, by March 15th or within thirty (30) days of notice of water availability by ACID, whichever is later, inform ACID in writing of its intent to take delivery of Project water and of the quantity to be taken.

8.0 Payment of Bureau Charges. The rate for the transferred water shall comply with the Final Policy on Water Rates for Water Transfers from One Central Valley Project ("CVP") to Another CVP Contractor, dated April 28, 2005; until such documents are amended or superceded. The City shall pay annual Bureau charges:

a) For 1500 acre-feet of water, whether actually transferred or not;

b) For any additional quantity of water confirmed to be taken by the City pursuant to Section 7; and

c) Payment of Bureau charges, as provided above, is required even if water cannot be delivered by reason of conditions imposed by the Bureau and accepted by the City under Section 10.

9.0 Payment of ACID Administrative Fee. The City shall pay annually an ACID administrative fee:

a) For 1500 acre-feet, whether actually transferred or not;

b) For any additional quantity of water actually taken by the City; and

c) Payment of the ACID administrative fee, as provided in subdivision "a" of this section, is required even if water cannot be delivered by reason of conditions imposed by the Bureau and accepted by the City under Section 10.

For 2008, the administrative fee shall be $35.00 per acre-foot. For the years 2009 through 2015, the administrative fee shall be increased 2% per year. For each year after 2015, the administrative fee shall be adjusted based upon changes to the Consumer Price Index, all Urban Consumers (CPI-U), base year 2015.

10.0 Bureau Approval. The City recognizes that the sale and transfer contemplated in this Agreement is subject to written approval by the Bureau. The City further recognizes that the transfer may be subject to environmental review by the Bureau. In the event that the Bureau imposes conditions on the transfer, the City shall have 30 days after receipt of notice of such conditions from ACID to consider whether these conditions are acceptable to the City. If the City, in the City's sole discretion, finds the conditions unacceptable, the City may terminate this Agreement without incurring any obligation to ACID.

11.0 Conditions, Measurement & Delivery Point. The 2,000 acre feet of Project water will be diverted by the City at its present diversion point located at the 16 inch water line meter located at the interconnection of the pumping plant discharge line at the water treatment facilities adjacent to the Shasta Dam Visitor Area. Additional point or points of delivery, either on CVP Project facilities or other locations, may be mutually agreed upon in writing by ACID and the City, which agreement will not be unreasonably withheld. The point or points of diversion shall also be the point or points of measurement of Project water purchased.

12.0 Critical Year Reductions. The Project water contemplated by this Agreement is subject to critical year reductions by the Bureau. In the event the Bureau reduces Project water available to ACID pursuant to its critical year reduction procedures, the total Project water available to the City will be subject to critical year reduction in the same proportion as other Project water is reduced to ACID.

13.0 Payment/Credit. ACID shall submit invoices to the City and the City shall pay such invoices in a manner that will allow ACID to make timely payments to the Bureau as required by Contract No. 14-06-2000-3346A-R-1. Except as provided in Section 6.1, if water for which the City has paid is re-transferred by ACID, the City shall receive a credit against its future obligations equal to the amount paid by the re-transferee to ACID

per acre-foot for the re-transferred water, up to the amount actually paid by the City for Bureau charges and the ACID administrative fee per acre-foot of the re-transferred water. ACID is under no obligation to re-transfer water available for transfer under this Agreement. This credit will not exceed the amount of the City's obligation to ACID for such water.

14.0 Water Quality. The City acknowledges that ACID is not responsible for the quality of Project water transferred and ACID does not warrant its quality.

15.0 Water Rights Not Transferred. Nothing in this Agreement is intended to nor shall confer any appropriative, public trust or other right to water on any person or entity. The only rights granted to the parties as a result of this Agreement are those expressly set forth herein.

16.0 General Indemnity. Each party agrees to protect, defend, indemnify and hold harmless the other party, its officers, directors, agents, servants, employees and consultants from and against any and all losses, claims, liens, demands and causes of action of every kind or character without limitation occurring on or in any way incidental to or arising directly or indirectly out of the performance or non-performance of the indemnifying party.

17.0 Governing Law. This Agreement will be interpreted and enforced pursuant to the laws of the State of California.

18.0 Modifications. This Agreement may be modified only by a written instrument executed by both parties.

19.0 Entire Agreement. This Agreement contains the entire understanding between the parties relating to their interests, obligations and rights connected with the subject matters set forth herein. All prior communications, negotiations, stipulations or understandings, whether oral or in writing, are superceded by this Agreement.

20.0 Assigns and Successors. This Agreement shall be binding upon, and inure to the benefit of, the assigns and successors in interest of the parties herein.

21.0 Waiver. The waiver or failure to declare a breach as a result of a violation of any terms of this Agreement shall not constitute a waiver of that term or condition and shall not

provide the basis for a claim of estoppel, forgiveness or waiver by any party of that term or condition.

22.0 Attorney's Fees. If it is necessary for any party hereto to commence legal action or arbitration to enforce the provisions of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees, expenses and costs incurred therein.

23.0 Notices. Any and all communications or notices in connection with this Agreement will be hand-delivered or sent by United States First Class Mail postage prepaid as follows:

TO THE CITY:

City Manager
P.O. Box 777
Shasta Lake, CA 96019

TO ANDERSON-COTTONWOOD IRRIGATION DISTRICT:

General Manager
2810 Silver Street
Anderson, CA 96007

IN WITNESS WHEREOF, the parties have executed this Amended Water Transfer Agreement as of the day and year stated below:

Dated: 4/24/08. CITY OF SHASTA LAKE

By: _____

Its: _____

Dated: 4-28-08. ANDERSON-COTTONWOOD IRRIGATION DISTRICT

By: Brenda L. Haynes

Its: Board President

New W-100-095-505

WATER TRANSFER AGREEMENT

This Water Transfer Agreement ("Agreement") is made and entered into between the City of Shasta Lake ("City") and MCM Properties.

RECITALS

1. MCM Properties is a/an Corporation duly authorized and existing under the laws of the State of California.

2. The City is a duly incorporated general law city organized and existing under the laws of the State of California.

3. The City seeks water to be used for its general municipal and industrial purposes.

4. MCM Properties has 325 acre feet of CVP (Project) water pursuant to Contract Number 14-06-200-7827A (Contract No. 7827A) with the United States Bureau of Reclamation ("Bureau"), which MCM Properties desires to make available for sale and transfer to the City.

IN WITNESS WHEREOF and in accordance with the terms and conditions set forth below, the parties agree as follows:

5. Term of Agreement. This Agreement shall be effective when last signed by the parties below and shall continue until February 28, 2045, or until termination, for reasons beyond MCM Properties' control, of Contract No. 7827A, under which the water to be made available for this Agreement is being made available, which ever is earlier.

6. Water to Be Transferred. MCM Properties shall make available for transfer to the City up to a maximum of 325 acre-feet per year of Project water pursuant to Contract No. 7827A. MCM Properties shall make available an additional 132 acre feet per year of Project water if agreed upon annually by both parties. The City shall have first right to this 132 acre feet per year of excess Project water if MCM Properties determines that the Project water is available for transfer.

7. Purchase of Water. During the term of this Agreement, the City may purchase up to, and shall have the first right of refusal for 325 acre-feet of Project water from MCM Properties beginning March 1, 2006, and each calendar year thereafter. Not later than February 15 of each year during the term of this Agreement, MCM Properties shall confirm to the City that the Project water to be made available pursuant to Contract No. 7827A can be delivered, the quantity available, and its cost per acre foot. The City shall thereafter inform MCM Properties of its intent to take delivery of Project water as described herein for such year and confirm the quantity to be transferred.

8. Rate Applicable to Transferred Water. The rate for the transferred water shall comply with the Final Policy on Water Rates for Water Transfers from One Central Valley Project (CVP) Contractor to Another CVP Contractor, dated April 28, 2005; until such documents is amended or superseded.

9. Compensation. For the Project water not taken, and not otherwise sold or transferred by MCM Properties to another party, the City agrees to pay all fees, charges, and costs imposed by the Bureau on MCM Properties relating to the purchase of the Project water. For Project water delivered, the City shall pay all fees, charges and costs imposed by the Bureau on MCM Properties relating to the purchase and transfer of such Project water.

a) Interest Bearing Operation and Maintenance Deficit Rate. In addition to the fees, charges and costs imposed by the Bureau, the City agrees to pay an additional sum equal to the "interest bearing operation and maintenance deficit component", which the Bureau incorporates into MCM Properties' irrigation rate in Contract No. 7827A, for each ac/ft diverted. As an example, the City would pay the 2005 Bureau temporary rate of $20.26 per ac/ft, plus MCM Properties' "interest bearing deficit component" of $4.27 per ac/ft, for a total of $24.53 per ac/ft for water transferred during the 2005 water year.

(b) Surcharge. The City shall pay an additional surcharge to MCM Properties per acre-foot of Project water, due annually on September 15th. The surcharge that the City of Shasta Lake will pay to MCM Properties shall be $15.00 per acre-foot, increased annually by 2.5 %.

The parties acknowledge that the Project water transferred must first be scheduled and purchased by MCM Properties from the Bureau. For the Project water delivered, the City will pay all purchase and transfer charges and any other fees, charges or costs imposed on MCM Properties for such Project water.

10. Bureau Approval. The parties recognize that the sale and transfer contemplated in this Agreement is subject to prior written approval by the Bureau. The City further recognizes that the transfer may be subject to environmental review by the Bureau. In the event that the Bureau imposes conditions on the transfer, the City shall have 30 days after receipt of notice of such conditions from MCM Properties to consider whether these conditions are acceptable to the City. If the City, in the City's sole discretion, finds the conditions unacceptable, the City may terminate this Agreement without incurring any obligation to MCM Properties

11. Conditions, Measurement & Delivery Point. The Project water delivered will be diverted by the City at its present diversion point located at the 16 inch water line meter located at the interconnection of the pumping plant discharge line at the water treatment facilities adjacent to the Shasta Dam Visitor Area. Additional point or points

of delivery, either on CVP Project facilities or other locations, may be mutually agreed upon in writing by MCM Properties and the City. The point or points of diversion shall also be the point or points of measurement of Project water purchased.

12. Critical Year Reductions. The Project water contemplated by this Agreement is subject to critical year reductions by the Bureau. In the event the Bureau reduces Project water available to MCM Properties pursuant to its critical year reduction procedures, the total water available to the City will be subject to critical year reduction in the same proportion as other Project water is reduced to MCM Properties

13. Payment. MCM Properties shall submit invoices to the City and the City shall pay such invoices in a manner that will allow MCM Properties to make timely payments to the Bureau as required by Contract No. 7827A. The City recognizes that the Project water being made available for transfer by MCM Properties is subject to a "take or pay" provision in Contract No. 7827A. Subject to certain reduction requirements, MCM Properties is required to pay for 75% of the Project water under Contract No. 7827A whether the Project water is used or not. The City agrees to assume MCM Properties' obligations of the provisions of the Bureau contract and to pay for the Project water whether the Project water is actually transferred or not. Therefore, the City agrees to pay for, each year, 75% of the 325 acre-feet per year of Project water. In the event that the City does not take the Project water made available for transfer under this Agreement and MCM Properties sells or transfers the Project water to another party, the City's obligation to MCM Properties shall be credited by the amount MCM Properties receives from the party to whom it sells.

14. Water Quality. The City acknowledges that MCM Properties is not responsible for the quality of Project water transferred and MCM Properties does not warrant its quality.

15. Water Rights Not Transferred. Nothing in this Agreement is intended to nor shall confer any appropriative, public trust or other right to water on any person or entity. The only rights granted to the parties as a result of this Agreement are those expressly set forth herein.

16. General Indemnity. Each party agrees to protect, defend, indemnify and hold harmless the other party its officers, directors, agents, servants, employees and consultants from and against any and all losses, claims, liens, demands and causes of action of every kind or character without limitation occurring on or in any way incidental to or arising directly or indirectly out of the performance or non-performance of the indemnifying party.

17. Governing Law. This Agreement will be interpreted and enforced pursuant to the laws of the State of California.

18. Modifications. This Agreement may be modified only by a written instrument executed by both parties.

19. Entire Agreement. This Agreement contains the entire understanding between the parties relating to their interests, obligations and rights connected with the subject matters set forth herein. All prior communications, negotiations, stipulations or understandings, whether oral or in writing, are superceded by this Agreement.

20. Assigns and Successors. This Agreement shall be binding upon and inure to the benefit of, the assigns and successors in interest of the parties herein.

21. Waiver. The waiver or failure to declare a breach as a result of a violation of any terms of this Agreement shall not constitute a waiver of that term or condition and shall not provide the basis for a claim of estoppel, forgiveness or waiver by any party of that term or condition.

22. Attorney's Fees. If it is necessary for any party hereto to commence legal action or arbitration to enforce the provisions of this Agreement, the prevailing party shall be entitled to reasonable attorney's fees, expenses and costs incurred therein.

23. Notices. Any and all communications or notices in connection of this Agreement will be hand-delivered or sent by United States First Class Mail postage prepaid as follows:

TO THE CITY:

City Manager
P.O. Box 777
Shasta Lake, CA 96019

TO MCM PROPERTIES INC.:

Clairelee and Ralph Bulkley
5001 Ensley Road
Knights Landing, Ca. 95645

IN WITNESS WHEREOF, the parties have executed this Agreement as of the day and year first written above.

CITY OF SHASTA LAKE

By: Gerry Cupp by cw
City Manager Date 1/23/06

MCM PROPERTIES INC.

By: MCM Properties, Inc. by Claudette Laing Bulkley Pres.
Date 1/25/06

WATER USE AGREEMENT

This Agreement, effective March 1, 2014, is made by and between THE MCCONNELL FOUNDATION, a California non-profit corporation, (hereafter "McConnell") and City of Shasta Lake, a California municipal corporation (hereafter "Contractor").

RECITALS

A. McConnell has the right to receive 5,100 acre feet of water each year from the United States Department of the Interior, Bureau of Reclamation's (hereafter "Reclamation") Central Valley Project (hereafter "CVP") pursuant to a written contract dated August 11, 2000 (hereafter the "Contract").

B. Under the terms of the Contract, McConnell may designate the place of delivery of Contract water to any area that is within the permitted place of use for CVP water and temporarily assign its rights to receive Contract water to another party.

C. Contractor holds an existing contract to receive CVP water from Reclamation. Contractor's service area is within the permitted place of use for CVP water.

D. McConnell desires to grant to Contractor, and Contractor desires to purchase, the right to receive Nine Hundred (900) acre feet of Contract water, pursuant to the terms and conditions set forth below.

NOW, THEREFORE, the parties agree as follows:

TERMS AND CONDITIONS

1. **Purpose of Agreement:** The purpose of this Agreement is to allow Contractor to purchase a portion of McConnell's Contract water during the 2014-2015 water year ("Water Year") only.

2. **Term of Agreement:** This Agreement is effective as of the date first indicated above and shall expire February 28, 2015, unless otherwise extended by a written agreement signed by both parties.

3. **Quantity of Water:** The quantity of water Contractor is entitled to receive under this Agreement is Nine Hundred (900) acre feet (hereafter "Quantity"). On or before March 31, 2014, Contractor may reduce the Quantity by providing written notice to McConnell pursuant to Paragraph 14, below. Beginning April 1, 2014, Contractor shall be obligated to "take or pay" for the total Quantity requested by that date. Water delivered to Contractor under this Agreement shall be made available to Contractor by Reclamation pursuant to the terms of the Contract and in the quantity set forth in the Water Delivery Schedule attached hereto as Exhibit "A" and incorporated herein by reference, or as subsequently amended.

4. **Measurement of Water:** The water made available to Contractor under this Agreement will be measured with equipment owned, installed, operated and maintained by Contractor. Upon

request by McConnell, Contractor will investigate the accuracy of such measurements and promptly correct any discovered errors.

5. **Use of Water:** The parties agree that water made available under this Agreement may be used for municipal and irrigation purposes.

6. **Payment for Water:** Contractor shall pay to McConnell the sum of Two Hundred Fifty Dollars ($250.00) per acre foot for each acre foot of water purchased under this Agreement. Payments must be received by McConnell within thirty days of each month during which water is scheduled for delivery, and shall be made for the full amount of McConnell water scheduled for that month. Contractor understands that this is a "take or pay" agreement and that Contractor's failure to take delivery of water scheduled under this Contract does not affect Contractor's obligation to pay for the water purchased, provided that if Reclamation permits a change in the schedule, Contractor will pay for the water in accordance with the modified schedule. All payments to McConnell shall be sent to the address indicated in Paragraph 14, below.

7. **Delivery Schedule:** Water shall be available for diversion by Contractor at its existing point of diversion for CVP water in accordance with the attached Water Delivery Schedule. Any quantity of water not diverted by Contractor during the month in which it is scheduled shall be available to Contractor during any subsequent month of the Water Year only upon rescheduling through a revised Water Delivery Schedule and subject to Reclamation's prior approval. Failure by Reclamation to reschedule unused water shall not relieve Contractor of its obligation to pay McConnell for the water.

8. **Limits on Use:** Contractor may use the water diverted under this Agreement for any beneficial use within its existing service area for CVP water. Contractor may not reallocate, transfer, sell or exchange any portion of the water diverted under this Agreement without McConnell's prior written approval, which may be withheld at McConnell's sole discretion.

9. **Reporting Requirements:** Contractor shall provide McConnell with monthly reports identifying the quantity of water diverted under this Agreement during the immediately preceding month. These reports must be received by McConnell by the 7th day of each month following any month in which water is diverted under this Agreement. Contractor also shall report to Reclamation by the 10th day of each month the quantity of water diverted under this Agreement.

10. **Interruption by Reclamation:** Contractor understands that the water made available under this Agreement is being delivered by Reclamation pursuant to the terms of McConnell's Contract. McConnell shall not be liable to Contractor for any interruption or reduction of water deliveries under this Agreement caused by Reclamation not delivering water under McConnell's Contract. In the event Reclamation does not deliver water to Contractor under this agreement for reasons unrelated to Contractor's actions or inactions, Contractor shall not be required to pay for the undelivered quantity.

11. **Default:** If Contractor fails to pay any amount owed under this Agreement for a period of three (3) days after receiving written notice of this failure from McConnell, McConnell may terminate this Agreement and exercise its rights and remedies under the law.

12. **Assignment Restricted:** Contractor's rights and obligations under this Agreement shall not be assigned without McConnell's prior written consent, which may be withheld in McConnell's sole and absolute discretion, and any assignment without consent shall be void and have no effect. Subject to this restriction, this Agreement shall inure to the benefit of and be binding on the parties and their respective successors, heirs and assigns.

13. **Indemnification and Hold Harmless:** McConnell shall not be responsible for the control, carriage, handling, use, disposal or distribution of water made available to Contractor under this Agreement. Contractor shall indemnify, defend and hold McConnell, its affiliates, partners, officers, directors, shareholders, employees, independent contractors, agents, successors and assigns harmless from any damage or claim of damage of any nature whatsoever for which there is legal responsibility, including property damage, personal injury or death arising out of or connected with the control, carriage, handling, use, disposal, or distribution of such water, including but not limited to court costs and attorney fees and the fees of expert witnesses.

14. **Notices:** Any notices given under this Agreement shall be in writing and shall be served either personally or delivered by first class or express United States mail with postage prepaid, return receipt requested pursuant to registered or certified mail, or by a nationally recognized overnight commercial courier service with charges prepaid. Notices may also effectively be given by transmittal over electronic transmitting devices if the party to whom the notice is being sent has a receiving device in its office, and provided a complete copy of the notice shall also be served either personally or in the same manner as required for a mailed notice. Notices shall be deemed received at the earlier of actual receipt or three (3) days following deposit in the United States mail with postage prepaid or with a nationally recognized overnight commercial courier service with charges prepaid. Notices shall be directed to the following addresses:

To: McConnell,

John Mancasola
The McConnell Foundation
800 Shasta View Drive
Redding, CA 96003-8208

With a copy to:

Swanson Law Office
Jeffery J. Swanson
2515 Park Marina Drive, Suite 102
Redding, CA 96001

To: Contractor,

John Duckett, City Manager
City of Shasta Lake
1650 Stanton Drive
Shasta Lake, CA 96019

Any party may change its address for notice purposes by giving notice to the others in accordance with this paragraph, provided that the address change shall not be effective until three (3) days after notice of the change.

15. **Force Majeure:** Neither party shall be liable for any loss, damage or penalty resulting from delays or failures in performance resulting from acts of God or other causes beyond its control. Each party agrees to notify the other party promptly of any circumstance delaying its performance and to resume performance as soon thereafter as is reasonably practicable. If there is such a delay or failure due to events as set forth in this paragraph, such delay or failure will result in all scheduled deadlines and time limitations being extended by an amount of time equal to such delay or failure.

16. **Severability:** The unenforceability, invalidity, or illegality of any provision of this Agreement shall not render the other provisions unenforceable, invalid or illegal.

17. **Attorneys' Fees:** In any dispute between the parties, whether or not resulting in litigation, the prevailing party shall be entitled to recover from the other party all reasonable costs, including, without limitation, reasonable attorneys' fees.

18 **No Party Deemed Drafter:** In the event of a dispute between any of the parties hereto over the meaning of this Agreement, no party shall be deemed to have been the drafter hereof, and the principle of law that contracts are construed against the drafter does not and shall not apply.

19. **Authority:** Upon request, each party shall deliver to the other party a certified copy of a resolution of its board of directors/governing body or other evidence authorizing the execution of this Agreement and naming the persons authorized to execute this Agreement on behalf of the named entity.

20. **Counterpart Copies:** This Agreement may be signed in counterpart or duplicate copies, and any signed counterpart or duplicate copy shall be equivalent to a signed original for all purposes.

21. **Entire Agreement/Amendments:** This Agreement, which includes the Exhibits, contains all representations and the entire understanding and agreement between the parties. Correspondence, memoranda, and oral or written agreements which originated before the date of this Agreement are replaced in total by this Agreement unless otherwise expressly stated in this Agreement. The provisions of this Agreement may be waived, altered, amended, or repealed, in whole or in part, only on the written consent of all parties to this Agreement.

IN WITNESS WHEREOF, the parties hereto have signed their names as of the date and year indicated below.

THE MCCONNELL FOUNDATION

By: _____
JOHN A. MANCASOLA,
Executive Vice-President

Date: 3.31.14

CONTRACTOR

By: _____
JOHN DUCKETT,
City Manager

Date: 3/5/2014

EXHIBIT "A"

WATER SCHEDULE
THE MCCONNELL FOUNDATION/CITY OF SHASTA LAKE

WATER YEAR 2014-2015

Month	Quantity (af)	Point of Diversion	Place of Use
March	0	COSL Intake – 001	City of Shasta Lake
April	0	COSL Intake – 001	City of Shasta Lake
May	80	COSL Intake – 001	City of Shasta Lake
June	100	COSL Intake – 001	City of Shasta Lake
July	140	COSL Intake – 001	City of Shasta Lake
August	100	COSL Intake – 001	City of Shasta Lake
September	100	COSL Intake – 001	City of Shasta Lake
October	90	COSL Intake – 001	City of Shasta Lake
November	90	COSL Intake – 001	City of Shasta Lake
December	75	COSL Intake – 001	City of Shasta Lake
January	75	COSL Intake – 001	City of Shasta Lake
February	50	COSL Intake – 001	City of Shasta Lake
Total Scheduled	900		

AGREEMENT FOR PURCHASE AND SALE OF WATER

This agreement is made this 7th day of August, 2007, by and between the City of Shasta Lake ("Shasta Lake" herein) and the City of Redding ("Redding" herein) as follows:

Recitals

A. Shasta Lake desires to improve its water system reliability by purchasing water on an emergency basis from Redding for delivery at an intertie point within Shasta Lake.

B. Redding presently has a surplus of ground water which it can sell to Shasta Lake.

It is agreed that:

1. **Water Delivery**. Redding will deliver up to 200,000 gallons of water per day on an emergency basis to Shasta Lake. For each gallon of water delivered, Redding will pump an equivalent amount of ground water into its system to replace the water delivered to Shasta Lake.

2. **Intertie Point.** The intertie point shall be at the end of Redding's existing 6-inch transmission main that extends east from Newtown Road, under the Union Pacific Railroad tracks, and terminates at a service connection on the east side of the railroad (Refer to attached Exhibit A).

3. **Construction and Maintenance of Intertie.** Shasta Lake shall maintain the intertie during the life of this agreement.

4. **Water Cost.** Shasta Lake shall pay Redding a rate equal to Redding's water commodity rate in effect at the time of the deliveries plus ground water pumping costs and any other costs associated with pumping and delivery of water to Shasta Lake. The delivery rate will be updated periodically. Billing shall be monthly for the water delivered during the previous billing period. The water rate for the current one year term of the agreement shall be $1.14 per one hundred cubic feet delivered.

5. **Term.** The term of this agreement shall be for one year and shall renew for successive one year terms until such time as either party terminates this Agreement pursuant to Section 7.

6. **Bureau of Reclamation Approval.** Although not anticipated, the parties acknowledge that the approval of the United States Bureau of Reclamation may be required for the transfer of water between the parties. It is the current understanding of the parties that a groundwater transfer shall not be construed by the Bureau as the transfer of CVP surface water. It shall be the responsibility of Shasta Lake to confirm this understanding before delivery of water begins.

7. **Termination.** (a) This agreement may be terminated without cause by either Party upon the expiration of thirty (30) calendar days following mailing of a written notice to the non-terminating party.

Approved 8-7-07

C-3721

8. **Notice.** Any Notice required to be given by the terms if this agreement shall be by first-class mail, postage prepaid, addressed to the City Manager or at the then current business address of the other party.

9. **Attorneys Fees.** If any action is brought by either party to enforce any term of this agreement, the prevailing party shall be entitled to its reasonable attorneys fees and costs.

10. **Mutual Hold Harmless.** The City of Shasta Lake shall indemnify and save harmless the City of Redding, its elected officials, officers, employees, agents and volunteers, and each and every one of them, from and against all actions, damages, costs, liability, claims, losses and expenses of every type and description to which any or all of them may be subjected, by reason of, or resulting from, directly or indirectly, the negligent performance of this agreement by the City of Shasta Lake.

    The City of Redding shall indemnify and save harmless the City of Shasta Lake, its elected officials, officers, employees, agents and volunteers, and each and ever one of them, from and against all actions, damages, costs, liability, claims, losses and expenses of every type and description to which any or all of them may be subjected, by reason of, or resulting from, directly or indirectly, the negligent performance of this agreement by the City of Redding.

11. **Drought & Emergency Restrictions.** Notwithstanding the hold harmless provisions of Paragraph 10, negligent performance shall not include the inability to deliver the amount of water requested by Shasta Lake due to drought conditions. This agreement to deliver water shall be subject to the same conditions which Redding may place upon the quantity of water used by its resident customers, including percentage cutbacks.

IN WITNESS WHEREOF, the parties, through their duly authorized representatives, have executed this agreement as of the date first above written.

CITY OF SHASTA LAKE

BONNIE HURLHEY, Mayor

ATTEST:

RAE MORROW, City Clerk

FORM APPROVED:

JOHN KENNY, City Attorney

CITY OF REDDING

DICK DICKERSON, Mayor

ATTEST:

CONNIE STROHMAYER, City Clerk

FORM APPROVED:

BARRY E. DEWALT, Asst. City Attorney

EMERGENCY INTERTIE AGREEMENT
BETWEEN
BELLA VISTA WATER DISTRICT
AND
THE CITY OF SHASTA LAKE

This agreement, made this 17th day of June, 1997, by and between Bella Vista Water District, a California Water District, hereinafter referred to as District, and the City of Shasta Lake, hereinafter referred to as City.

RECITALS

The parties hereto have determined that it would be in their best interest to utilize water interties between them for the purpose of water transfers in times of emergency;

The parties hereto have further determined that it would be in their mutual best interests to set forth their respective rights, duties, and obligations concerning emergency transfers of water in a written agreement.

WHEREFORE the parties hereby agree as follows:

1. **Definitions.** For purposes of the agreement, "emergency" includes, but is not limited to, mechanical failures, broken water mains, and system contamination, however, in no event shall a reduced supply of available water to either party be considered an "emergency" for purposes of this agreement;
2. **Notice.** Prior to any transfer of water pursuant to this Agreement, the requesting party shall notify the supplying party orally, that such a transfer is desired, what emergency condition exists which would permit the requested transfer, the anticipated duration of such emergency, and the anticipated quantity of water to be delivered during such transfer. Upon receipt of the request, the supplying party's

authorized agent, shall immediately make a determination as to whether such transfer will be approved, and shall inform the requesting party of its decision, and give the rate of transfer of water in G.P.M., and the start of delivery time. The receiving party will confirm in writing this arrangement within twenty-four (24) hours of start of delivery. The determination of whether or not to approve a request for water transfer shall be in the sole discretion of the supplying party;

3. **Duration of Transfer.** As water transfers pursuant to this Agreement are strictly limited to emergency situations, any transfer of water shall automatically terminate thirty days (30) from the time the transfer was approved by the supplying party. If the receiving parties request for water transfer exceeds the thirty (30) day period, the receiving party shall submit an additional request for water transfer as provided above;

4. **Costs**. The supplying party, pursuant to a transfer of water under this Agreement, shall be entitled to compensation for actual water supplied based on its wholesale cost of water transferred per emergency, plus the actual cost of treatment, transportation, and administrative costs connected therewith. Neither party is to profit from such transfer;

5. **Indemnification.** The parties hereto agree to indemnify and hold the supplying party harmless from any and all claims of any nature whatsoever arising from , or relating to, the quality of water transferred pursuant to this Agreement, or the inability of failure of the supplying party to deliver water for any reason;

6. **Bureau of Reclamation Approval.** The parties hereby acknowledge that written approval from the United States Bureau of Reclamation may be required for transfer of water between the parties. In the event the Bureau of Reclamation does not grant such approval this Agreement shall terminate;

7. **Termination.** This Agreement shall commence on the date of signing thereof and shall continue until such time as one or more of the following occurs: (a) the United States Bureau of Reclamation disapproves of the transfer contemplated herein; (b) either party determines in its sole discretion that the transfer

contemplated herein would not be in its the best interests; or, either party gives written notice to the other that this Agreement is terminated upon receipt of which this Agreement shall terminate excepting any unpaid financial obligations owing to either upon termination.

8. **Disputes.** If any action or arbitration is commenced to enforce any of the terms or conditions herein, or to enforce collection of monies due pursuant to this Agreement, the prevailing party shall be entitled to reasonable attorney's fees and costs from the losing party;

IN WITNESS WHEREOF, the parties, through their duly authorized representatives, have executed this Agreement as of the date first above written.

BELLA VISTA WATER DISTRICT

By: _____

Robert W Dietz, P.E.
General Manager

THE CITY OF SHASTA LAKE

By: _____

Linda Frank, Mayor

WATER PURCHASE AGREEMENT

BETWEEN

CITY OF SHASTA LAKE

AND

BELLA VISTA WATER DISTRICT

This Agreement is made this 7th day of December, 1999, by and between the Bella Vista Water District, a California Water District (hereinafter referred to as "BVWD") and the City of Shasta Lake (hereafter "Shasta Lake"). This Agreement is made with reference to the following facts:

A. BVWD and Shasta Lake maintain a water pipeline intertie connecting their respective public water systems to each other. The foregoing mentioned pipeline has previously been in use for emergency purposes only for transfer of temporary water supplies between the parties to this Agreement.

B. The intertie which is the subject of this Agreement is located at 2703 Akrick Park, Redding, California (hereinafter "the intertie").

C. Shasta Lake has requested to purchase by transfer through the intertie, a portion of BVWD's groundwater supplies. BVWD has determined that, subject to the conditions set forth below in this Agreement, it has sufficient groundwater supply to provide to Shasta Lake.

NOW THEREFORE, IT IS AGREED:

1. Subject to the provisions of paragraph six below, availability and the terms and conditions set forth below in this Agreement, BVWD hereby agrees to sell and Shasta Lake hereby agrees to purchase up to 250 acre feet/year of BVWD groundwater supplies for each year this Agreement is in effect.

2. Water purchased under this Agreement shall be delivered by BVWD to Shasta Lake through the intertie.

3. Water delivered through the intertie shall be measured by means of a six-inch meter installed and maintained by Shasta Lake. The cost of further maintenance shall be borne by Shasta Lake.

4. BVWD shall invoice Shasta Lake monthly for water actually delivered through the intertie. Statements are due and payable upon receipt. The water rate applied to delivery to Shasta Lake under this Agreement shall be $0.54 per 100 cubic feet, subject to an annual rate increase adjustment of 3% beginning on March 1, 2001.

5. Total water deliveries for which BVWD is obligated under this Agreement are limited to 250 acre feet per year. BVWD shall provide the supply at 250 gpm at the intertie. Additional supplies, if requested by Shasta Lake, may be made available at the sole discretion of BVWD under terms and conditions to be agreed upon prior to delivery by BVWD.

6. BVWD shall be relieved of its obligations hereunder under conditions where BVWD has determined, in its sole discretion, that continued supplies of groundwater to Shasta Lake jeopardizes BVWD's ability to provide service to its customers, including, but not limited to, service for fire protection, human consumption, and sanitation. Under such circumstances, BVWD shall provide Shasta Lake with written notice of such interruption of service, the nature of the conditions justifying the interruption or reduction, the expected duration of service interruption, and the date on which such interruption will commence (which shall be not less than 10 days from the date of the notice).

7. Shasta Lake hereby waives any and all claims for loss or damages against BVWD arising from insufficient water quantity or unacceptable water quality under conditions which arise from circumstances which are beyond the control of BVWD.

8. This Agreement shall become effective on the date of execution and shall continue in full force and effect until such time as one or more of the following events first

occurs: (i) the expiration of five (5) years from its date; or (ii) 180 days written notice of intent to terminate this Agreement is delivered by either party to the other. This Agreement may be renewed for successive five (5) year terms at the request of either party, upon mutually agreeable terms and conditions.

IN WITNESS WHEREOF, the parties, through their duly acting and authorized representatives, have executed this Agreement as of the date first written above.

BELLA VISTA WATER DISTRICT

By: Robert W. Dietz, Secretary

THE CITY OF SHASTA LAKE

By: Rod Lindsay, Mayor

Appendix F

RECYCLED WATER BALANCE AND PLANNING REPORTS

City of Shasta Lake Wastewater Treatment Facility
Future Reclaimed System Water Balance
Technical Memorandum

Date: May 7th, 2014

Prepared by: Scott Buecker, P.E.

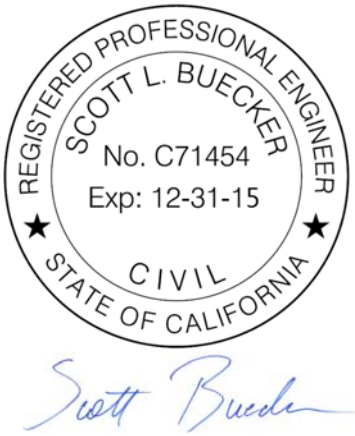


Table of Contents

Background

The City of Shasta Lake owns and operates the City of Shasta Lake Wastewater Treatment Facility (WWTF), which produces Title 22 quality water for reclamation and discharge to Churn Creek. Currently the City provides reclaimed water to 1) Sierra Pacific Industries (SPI) for soaking logdecks for fire prevention, 2) Knauf Fiberglass for landscape and turf irrigation, and 3) the California Department of Transportation (Caltrans) for irrigation of the Shasta Dam Boulevard interchange on I-5.

Caltrans recently contacted the City and requested additional reclaimed water for irrigation of additional interchanges on the I-5 corridor. Initially Caltrans requested an addition 5 million gallons (MG) per year, and they were under the impression that they currently utilize 5 MG to irrigate the Shasta Dam Blvd interchange. In actuality Caltrans has historically utilized more than 5 MG/year for that interchange, and Caltrans' contract with the City states that they may utilize as much as 11.7 MG/year (36 ac-ft/year). This topic will be discussed further herein.

Currently the City has plenty of reclamation water capacity to provide Caltrans with the additional water that has been requested, as there is a 400 acre foot (ac-ft) Reclaimed Reservoir at the WWTF. However, in the next five years the City will be upgrading the WWTF to enable year-round direct discharge of its effluent to Churn Creek. Once that project is in place the City will abandon the 400 acre foot Reclaimed Reservoir, because the City will not be able to discharge water that is kept in the reservoir to Churn Creek when necessary, without additional treatment. In addition, the plant upgrades will include a new deep-bed filtration process. This will consist of four filter cells, and the filter media will require regular backwashing. The backwash will require high quality reclaimed water to ensure good filtration performance, placing additional demand on the reclaimed water system. The plant will also have additional utility water needs after the upgrades, above and beyond the current WWTF's utility water needs.

The existing reclaimed reservoir and pump station will be replaced, as part of the WWTF Upgrade, by converting the existing Chlorine Contact Basin into a Reclaimed Water Storage Basin (RWSB). The WWTF effluent discharged to Churn Creek will be disinfected using ultraviolet (UV) radiation. The RWSB will be used for chlorine contact for reclaimed, backwash and utility water demand. A new pump station will be constructed adjacent to the RWSB with pumps sized for these demands.

Therefore, it is necessary to determine how much reclamation capacity the City will have after the plant upgrades are implemented before committing the additional water that Caltrans has requested. That is the purpose of this technical memorandum. A water balance has been compiled around the future RWSB and the water balance is described herein.

Future Reclaimed Water System Design

Currently the City utilizes a 400 ac-ft Reclaimed Water Storage Reservoir for storage and distribution of Title 22 quality effluent. The size of this reservoir is huge in relation to the small amount of reclaimed water the City distributes. The long storage time of the water in the reservoir results in degraded water quality due to the presence of wildlife and algae growth. With the WWTF Upgrades, it would become necessary to treat

this water prior to discharging any of it to Churn Creek. Rather than take these extraordinary measures to retain the reservoir, the City has opted to utilize the existing Chlorine Contact Basin as its future Reclaimed Water Storage Reservoir. The effluent that will be discharged to Churn Creek after the upgrades will be disinfected using a new UV Disinfection process, to prevent the formation of disinfection byproducts.

The key design criteria for the existing Chlorine Contact Basin are provided in Table 1, below. The information on the basin's design was gleaned from the WWTF Record Drawings.

Table 1. Future Reclaimed Water Storage Reservoir Design Criteria

Parameter and Units	Value	Notes
Basin Length (ft)	72	78.5' total - 6.5' of baffle walls
Basin Width (ft)	95.67	(includes influent channel)
Minimum Operating Depth (ft)	3	745.00 minimum WSE - 742.00 finished floor elevation
Maximum Operating Depth (ft)	10	Maximum WSE of 752.00 - 742.00
Maximum Volume (gal)	515,240	
Volume at Pump Shutoff (gal)	154,572	Assumed minimum WSE
Active Volume (gal)	360,668	

Reclaimed Water Supply

The reclaimed water supply, once the existing 400 ac-ft reservoir is abandoned, will be the existing Chlorine Contact Basin as described in the preceding section. The volume of the basin will be filled, as-needed, with filtered water that will be diverted from the WWTF process flow. As the filter effluent is diverted to the RWSB, it will be injected with sodium hypochlorite for Title 22 disinfection purposes. The chlorine contact time (CT) in the basin must be at least 454 min-mg/L at all times to comply with Title 22. Filter effluent that is not diverted to the RWSB will be disinfected using UV radiation, to prevent the formation of disinfection byproducts, and discharged directly to Churn Creek.

The worst-case reclaimed water supply will therefore be the minimum wastewater flow to the WWTF, which typically occurs around August and September. In recent years, this flow has typically been approximately 650,000 gallons per day (gpd). This value will be used in the reclaimed water balance to determine if there will be enough water to serve all of the reclaimed water demand, from the three reclamation users (Knauf Fiberglass, Sierra Pacific Industries and Caltrans), and from the WWTF's filter backwash and utility water needs. The WWTF's reclaimed needs must be given priority over the reclamation users, because this water is critical for plant treatment process performance. Therefore, the design of the upgrades will include measures to prohibit reclamation distribution when the volume of the RWSB encroaches upon the minimum volume required for filter backwashes and plant reclaimed water uses.

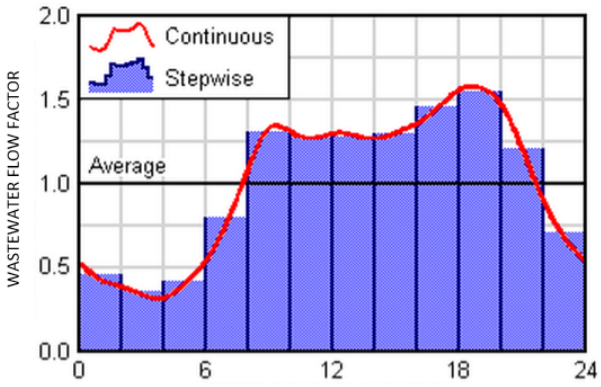
In order to estimate the real-time volume changes in the future RWSB, it is necessary to simulate the variability in the instantaneous raw wastewater flowrate that the WWTF will see during the typical dry weather period. The 650,000 gallons does not arrive at the plant uniformly throughout the day. To mimic this variability, a standard diurnal wastewater flow curve was utilized, as shown in the graphic on the

following page. Wastewater flows are typically lowest in the late night and early morning hours, increase around 6 or 7 a.m., and peak around 6 p.m. This pattern was utilized in the water balance for the RWSB.

Reclaimed Water Demand

Current Reclamation Demand

The City provided monthly total reclamation data for the SPI, Knauf Fiberglass and Caltrans reclamation accounts. This data was used to develop Annual Average and Maximum Month usage for the purposes of analyzing maximum reclamation demand. The maximum month use was then divided by 30 days to obtain an average day maximum month value for each reclaimed user. This assumes that there is no peak day of irrigation, as the evapotranspiration rate does not vary substantially within a given month.



TYPICAL DIURNAL WASTEWATER FLOW CURVE

The time and duration that each reclaimed user utilizes the reclaimed water is critical to determine the instantaneous flowrates from the WWTF. Each user was contacted to determine when they would most like to use the reclaimed water, and for how much time overall. The feedback received is summarized in the following paragraphs.

Caltrans

John Dobson of Caltrans reported that Caltrans has a new internal initiative for water conservation that requires Caltrans to irrigate overnight when feasible. Mr. Dobson indicated that with Shasta Dam, Pine Grove and Oasis interchanges online, Caltrans would like to utilize reclaimed water from approximately 8 p.m. to 6 a.m.

As discussed previously, Caltrans was under the impression that they had never used more than 5.0 MG in a year. However, in 2013, Caltrans actually used 8.28 MG according to the City of Shasta Lake's meter. In addition, Caltrans' contract with the City allows them to utilize up to 11.7 MG/yr. When Caltrans first contacted the City with a general request for additional reclaimed water to serve the additional interchange, they requested that an additional 5 MG of water be made available to them. There is a discrepancy between the volume of water the City has measured and the amount that Caltrans believes it has applied, and therefore the estimate of future usage should be conservative. As such, it has been assumed that Caltrans will double its current maximum usage.

The net result is that Caltrans would utilize up to 3.4 MG in the maximum month, with an average day maximum month usage of 113,333 gpd versus the 56,667 gpd estimate for current average day maximum month. Assuming the duration of usage will extend over 10 overnight hours (8 p.m. to 6 a.m.), the average demand from Caltrans will be approximately 190 gpm.

Sierra Pacific Industries

SPI verified their annual usage and reported that during the driest weather, they typically continually (24 hours, seven days a week) fill their onsite log-deck spray supply pond using the City's reclamation water. In this case, the estimated average instantaneous demand would be 139 gpm. However, according to SPI, there have been occasions where they needed to fill the pond at a higher rate during the course of operation hours (6 a.m. to 5 p.m.). Therefore, the maximum daily usage for SPI was distributed over these 11 hours, to be conservative. The result is 303 gpm.

Knauf Fiberglass

Knauf Fiberglass reports that they irrigate their landscaping overnight. They did not provide specific timeframes, and would like to be able to adjust the timing within the bounds of 8 p.m. to 6 a.m., similar to Caltrans. They caveated that this timeframe applies to landscape irrigation water only, and would not apply to plant process water, if they elected to use reclaimed water for the plant process, as they have at times in the past. As they currently do not have plans to utilize reclaimed water in the plant process, it was decided that any potential demand during daylight hours for process would be withheld from this analysis. If Knauf notifies the City in the future with a request to utilize water during daylight hours, the capacity could be re-evaluated at that time.

Applying the overnight usage to Knauf's historic demand results in an average instantaneous demand of 172 gpm.

All of the information discussed above has been compiled and summarized in Table 2, below.

Table 2. City of Shasta Lake Future Reclamation Usage Information

Reclamation Parameter	Knauf Fiberglass	Caltrans[1]	Sierra Pacific Industries	Total
Annual Average (MG)	11.5	10.8	14.5	31.4
Maximum Month (MG)	3.1	3.4	6.0	12.5
Average Day Maximum Month (GPD)	103,333	113,333	200,000	416,667
Estimated Duration (hr)	10	10	11	N/A
Estimated Window	Overnight (8 pm to 6 am)	Overnight (8 pm to 6 am)	Operation Hours (6 a.m. to 5 p.m.)	N/A

[1]Caltrans future use was estimated by doubling their historical use.

WWTF Utility Water System

Currently there are several uses of reclaimed water at the existing WWTF:

- Barscreen Spray
- Washer/Compactor Sprayer
- Oxidation Ditch Scum Sprays
- Secondary Clarifier Surface Sprays
- Traveling Bridge Filter Continuous Backwash System
- Chlorine Carrier Water
- Facility Washdown Water

Most of these will continue to be utilized after the WWTF Upgrade Project, and those that will not remain a part of the WWTF after the upgrades will just be replaced with similar systems. Table 3 compiles an estimate of future utility water use at the upgraded WWTF.

Table 3. Compilation of Utility Water Usage at Upgraded City of Shasta Lake WWTF

Utility Water Usage Point	Usage Rate (gpm)	Frequency of Use
Bar Screen Spray Water	10	Continuous
Washer/Compactor	10	Continuous
Aeration Basin Influent and Effluent Spray	20	Continuous
Secondary Clarifiers Scum Spray	15	Continuous
Secondary Scum Wetwell Spray	5	Continuous
Pump Seal Water	5	Continuous
Polymer Makeup Water (for Sludge Drying Beds)	10	Intermittent
Facility Washdown Water	15	Intermittent
Total Continuous Usage:	60 gpm	
Total Peak Usage:	90 gpm	

Note that many of the utility water uses will not be truly lost from the reclaimed system supply. A large portion of the utility water will be captured in the process that it is being utilized in, and therefore just re-circulated into the reclaimed water supply. For example, the barscreen spray (10 gpm), aeration basin sprays (20 gpm), and clarifier scum sprays (15 gpm) all become part of the process flow and so are not removed from the water balance. For this reason, a value of 40 gpm will be utilized for the true utility water "demand" with no facility washdown occurring, and 65 gpm during washdown of facilities (7 to 3 pm).

Deep Bed Filter Backwashing

The Development Design Report (DDR) for the City of Shasta Lake WWTF Upgrades includes preliminary design criteria for Deep Bed Filters for the WWTF Upgrade. Deep bed filters were selected for their performance and adaptability to varying treatment goals. Deep bed filters typically utilize an approximately 6-ft deep media bed, to allow for depth filtration of solids and longer filter runs (1 to 3 days, depending on filter loading rates and secondary effluent total suspended solids (TSS) concentrations). Simultaneous air and water backwashes are used to ensure cleaning of the filter media.

Preliminary design criteria information for deep bed filters for the City of Shasta Lake Upgrade are listed in Table 4, below. This is Table 6.3 from the DDR with additional information added on backwash operation, including utilization of the worst-case backwash rate (20 gpm/ft^2), in order to be conservative for the reclaimed water demand analysis.

Table 4. Deep Bed Filtration Design Criteria

Design Criteria	Units	Value
Average Flow	mgd	1.8
Peak Flow	mgd	3.5
Number of Filter Cells	#	4
Total Active Filter Surface Area	ft^2	660
Individual Filter Cell Surface Area	ft^2	165
Individual Filter Dimensions (L)	ft	12
Individual Filter Dimensions (W)	ft	13.75
Avg Filter Loading Rate (all in service)	gpm/ft^2	1.9
Avg Filter Loading Rate (one unit in BW)	gpm/ft^2	2.5
Peak Filter Loading Rate (all in service)	gpm/ft^2	3.7
Peak Filter Loading Rate (one unit in BW)	gpm/ft^2	4.9
Minimum Filter Media Depth[a]	ft	2.8
Maximum Filter Media Depth[a]	ft	8
Empty Bed Contact Time at Peak[b]	mins	16
Total Sidewall Depth	ft	22
Maximum Backwash Rate	gpm/ft^2	20
Maximum Potential Backwash Rate	gpm	3,300
Backwash Duration (per Cell)	min	15
Backwash Volume Required per Cell	gallons	49,000
Maximum Daily Backwash Demand	gpd	198,000

For the purposes of this analysis, it was assumed that all four filters would be backwashed sequentially, resulting in the temporary loss of 198,000 gallons from the RWSB. This will not be the typical operation and would likely only be necessary in the case of a secondary treatment process upset that loaded the filters with solids and caused a terminal headloss condition. In addition, in the driest part of the year, when irrigation demands are at their greatest, the operational stress on the filters will be least, since the filter loading rates will be at their lowest.

Finally, it should be noted that the demand on the reclamation system from backwashing the filters, like the demand from utility water usage, will not be a true demand in that the backwash waste will be returned to the WWTF headworks. It is an internal recycle within the plant. There will be a short delay between use of the reclamation water for backwashing and the subsequent increase in secondary process flows that will refill the Reclaimed Water Storage Reservoir (the existing Chlorine Contact Basin). Since final design of the backwash waste recovery system is not finalized, it will be assumed that the delay will be one hour. This is probably conservative, the actual return of the backwash volume will be shorter as the backwash waste flows to the headworks and displaces water in the downstream processes, pushing flow back through the diversion to the RWSB.

Summary and Water Balance

The information described in the preceding sections was used to construct a water balance around the future Reclaimed Water Storage Basin. The additional water requested by Caltrans was included in the water balance. A spreadsheet model was also constructed using the same values, and multiple scenarios were utilized to determine the effects on the Reclaimed Water Storage Basin, with the goal of ensuring that there always is enough water in the basin to backwash all four filters sequentially. The water balance and spreadsheet model are built on the following key assumptions:

- Total volume of future Reclaimed Water Storage Basin (RWSB) is 515,240 gallons, and with a minimum water surface elevation of 3 feet in the basin (to provide adequate suction hydraulics for the future Reclaimed/Backwash Water Pumps), the active volume of the basin is 360,668 gallons.
- The minimum dry weather flow of raw wastewater to the WWTF will be 650,000 gallons per day (gpd). The diurnal curve for the City's raw wastewater flow has been assumed to be similar to the standard wastewater diurnal curve.
- The future maximum day and peak instantaneous reclaimed water demand from the three reclaimed water users, including the additional water recently requested by Caltrans, will be 416,667 gpd, and 361 gpm (overnight, for overlapping Caltrans and Knauf use) or 303 gpm (during the day, if SPI has to fill their pond during operational hours), respectively.
- The future utility water demand will be as high as 90 gpm, instantaneous. However, much of this water is returned to the WWTF flowstream. Therefore, 65 gpm of utility water demand has been assumed during hours when the WWTF is staffed (7 a.m. to 3 p.m.). This flow includes facility washdown water. A value of 40 gpm will be utilized for un-staffed hours (3 p.m. to 7 a.m.).
- The future deep-bed filters will require a maximum day backwash volume of 198,000 gpd. This will be delivered at a maximum instantaneous rate (one of four cells in backwash mode at any given time, for 15 minutes) of 3,300 gpm. To be conservative, it has been assumed that all four filter cells may require backwashing sequentially, meaning the 198,000 gallons would be utilized in one hour. In actuality there will be some gap between the full backwash flow rates between each filter's backwash sequence, but assuming back-to-back backwashing is conservative. The return of the backwash waste will lag the backwash event by one hour. This is an over-simplification of the actual return rate, but is conservative.

The result of this analysis indicates that there will be sufficient capacity in the future reclaimed water system to service all three current reclaimed water users, and to provide Caltrans with the additional water that they have requested. There will be enough water in the RWSB to backwash the deep-bed filters when they require backwashing, with no restrictions on the timing of the backwash cycles. The minimum volume of the RWSB, which will occur in the event that there are four back-to-back filter backwashes, will be approximately 317,764 gallons. The minimum required volume of the RWSB for pump suction hydraulics is approximately 154,572 gallons. Therefore, based on the assumptions described herein, even under worst-case conditions it appears that there will be

enough reclaimed water available for the plant utility water system and the reclaimed water users at all times.

The results of this analysis are very favorable due primarily to the fact that all three reclaimed water users have expressed an interest in spreading their demand out overnight or even over 24 hours (SPI). If this were to change in the future (e.g., if Knauf Fiberglass elects to use reclaimed water for plant process), then it would be advisable to re-evaluate this analysis to ensure that there would be enough reclaimed water in the RWSB at all times for filter backwashing. In addition, it is recommended that in future renewals of reclaimed water contracts, the City formalize the supply of reclaimed water for Caltrans and Knauf over the overnight time period.

The iteration of the water balance that captures the "worst-case" reclaimed water demand condition is provided in Table 5.

A schematic of the reclaimed water balance is provided in Figure 1.

Table 5. City of Shasta Lake Future "Worst-Case" Reclaimed Water Balance

Hour	Wastewater Flow Factor	Wastewater Flowrate (gpm)	Reclamation Flowrate (gpm)			WWTF Utility Water Usage (gpm)	Filter Backwash Rate (gpm)	Total Demand (gpm)	Differential Flowrate (gpm)	Differential Volume (gal)	Resulting Basin Volume (gal)
			Knauf Fiberglass	Sierra Pacific Industries	CalTrans						
Midnight	0.6	271	172	139	189	65	0	565	(294)	(17,650)	492,512
1:00 AM	0.5	226	172	139	189	65	0	565	(339)	(20,358)	472,154
2:00 AM	0.4	181	172	0	189	65	0	426	(245)	(14,727)	457,427
3:00 AM	0.3	135	172	0	189	65	0	426	(291)	(17,435)	439,992
4:00 AM	0.3	135	172	0	189	65	0	426	(291)	(17,435)	422,557
5:00 AM	0.4	181	172	0	189	65	0	426	(245)	(14,727)	407,830
6:00 AM	0.8	361	0	303	0	65	0	368	(7)	(413)	407,417
7:00 AM	1.1	497	0	303	0	65	0	368	129	7,712	415,129
8:00 AM	1.5	677	0	303	0	90	0	393	284	17,045	432,174
9:00 AM	1.6	722	0	303	0	90	3300	3693	(2,971)	(178,247)	253,927
10:00 AM	1.4	1,457	0	303	0	90	0	393	1,064	63,837	317,764
11:00 AM	1.3	1,412	0	303	0	90	0	393	1,019	61,128	378,892
12:00 PM	1.2	1,367	0	303	0	90	0	393	974	58,420	437,312
1:00 PM	1.2	1,367	0	303	0	90	0	393	974	58,420	495,732
2:00 PM	1.1	497	0	303	0	90	0	393	104	6,212	501,944
3:00 PM	1.0	451	0	303	0	90	0	393	58	3,503	505,447
4:00 PM	1.1	497	0	303	0	90	0	393	104	6,212	511,659
5:00 PM	1.3	587	0	0	0	90	0	90	497	29,808	FULL
6:00 PM	1.4	632	0	0	0	65	0	65	567	34,017	FULL
7:00 PM	1.5	677	0	0	0	65	0	65	612	36,725	FULL
8:00 PM	1.3	587	172	0	189	65	0	426	161	9,648	FULL
9:00 PM	1.0	451	172	0	189	65	0	426	25	1,523	FULL
10:00 PM	0.9	406	172	0	189	65	0	426	(20)	(1,185)	514,055
11:00 PM	0.8	361	172	0	189	65	0	426	(65)	(3,893)	510,162

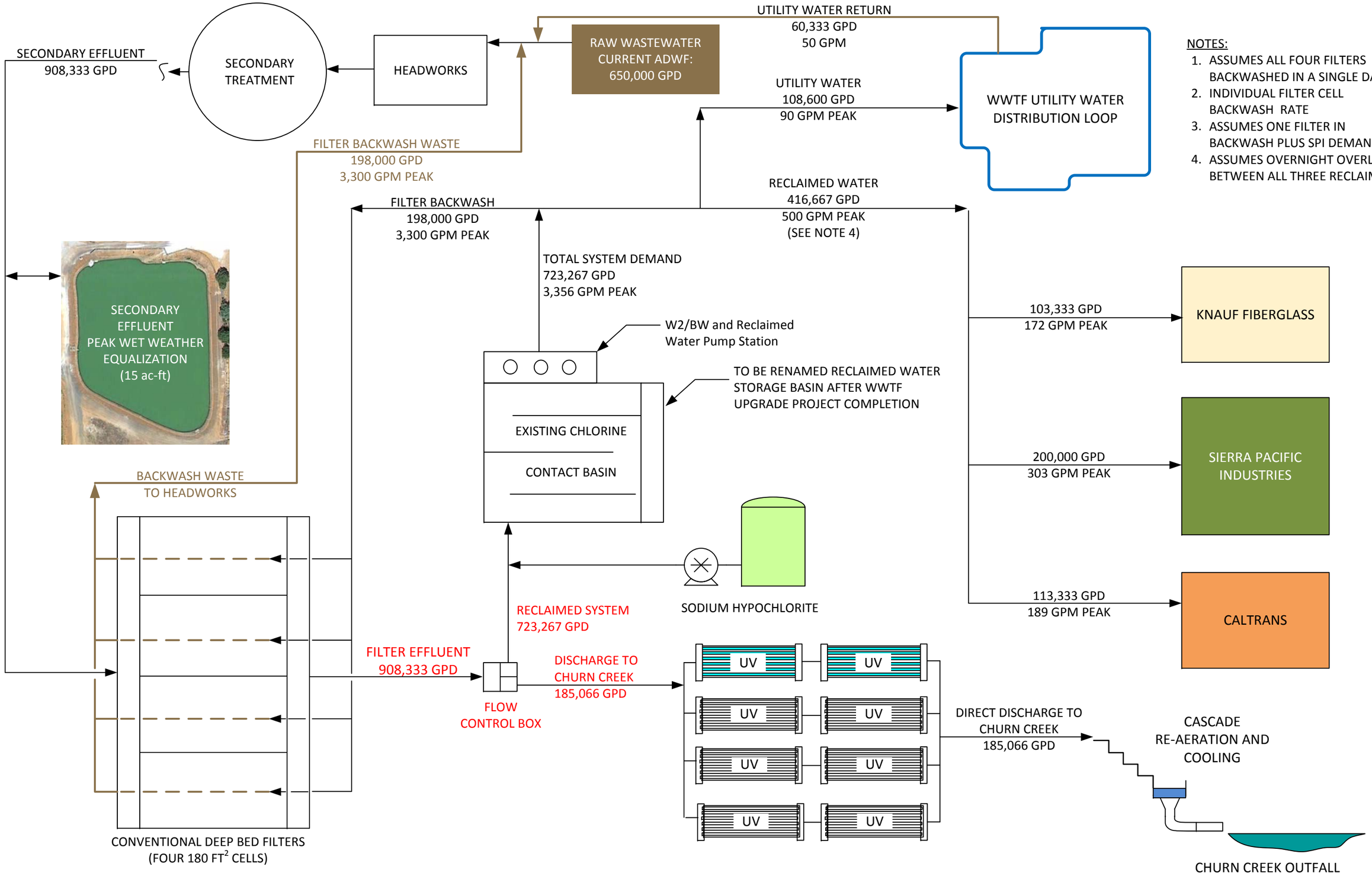


FIGURE 1. FUTURE CITY OF SHASTA LAKE RECLAMATION WATER BALANCE

RECYCLED WATER FACILITIES PLANNING REPORT

FOR

CITY OF SHASTA LAKE

1650 Stanton Drive
Shasta Lake, CA 96019

Job No. 110.81

JUNE 2009

PACE ENGINEERING
REDDING, CALIFORNIA

PACE ENGINEERING

June 8, 2009

110.81

Tom Chism, Wastewater Treatment Plant Operator
City of Shasta Lake
P.O. Box 777
Shasta Lake, CA 96019-0777

We are pleased to present the final engineering report entitled:

RECYCLED WATER FACILITIES PLANNING REPORT
FOR
CITY OF SHASTA LAKE

This report contains the results of our evaluation of sites in the City of Shasta Lake and north Redding areas for use of recycled water. The Tierra Oaks Golf Course site was considered to be the most viable site, primarily due to its proximity to the existing City reclaimed water pipeline, near Interstate 5, and low relative capital cost.

It is unlikely that the concept of wintertime effluent storage and summertime irrigation will accommodate the long-term wastewater disposal needs of the City due to the difficulty and cost of constructing a new large effluent storage reservoir. However, the City is in the process of evaluating its long-term wastewater disposal needs. It is possible that the City's ultimate solution may have an impact on its future recycled water disposal needs.

Because the rate and magnitude of future growth is uncertain, and in order to grow to an average dry weather plant flow of 1.3 MGD, the City should consider extending recycled water service to Tierra Oaks Golf Course.

PACE Engineering is very pleased to have participated in this project. We would like to thank you and other City staff for your able assistance in its preparation.

Sincerely,

Paul J. Reuter
Managing Engineer

PJR
Enclosures
M:\Jobs\0110\0110.81\REPORT\Cover Letter.doc

1730 SOUTH STREET • REDDING, CA 96001-1811 • (530) 244-0202 • FAX (530) 244-1978

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

CHAPTER **PAGE NO.**

APPENDICES **END OF TEXT**

TABLES **END OF TEXT**

FIGURES **END OF TEXT**

RECYCLED WATER FACILITIES PLANNING REPORT

I. BACKGROUND

The City of Shasta Lake's existing wastewater treatment and reclamation facilities were upgraded in 1995 to an average dry weather flow capacity of 1.3 MGD and a peak wet weather capacity of 5.2 MGD. The 400 AC-FT reclaimed water storage reservoir was sized based on the following assumptions:

- The City would be allowed to discharge treated effluent to Churn Creek between November 15 and March 15, if creek flows provided the required 5:1 dilution. In addition, the City could discharge to Churn Creek between October 16 to November 14, and March 16 to April 14 if creek flows exceeded a minimum 10:1 dilution.
- Summertime irrigation with stored treated effluent would be implemented on the following sites:
    - Peri Property
    - Tierra Oaks Golf Course
    - Existing City irrigation field

Unfortunately, shortly after construction of the reclamation facilities, the Regional Water Quality Control Board (RWQCB) increased the dilution limitation in Churn Creek from 5:1 to 10:1, unless the RWQCB determined a drought condition exists, which makes the reclaimed water storage reservoir undersized to accommodate the 1.3 MGD plant flow during a low rainfall year. In addition, for various reasons, the Peri Development Project never materialized and the agreement with Tierra Oaks to take reclaimed water was terminated.

Since the reclamation facilities were constructed, the City has been able to obtain agreements with Caltrans, Knauf, and Sierra Pacific Industries to take recycled wastewater. Combined, these three entities consume about 142 acre-feet (AC-FT) annually. Adding the wastewater irrigation

on the City disposal field and the allowable discharge to Churn Creek during a drought, the current total possible disposal volume is about 668 AC-FT.

In order for the City to accommodate growth to 1.3 MGD, it must be able to dispose of about 1,700 AC-FT of treated wastewater. In addition, the effluent storage reservoir would need to be nearly empty at the end of the irrigation season and before the winter rains. Due to lack of summertime irrigation area since 2005, the City has only been able to drain the reservoir to about 32 percent full.

The City's current average dry weather wastewater flow is about 0.7 MGD. It is estimated that the effective capacity of the existing storage reservoir, the current reclamation uses, and the allowed discharge to Churn Creek during drought conditions is about 0.83 MGD average dry weather flow. The increase from 0.7 MGD to 0.83 MGD represents about 540 household equivalents (HEs).

In order to accommodate the approximate 2,500 HEs to get to 1.3 MGD, it is imperative that the City increase its reclaimed water utilization by either, 1) increasing its effluent storage and irrigation capacities, or 2) developing a year-round discharge to the Sacramento River. If the City were to accommodate growth to ultimate development with increased effluent storage and irrigation capacity, it would need to add about 2,100 AC-FT of effluent storage capacity and 1,000 AC of irrigation area beyond what is currently being utilized.

II. STUDY AREA CHARACTERISTICS

Incorporated in 1993, the City of Shasta Lake encompasses approximately 6,942 acres north of the City of Redding and generally west of Interstate 5, see Figure 1. The current population is about 9,030, consisting of about 3,380 households.

The City of Shasta Lake is located entirely within the Sacramento River watershed, downstream of Shasta Dam. Water intakes are located along the Sacramento River through Redding, which

provide raw drinking water for the City of Redding and Bella Vista Water District. The City of Redding has two treated wastewater outfalls into the Sacramento River downstream of these intakes.

III. WATER SUPPLY CHARACTERISTICS AND FACILITIES

The City of Shasta Lake obtains its municipal water supply from Shasta Lake through a contract with the U.S. Bureau of Reclamation (USBR). The current annual water allocation is 4,430 AC-FT, but it is subject to 10 to 25 percent reduction during dry years depending upon the overall water supply forecast. The City has short-term contracts with Centerville Community Services District, McConnell Foundation and Bella Vista Water District for supplemental water supplies. In addition, the City is pursuing an additional 2,325 AC-FT of water from USBR, but issues with lost power generation potential and the cold water pool have stalled approval.

The City recently expanded its water supply facilities by adding additional raw water pumping, filtration, and transmission capacity. According to the City's 2005 Master Water Plan Update, anticipated growth within the City could exhaust the City's current USBR allocation by year 2018.

Bella Vista Water District (BVWD), located to the east and south of the City, obtains water through the Central Valley Project as administered by the USBR. The BVWD was formed in 1957 and construction began in 1963 primarily to provide irrigation water for agriculture. Since then, the District has added rural and residential services; however, agriculture still represents roughly 60 percent of the water demand. The primary water source is the Sacramento River augmented by five groundwater wells. The appropriated water is authorized through the Cow Creek Unit of the Trinity River Division of the USBR's Central Valley Project (CVP). The contract allows for up to 24,578 AC-FT of water per year, subject to shortage provisions. During the severe drought year of 1990, the CVP allocation was reduced by 50 percent, providing 12,000 AC-FT of available water. In addition, about 2,000 to 3,000 AC-FT were produced from the then existing three wells. According to the District's 2005 Master Water Plan, projected

growth within the District could exceed its current water supplies in approximately year 2030. Options for expanding the District's water supplies include purchasing surplus water from the Anderson-Cottonwood Irrigation District (ACID) and developing additional wells.

The Shasta Lake and Sacramento River water supplies north of Redding are of very good quality and relatively easy to treat. Appendix A contains records of historical raw water quality analyses from Shasta Lake. Many of the wells within the Bella Vista Water District and some within the City of Redding contain high iron and manganese concentrations. A few of the City of Redding Wells contain arsenic. All wells are treated for these constituents.

IV. WASTEWATER CHARACTERISTICS AND FACILITIES

The City of Shasta Lake's existing water reclamation facilities were upgraded in 1995 to an average dry weather flow capacity of 1.3 MGD and a peak wet weather capacity of 5.2 MGD.

The treatment processes consist of a headworks with automatic screen, oxidation ditch activated sludge process, secondary clarification, effluent filtration, and disinfection facilities. The facilities were designed to produce disinfected tertiary effluent in accordance with California Department of Health Services, Title 22, Division 4, Chapter 3, and Section 60304. The facility provides treated effluent with average Biochemical Oxygen Demand (BOD) concentrations of less than 3 mg/l. Appendix B contains copies of recent laboratory test results of the effluent quality. A portion of the treated effluent is discharged directly to Churn Creek from October 16 to April 14, based on the 10:1 dilution requirement. Effluent that cannot be discharged to Churn Creek is stored in the reclaimed water storage reservoir; used for pasture irrigation on the City disposal area; sprinkled on the Sierra Pacific log decks; used as process water and irrigation at the Knauf Fiberglass Plant; or used for Caltrans landscape irrigation of a portion of Interstate 5.

The City's existing reclaimed water storage reservoir has a gross storage volume of about 400 AC-FT. After subtracting an allowance of 20 AC-FT for dead storage, there is a net

available storage of about 380 AC-FT. This reservoir was designed to retain the excess wintertime flows that cannot be discharged during drought conditions. While the reclaimed water reservoir is currently being used to store a portion of the summertime sewage flows for discharge in the wintertime, it must be remembered that this is not the primary purpose of this reservoir. As the influent flows increase due to growth, it is imperative that additional reclaimed water uses be developed so the reservoir is essentially empty in October.

The Reclaimed Water Pump Station is located at the base of the main Reclaimed Water Reservoir Dam. This pump station is equipped with two 100-HP vertical turbine pumps, rated at 1,400 GPM each. This pump station is utilized for irrigation of the City pasturelands and provides water to Knauf landscape irrigation uses, Caltrans, and to the Sierra Pacific Mill under certain conditions.

As part of the 1995 construction project, a 12-inch reclaimed water force main was extended from the Reclaimed Water Pump Station easterly to Cascade Boulevard and then northerly to the Peri property. In addition, a 10-inch line was stubbed under Interstate 5 toward the Tierra Oaks Golf Course.

The City has irrigated about 40 acres of City pastureland surrounding the treatment plant site since the original plant was constructed in 1977. Check dams in the various drainages retain irrigation run-off so it can be pumped back to the plant and not discharged to Churn Creek during the no-discharge period.

In 2003, there were approximately 3,600 single-family equivalents connections (SFECs) served by the City of Shasta Lake sewer system. The projected ultimate SFEC value for the City's existing Sphere of Influence is 18,380. Based on projected growth rates used in the 2005 City of Shasta Lake Master Sewer Plan, it is estimated the City will reach its treatment facility capacity in about year 2020. The values shown below indicate projected wastewater flows based on the City's Master Sewer Plan.

	2007	2020	2025	Ultimate
Average Dry Weather Flow, MGD	0.70	1.3	1.47	4.42
Potential Peak Wet Weather Flow, MGD	6.0	*5.2	7.54	19.22

*Assumes infiltration and Inflow (I/I) reduction projects will be successful in reducing peak wet weather flows.

V. TREATMENT REQUIREMENTS FOR DISCHARGE AND REUSE

Current Effluent

When discharging to the effluent storage reservoir, the City of Shasta Lake recycled water complies with the standards established by the Department of Health Services (DHS) for the statewide use of recycled water criteria effective December 2, 2000 in Chapter 3, Division 4, Title 22, California Code of Regulations, Section 60304. Accordingly, the City's treated effluent is suitable for the following uses:

- Food crops, including all edible root crops, where the recycled water comes into contact with the edible portion of the crop.
- Parks and playgrounds.
- School yards.
- Residential landscaping.
- Unrestricted access to golf courses.

Current recycled water discharge requirements, as established by the CRWQCB are shown in Appendix B. Appendix B also includes copies of recent laboratory results on the City's effluent quality characteristics. Even with this high quality effluent, potential recycled water users that are currently using municipal water for irrigation will need to establish backflow prevention devices in accordance with the water utility requirements when connections between municipal and reclaimed water systems are made.

When discharging to Churn Creek during the wintertime (October 16 to April 14), effluent quality can meet less stringent requirements.

Shortly after construction the City's wastewater reclamation facilities in 1995, the RWQCB increased the dilution requirement in Churn Creek from 5:1 to 10:1 from November 15 to March 15 in addition to the one month shoulder periods on each end of the discharge time frame. This restriction effectively made the reclaimed water storage reservoir too small to accommodate the theoretical storage required to handle the 1.3 MGD design flow during a drought. While the RWQCB has indicated that during a drought, it could relax the dilution ratio to 5:1, the reality is that the wintertime discharge window would likely be over before the RWQCB deemed a drought year. Thus, the City will need to either, 1) lobby the RWQCB to re-establish the 5:1 dilution requirement in Churn Creek, 2) develop additional reclaimed water storage capacity before average dry weather flows approach 1.3 MGD during the summer, or 3) establish a viable wintertime discharge to the Sacramento River.

VI. RECYCLED WATER MARKET

Existing Recycle Water Use

Given the increasing demand and associated rising costs for water in California, the demand for recycled water is expected to continue to increase. Due to the relatively rich water resources in Northern California, recycling has not taken off as it has in other parts of California. However, this is changing as local water agencies struggle to secure long-term contracts with the USBR and other agencies to supply future water demands.

The City of Shasta Lake is located at the far northern end of the Sacramento Valley in the transition area between the agriculture-rich Central Valley and the Cascade Mountains. Thus, opportunities to utilize recycled water on agriculture land are limited. Figure 2 shows the land use designations for the City of Shasta Lake.

When the City's wastewater reclamation facilities were constructed in 1995, the intent was to provide recycled wastewater to a proposed development near Mountain Gate, and the newly developing Tierra Oaks Golf Course. Unfortunately, the Mountain Gate development never materialized and the agreement with Tierra Oaks was cancelled due to lack of funding needed to extend the infrastructure to the Golf Course. Since then, the City entered into reclaimed water use agreements with Knauf Fiberglass, Caltrans, and Sierra Pacific Industries.

Due to issues with scaling in its cooling facilities, Knauf discontinued use of recycled water for processing purposes in early fall 2005. Since then, it uses recycled water for on-site irrigation purposes only. Caltrans began using recycled water to irrigate landscaping around the Interstate 5/Shasta Dam Boulevard interchange in early summer 2006. Sierra Pacific Industries uses recycled water for make-up water on its log decks. The combined consumption for these three entities between October 2006 and September 2007 was about 122 AC-FT. Adding the 198 AC-FT discharged on the City's existing pasture, yields approximately 320 AC-FT of reclaimed water use. Table 1 lists current and potential recycled water users and provides information on historical and potential annual consumption and agreement terms with the City of Shasta Lake.

During the winter of 2006-07, the City was able to discharge about 649 AC-FT to Churn Creek, which was about 40 percent less than the year before due to reduced rainfall and lower flows in Churn Creek. Due to the dryer than normal winter of 2006-07, and the limited summertime recycled water users, the City was only able to lower the 400 AC-FT reclaimed water reservoir to about 141 AC-FT. Figure 3 shows the historical levels in the reclaimed water reservoir at the end of September. The reclamation reservoir should be operated to be essentially empty by the end of September each year in order to accommodate limited wintertime Churn Creek discharges associated with lower than normal rainfall years. As the City continues to grow and approach design capacity of the wastewater treatment plant, it is imperative that additional summertime irrigation uses be developed in order to prevent unauthorized discharges to Churn Creek.

Potential Recycled Water Users

As indicated earlier, BVWD contains a number of agricultural water users and two golf courses, located in reasonable proximity to the end of the City's existing recycled water pipeline. Both golf courses currently use treated potable domestic water for irrigating the premises. Article 7, Section 13550 of the California Water Code declares the use of potable domestic water for irrigating golf courses as a waste or an unreasonable use of the water if recycled water is available, which meets the quality standards for the intended use.

Local aerial photos were reviewed to determine potential irrigation areas that could benefit from the use of recycled water. While most of the agricultural users are relatively small, the 500-acre site owned by Lassen Canyon Nursery was identified as a potential reclaimed water user. Meetings were held with representatives of the following entities to discuss the possibility of recycled water use:

- Tierra Oaks Golf Course
- Lassen Canyon Nursery
- Gold Hills Golf Club
- Caltrans

All entities expressed interest in the possibilities offered through use of recycled water. Refer to Figure 4 for location of these potential recycled water users.

Tierra Oaks Golf Course: The Tierra Oaks Golf Course is located approximately one mile east of the end of the City's existing 10-inch reclaimed water pipeline. This privately owned 18-hole golf course has an up-scale residential subdivision interspersed amongst the fairways. Its estimated that about 50-60% of the developable land within the golf course is developed or currently built on. Tierra Oaks is also a customer of the Bella Vista Water District, consuming about 400 AC-FT of water on about 115 acres annually. If the City of Shasta Lake limited use of reclaimed water on its pasture irrigation area to winter months, it could provide enough recycled water to irrigate the entire golf course today.

However, additional irrigation areas would need to be developed to accommodate growth to the 1.3 MGD treatment plant design capacity.

Lassen Canyon Nursery: The Lassen Canyon Nursery property is located approximately 2.3 miles east of the end of the City's 10-inch reclaimed water pipeline. The property is comprised of two large parcels totaling approximately 500 acres. Approximately 328 acres of the Lassen Canyon Nursery property is being irrigated for cattle grazing, representing about 1,300 AC-FT of treated potable water annually. It is estimated that if the City limited use of recycled water on its pasture irrigation area to wintertime only, it could deliver about 550 AC-FT, which is enough to irrigate about 130 acres. In order to reach the full 1.3 MGD design capacity of the City's wastewater reclamation facilities, it would need to convey about 838 AC-FT of recycled water and irrigate approximately 195 acres.

Because the Lassen Canyon Nursery property utilizes portable aluminum irrigation pipe, staging the use of recycled water as the City grows would be relatively easy.

Golf Hills Golf Club: The Gold Hills Golf Club is also a privately owned facility located about 2.5 miles south of the end of the City's existing reclaimed water pipeline. Like Tierra Oaks, it has an upscale residential subdivision interspersed amongst the course. The subdivision is 100 percent developed. Gold Hills is also currently being served water by BVWD and in 2007 it consumed about 182 AC-FT on about 86 acres of irrigation area.

Caltrans Right-of-Way: Currently, Caltrans uses about 24 AC-FT of recycled water annually for landscape irrigation around the Interstate 5/Shasta Dam Boulevard interchange. According to Caltrans Staff, there are no immediate plans to expand its landscape irrigation facilities along the Interstate 5 corridor between Shasta Dam Boulevard and Oasis Road. If a reclaimed water pipeline were constructed to serve Gold Hills, it may be cost effective to provide turn-outs to Pine Grove and Oasis Road; however, to provide infrastructure for serving these relatively small demands would not be cost effective.

Additional City of Shasta Lake Property: In 2006, the City of Shasta Lake retained Enplan to evaluate the best use of its 180 acre parcel located immediately south of the City's wastewater reclamation facility. Due to environmental and topographical constraints, it determined the best use of this property was to develop it into additional pasture irrigation. In the analysis performed by Lawrence and Associates for Enplan, it was estimated that about 613 AC-FT of recycled wastewater could be disposed of on this site. See Appendix C for a copy of the Lawrence and Associates evaluation.

Potential Mountain Gate at Shasta Development: This proposed development is located on the former Peri property near Mountain Gate along Interstate 5. The project is in the early planning stages, but it is reported to consist of approximately 1,500 single-family residential units and commercial development.

Project planners have indicated that the proposed development may utilize its own recycled wastewater for some open space irrigation purposes. Thus, there may be some potential for developing additional irrigation disposal sites as part of this development. However, until more specifics are known, it is assumed, for now, that there will be only limited opportunities for utilizing the City's existing recycled water.

VII. PROJECT ALTERNATIVE ANALYSIS

The City's existing wastewater treatment plant consistently produces treated wastewater that meets or exceeds Section 60304, Chapter 3, Division 4, Title 22 of the California Code of Regulations. Recycled wastewater, meeting these requirements can be used on food crops, including all edible root crops, where recycled water comes into contact with the edible portion of the crop, residential landscaping, and unrestricted access to golf courses. Therefore, the treated wastewater is suitable for use, without further treatment, for all disposal alternatives considered in this study.

The following sites were identified as possible alternatives for expanding the City's effluent

irrigation potential: 1) Tierra Oaks Golf Course, 2) Lassen Canyon Nursery Property, 3) Gold Hills Golf Club, 4) Caltrans landscape irrigation along Interstate 5, and 5) Expansion of City spray irrigation fields to south of existing facilities. All alternatives are discussed in greater detail later in this section. The following factors and criteria were used in determining the viability of each alternative.

Project Planning Period

The capacity of the City's existing water reclamation facility is about 1.3 MGD on an average dry weather flow (ADWF) basis. Currently, the City's ADWF is about 0.7 MGD. In order to expand its treatment and disposal capacity beyond 1.3 MGD, the City will need to do one of the following:

- Increase the capacity to store treated effluent by expanding the existing 400 AC-FT reclaimed water storage reservoir or developing new reservoirs. In addition, it would need to acquire considerably more summertime irrigation area.

- Develop a permanent year-round discharge to the Sacramento River.

If all of the potential irrigation sites discussed herein were utilized for recycled water irrigation, the City would still need to increase its reclaimed water storage capacity by over five times in order to accommodate projected ultimate wastewater flows. The likelihood of developing an additional 1,700 AC-FT of reclaimed water storage is not very good. Therefore, the City will likely need to develop a permanent year-round discharge in order to accommodate significant growth beyond 1.3 MGD ADWF. For these reasons, it was assumed the City would utilize reclaimed water storage and summertime irrigation to an ADWF of 1.3 MGD.

Water Quality Impacts

Discharges to Churn Creek meet the stringent dilution and water quality requirements established by the RWQCB. Similarly, recycled water discharged to land irrigation facilities is applied at agronomic rates and not allowed to runoff into waters of the U.S. In addition, much of the nutrient concentrations present in the recycled water are consumed by the crops being irrigated

and are thus, prevented from reaching ground water supplies.

Water Conservation Benefits

Currently, many of the sites being considered for use of recycled water utilize treated municipal water for irrigation. The Lassen Canyon Nursery property, Tierra Oaks Golf Course, and Gold Hills Golf Club are served by BVWD. The landscape irrigation by Caltrans at the Oasis Road interchange utilizes City of Redding municipal water irrigation at the Pine Grove interchange utilizes City of Shasta Lake municipal water. Development of any of these sites to accommodate recycled water would free up municipal water supplies for domestic use.

Peak Delivery and Storage Criteria

It will not be possible for the City's existing reclaimed water infrastructure to provide adequate water pressure for operating existing irrigation facilities on the potential sites. Therefore, it will be necessary for each respective site to have its own irrigation pump station. In addition, except for the Caltrans irrigation areas, it will be necessary to provide adequate on-site storage to create a buffer between lower and peak demands for the Lassen Canyon Nursery property and golf courses. It is envisioned that existing ponds would be expanded to accommodate required storage volumes. Each irrigation pump station would draw water from the on-site pond and pump into existing irrigation facilities. The irrigation pump stations would be designed to accommodate peak demands for the facilities based on past water consumption data and interviews with respective facility managers.

Pipeline Route Alternatives

Potential pipeline routes were laid out based on the most direct route between the end of existing 10-inch reclaimed water pipeline east of Interstate 5 and the proposed site. Figure 4 shows the relative location of proposed pipeline alignments to the sites being considered for use of recycled water.

An attempt was made to locate the pipelines in existing public rights-of-way, or easements, or other utility easements in order to minimize impacts to private property. Where it will be necessary to transverse private property, effort was made to minimize impacts by locating the

pipeline on undeveloped parcels, or as far from existing development as possible. Each of the five irrigation disposal sites is described in greater detail below:

Site 1 – Tierra Oaks Golf Course: The 1995 improvements to the City's wastewater reclamation facilities were designed to provide recycled water to the Golf Course. Due to lack of funding needed to extend the reclaimed water pipeline to Tierra Oaks, the City was forced to rescind its agreement with them in 1997. The Pipeline extension required to serve Tierra Oaks is shown on Figure 4. Figure 5 depicts the more detailed site improvements necessary to accommodate the use of recycled water.

Essentially, recycled water would be discharged to an existing pond located at the north side of the Golf Course. An irrigation pump station would be constructed at the edge of the pond and an 8-inch pipeline tied into the existing irrigation system near the center of the Golf Course. Currently, during the peak irrigation season, the course irrigates at an approximate flow rate of 1,500 GPM for eight hours during the night.

There are two restrooms on the course being served off the irrigation network. New water services would need to be installed to those facilities from domestic water mains in Old Oregon Trail and Mitchellinda Drive.

The Golf Course would likely maintain its connection to BVWD to use as a back-up supply. Thus, it would be necessary to protect the BVWD source by installing appropriate backflow prevention. The estimated project cost to construct a 12-inch pipeline to Tierra Oaks and provide the necessary site improvements for accommodating recycled wastewater is about $2,373,000, see Table 2.

Site 2 – Lassen Canyon Nursery: In order to convey recycled wastewater to the Lassen Canyon Nursery property, approximately 2.3 miles of recycled water main must be extended to the east beyond the Tierra Oaks Golf Course. Like Tierra Oaks, recycled wastewater would be discharged to an existing pond that would need to be expanded in order to accommodate on-site storage requirements during peak irrigation periods. An irrigation pump station would be constructed to draw water from the pond and discharge into the existing irrigation system. The existing irrigation system is designed for a water pressure of about 75 PSI at the sprinkler. See

Figure 6 for improvements required on the Lassen Canyon Nursery property.

Currently, the nursery property irrigates about 328 acres for cattle grazing. The northern half of the property is irrigated by two booster pumps – a 100-HP pump located near the center of the property and a 40-HP booster pump located at the far north-west corner of the property. The southern half of the property utilizes the system pressure provided by BVWD with no booster pumping. Because the nursery property utilizes portable aluminum irrigation pipe and sprinkler sets, there is unlimited flexibility in terms of location and amount of area irrigated. Initially, it is proposed that approximately 130 acres of the north-east quadrant of the property be irrigated with recycled water and then the area would be expanded to the north-west portion as City flows increase. Irrigating the north-east portion of the property initially, would reduce the impact on surrounding neighbors and allow them the opportunity to become comfortable with use of reclaimed water in the vicinity.

The nursery would maintain its current connection points to BVWD to have a back-up supply in the event the City had trouble delivering recycled water.

The total estimated project cost to construct the improvements necessary to provide recycled water to the Lassen Canyon Nursery property is about $3,003,000, see Table 3. The cost estimate assumes service to the site is a stand-alone project, thus, costs include the portion of reclaimed water pipeline between Interstate 5 and Tierra Oaks.

Site 3 – Gold Hills Golf Club: The Gold Hills Golf Club is located the furthest distance from the City's existing reclaimed water pipeline. Figure 4 shows a potential reclaimed water pipeline alignment parallel to Interstate 5 to serve Gold Hills. Figure 7 shows potential site improvements necessary to accommodate use of recycled water. The Gold Hills irrigation system consists of a network of mostly 4-inch looped mains. The size of these water mains limits hydraulic capacity in the system. To help offset this limitation, there are seven different connections to BVWD. During peak irrigation periods, all service connections are utilized. Staff has indicated its desire to increase the capacity of its existing irrigation system.

If reclaimed water was conveyed to Gold Hills, the new pipeline would pass in close proximity to the Pine Grove and Oasis Road interchanges – currently containing landscape irrigation via City of Redding municipal water. Thus, recycled water services to both interchanges could be easily provided as shown on Figure 5.

Recycled water would be conveyed to an existing 0.4 acre pond located south-east of Crosby Lane. Similar to Tierra Oaks and Lassen Canyon Nursery, a new irrigation pump station would be constructed at the pond, which would pump into the existing irrigation system. In order to maintain the Golf Course's existing hydraulic capacity, it would be necessary to construct a 6-inch pipeline around the course and provide multiple connections to the existing system, see Figure 7.

The existing connections to BVWD would remain, but approved backflow prevention devices would need to be installed at each connection.

The total estimated project cost to construct the infrastructure necessary to serve Gold Hills Golf Club, and Pine Grove and Oasis Road interchanges with recycled water is about $3,901,000, see Table 4.

Sites 4 and 5 – Caltrans Right-of-Way: Since Summer 2006, the Shasta Dam Boulevard/Interstate 5 interchange landscaping has been irrigated with recycled water. Between October 2006 and September 2007, about 24 AC-FT of recycled water was utilized.

The Interstate 5 interchanges at Pine Grove and Oasis Road have existing landscape irrigation facilities, which consume about 55 AC-FT of City of Redding municipal water. According to Caltrans staff, there are no immediate plans to expand its irrigation facilities between Shasta Dam Boulevard and Oasis Road. Since the irrigation capacity is relatively small at the Caltrans sites, it would not be economical to construct a reclaimed water pipeline to serve these sites alone. However, if recycled water is conveyed to Gold Hills, turn-outs could easily be provided to each Interstate 5 interchange. Costs to construct these turnouts are included in the Gold Hills Cost Estimate, Table 4.

Site 6 – Existing City of Shasta Lake Property: The City of Shasta Lake owns approximately 180 acres to the south of its existing wastewater treatment and disposal facilities. In 2006, the City hired Enplan, Redding, CA, to conduct a study to determine the City's best use of this property. Among the options was to develop this land into an industrial park or recycled water irrigation fields. The study concluded that the best use of the property was to utilize it for recycled water spray irrigation fields. A copy of the evaluation is included in Appendix C. It was estimated that the site could accommodate about 613 AC-FT of irrigation water annually.

The estimated project costs to develop the entire site into spray irrigation fields is about $4,697,000 as shown in Table 5.

The estimated costs required to provide the infrastructure to serve the six sites is summarized in Table 6. In addition, a cost per AC-FT of potential recycled water disposed is also determined for each site

Comparison of Alternatives

Of the Alternatives described, providing recycled water to Site 1- Tierra Oaks Golf Course, is the preferred alternative for the following reasons:

- Lowest initial capital cost to implement.
- The City's existing reclaimed water infrastructure was designed to serve Tierra Oaks and much of the infrastructure is in place, including the pipeline extension under Interstate 5.
- Bella Vista Water District (BVWD) currently provides water service to Tierra Oaks. BVWD has formally expressed support for a project that delivers recycled water to Tierra Oaks Golf Club as it could potentially free up about 400 AC-FT of treated municipal water, annually, for other domestic use. Refer to BVWD Resolution No. 09-05 regarding supporting the City of Shasta Lake's Grant Application for wastewater Reclamation and Reuse in Appendix D. In addition, Appendix D contains a letter of support from Tierra Oaks for implementing recycled water use on their facility. Since BVWD does not have adequate water allocations to serve its long-term projected growth, this additional water would help mitigate its need for securing additional water supplies.
- The Tierra Oaks Golf Course could accommodate all of the City's current recycled water disposal needs. As the City grows, it will need to develop additional irrigation sites. By constructing a reclaimed water pipeline to Tierra Oaks, it extends the City's infrastructure further east and closer to the Lassen Canyon Nursery property, which will need to be considered in order to accommodate the City's future growth.

Expansion of reclamation facilities to irrigate Gold Hills Golf Club and the Caltrans Interstate 5 interchange sites (Nos. 3, 4, and 5) is the most costly alternative based on the cost per AC-FT of recycled water. Therefore, it was not considered to be the most viable alternative.

Development of the City's Industrial Park (Site 6) property for recycled water irrigation is the

most costly alternative, primarily due to the cost for constructing the on-site irrigation infrastructure. It is also the second most costly alternative in terms of cost per AC-FT of recycled water discharged. Thus, it was not considered to be the most viable alternative.

VIII. RECOMMENDED FACILITIES PROJECT PLAN

Description of Proposed Facilities

The Site 1 – Tierra Oaks Golf Course alternative consists of the following elements:

- Approximately 4,500 linear feet of 12-inch PVC recycled water pipeline between the extension under Interstate 5 to the Tierra Oaks Golf Course boundary.
- Approximately 1,400 linear feet of 12-inch PVC recycled water pipeline on Tierra Oaks property from the property boundary to an existing pond located at the north end of the Golf Course.
- About 7,500-linear feet of 8-inch PVC recycled water pipeline between a new irrigation pump station located at the pond to the point of connection to BVWD. There will be a double Reduced Pressure Principal (RPP) device between the recycled water and the domestic supply.
- Improvements to the existing pond, which include expanding the volume by dredging.
- New recycled water irrigation pump station consisting of two centrifugal pumps and controls located in a small building.

Pipeline routes were chosen based on the least expense and impact to the property. In addition, pipelines were generally routed along property lines and if environmental impacts appeared similar on both sides of the line, the side with the minimum number of property crossings was chosen. Not including the pipelines on the Tierra Oaks property, there are about four pipeline easements that need to be acquired.

Cost Estimate

A construction and project cost estimate was prepared for Site 1 – Tierra Oaks Golf Course in Table 2. These costs are based upon similar, recent prevailing wage projects that PACE Engineering has engineered. The costs have been projected forward based upon the typical yearly increase in the Engineering News Record – Construction Cost Index (ENR CCI). The ENR CCI has been in place since 1908, and indexes the cost of construction taking into account 200 hours of common labor, at a rate averaged over 20 cities, plus 2,500 pounds of standard steel

shapes, 1.128 tons of Portland cement, and 1,088 board-feet of 2x4 lumber. Costs were prepared in March 2008 dollars and inflated to June 2011 dollars assuming a 3% per annum inflation rate.

Potential Users

The only potential user for the Site 1 option is Tierra Oaks Golf Course. Based on annual water consumption records obtained from BVWD, Tierra Oaks consumes about 400 AC-FT of irrigation water annually. Currently, the City needs to dispose of about 668 AC-FT annually, in order to empty the effluent storage reservoir in the Fall. With its current users (Knauf, Sierra Pacific, and Caltrans) and a minimal discharge to Churn Creek, the City could accommodate all of Tierra Oaks irrigation needs.

Table 1 shows a summary of current and potential recycled water users, as well as current and potential recycled water consumption.

System Reliability

Currently, Tierra Oaks receives its water from BVWD at a lower pressure than required to operate its irrigation system; therefore, it has its own booster pump to supply irrigation water at a higher pressure. The proposed recycled water system will utilize irrigation pumps to boost recycled water into the existing irrigation system. Two pumps will be provided, one primary and one standby, so that system reliability will be enhanced.

In terms of water supply, the existing BVWD supply is subject to cut backs by the U.S. Bureau of Reclamation (USBR) during drought years. In the last couple years, BVWD water supplies have been cut back due to lingering drought conditions in California. The recycled water supply should be more reliable than USBR's Central Valley Project water because, even though water supplies may be cut back to the City of Shasta Lake, the volume of water discharged into its sewer system should remain relatively consistent.

Implementation Plan

In April 2009, the BVWD adopted Resolution No. 09-05, titled, "Supporting the City of Shasta Lake's Grant Application for Wastewater Reclamation and Reuse," see Appendix D. It has been discussed that BVWD would be the purveyor of recycled water to Tierra Oaks Golf Course. During development of Tierra Oaks, an agreement between the City of Shasta Lake and GOLFCO (parent company of Tierra Oaks) was executed in May 1997, which allowed for use of recycled water on the Tierra Oaks Golf Course. Because the City lacked funding to extend the

infrastructure to Tierra Oaks, this Agreement was terminated in October 1997. A similar agreement will need to be executed between the parties in order to supply recycled water to Tierra Oaks Golf Club. Both the Agreement and termination letter are located in Appendix E.

The on-site irrigation infrastructure is already in place on Tierra Oaks. It is envisioned that on-site infrastructure related conveyance and storage of recycled water would be funded by the City of Shasta Lake through a combination of grant/loan financing. As soon as a project funding package is secured, the project could move forward.

As indicated in Chapter 5, the recycled water discharge requirement, as established by the CRWQCB, is attached in Appendix B. The City of Shasta Lake's recycled water complies with the standards established by the Department of Health Services (DHS) for the statewide use of recycled water criteria effective December 2, 2000, in Chapter 3, Division 4, Title 22, California Code of Regulations, Section 60304. Accordingly, the City's treated effluent is suitable for the following uses:

- Food crops, including all edible root crops, where the recycled water comes in contact with the edible portion of the crop.
- Parks and playgrounds.
- School yards.
- Residential landscaping.
- Unrestricted access to golf courses.

Currently, BVWD has a contract with USBR for 24,578 AC-FT of water per year, subject to shortage provisions. In addition, they have five wells which produce about 4,000 to 5,000 AC-FT annually. According to the BVWD 2005 Master Water Plan, projected growth within the District could exceed these supplies by about Year 2030. Therefore, converting Tierra Oaks Golf Club to recycled water use could free up about 400 AC-FT water for BVWD, which is enough water to serve about 400 homes.

Implementation of a recycled water project to serve Tierra Oaks Golf Course would be subject to an environmental review, presumably an initial study leading to a mitigated negative declaration. An environmental study has not yet been completed for the recommended project; however, it is

envisioned that permits would likely need to be obtained from the following agencies:

- Regional Water Quality Control Board
- California Department of Fish and Game
- Shasta County Encroachment Permit

Approximately four permanent easements would need to be acquired from private property owners for constructing the new recycled water pipeline. The remainder of the proposed pipeline would be located in public road rights-of-way and on Tierra Oaks Golf Course property.

The recycled water pipeline would be poly-vinyl chloride (PVC) pipe conforming to American Water Works Association (AWWA) standards for C900 pipe and joints. The pipeline would be colored purple in order to designate its use as a reclaimed water pipeline. Fittings would be ductile iron mechanical joint-type and gate valves would conform with the standards set forth in AWWA C509 or C515.

Irrigation pumps would likely be centrifugal, end-suction, close coupled-type pumps; however, vertical turbine pumps would be considered. Capital cost and pumping efficiency would be considered before making a final pump selection during early design stages.

No major construction challenges are envisioned except that it is likely that sub-surface rock along the pipeline route may be encountered. Prior pipeline projects in this area of Shasta County have required either rock trenching or blasting in order to excavate a trench deep enough to obtain the 30-inch minimum cover over the pipe.

Once a funding commitment is obtained, the project could immediately begin implementation. The following is a rough schedule of key project milestones necessary to see the project to completion.

Project Milestone	Approximate Timeline
Design	4 months
Bid Advertisement	1 month
Award & Contract Award	1 ½ months
Construction	9-12 months
Project closeout	1 month

Operational Plan

Even though BVWD would be the purveyor of recycled water, Tierra Oaks would be responsible for operating and maintaining the recycled water facilities on its property. In addition, Tierra Oaks would need to comply with the City's recycled water discharge permit with the RWQCB. Typical responsibilities of the City, BVWD, and Tierra Oaks are contained in the old Agreement, dated May 17, 1997, in Appendix E; however it is likely that new terms, conditions, and pricing will need to be negotiated.

Tierra Oaks would need to designate an individual as the Reclaimed Water Supervisor, who would be the coordinator and direct contact person between Tierra Oaks, the City, and BVWD. This individual would be responsible for the proper operation of the on-site reclaimed water system, training of employees in handling reclaimed water, implementing the requirements of the Agreement between parties relative to the on-site use of reclaimed water, monitoring of the on-site reclaimed water system for prevention of potential hazards, and coordination with City and the regulatory agencies, when necessary. The City would assist in the training of Tierra Oaks Reclaimed Water Supervisor. It is likely that both Tierra Oaks and the City would work jointly to make sure the appropriate monitoring and testing requirements were met in accordance with the RWQCB discharge permit. However, the exact terms would need to be spelled out in the Agreement.

Currently, during the peak irrigation season, Tierra Oaks runs their irrigation booster pump for about 8 hours beginning at about 9:00 a.m., and ending at about 5:00 a.m. The timing of irrigation is important to not conflict with the golfers. It is reported that the irrigation pump(s) operate at a relatively consistent flow rate of 1,500 gallons per minute (GPM). It is not envisioned these irrigation practices would change after converting to recycled water.

It is recommended, however, that Tierra Oaks maintain a connection to BVWD in case there are issues preventing delivery of recycled water, or other emergencies.

IX. CONSTRUCTION FINANCING PLAN AND REVENUE PROGRAM

Project Funding

There are a number of potential funding sources for the recommended project:

- State Water Resources Control Board (SWRCB) Water Recycling Program.
- Clean Water State Revolving Fund (CWSRF) Program.

- USDA Rural Development.
- Infrastructure State Revolving Fund Program (I-Bank).

The SWRCB Recycling Program financing offers up to 25% grant funding up to $5M with a maximum project size of $25M per agency per year.

The CWSRF program was partially funded through the recent American Recovery and Reinvestment Act (ARRA). There is about $525M allocated for CWSRF projects in California. While the Drinking Water Division of SRF allocated the majority of their ARRA funds as grants, the competition for the money was significant. Only about 3% of applicants were asked to submit final applications.

If the competition for the Clean Water funds is similar to the Drinking Water funds, it's unlikely a project will be asked to submit a final application, unless there is a documented health risk or threat to the environment. In addition, a pre-application for ARRA funding would have had to been filed in April 2009 to be qualified to apply. It is our understanding the ARRA funding will be allocated over three years, so there will likely be opportunities in the next couple years to apply. The CWSRF does, however, have a general (non-ARRA) funding allocation that any agency is eligible to apply for. Funding packages typically consist of low or zero interest, 30-year loans, and small grant components.

The USDA Rural Development (RD) program is a grant/loan combination funding program that can allocate up to 40% grants. Loans typically have 40-year terms with relatively low interest rates currently at 2.75%. The RD program requires a 10% of annual debt service reserve as well as a short-lived asset replacement reserve.

The I-Bank Program is a low-interest loan program administered by the California State Revolving Fund. Interest rates are set at 67% of a tax-exempt "A" rated bond. Loan terms are up to thirty years.

Assuming environmental review of the recommended project is completed by late Winter 2009/2010, and a funding source secured by Summer 2010, design of facilities could begin in Fall 2010, with construction beginning in Summer 2011. A contractor would need about 9 to 12 months to construct the facilities, so it's conceivable the project could be completed by early Summer 2012.

Recycled Water Pricing

A recycled water pricing policy was established in the "now defunct" Agreement, dated May 17, 1997, between the City of Shasta Lake and GOLFCO (Tierra Oaks). The following cost considerations were written into the Agreement:

- Electrical pumping costs to deliver recycled water to the user.
- Overhead and maintenance costs solely related to delivering and pumping equipment cost.
- Consideration for the "actual net revenue lost" by BVWD.

In the May 17, 1997 Agreement, the rate to be charged to Tierra Oaks by the City of Shasta Lake was $70 per AC-FT, and was to be in affect until 2006. A provision in the Agreement required the rate charged to Tierra Oaks could not exceed one-half of the BVWD commercial rate. BVWD's current commercial rate varies depending on consumption, but high volume users, such as golf courses, typically pay between $200 and $250 per AC-FT. These rates are expected to increase in the near future. Currently, the City charges its recycled water users $75 per AC-FT.

Project Financing

Attached Table 2 contains a preliminary project cost estimate for the recommended Project Site 1 – Tierra Oaks Golf Course. A 20% construction contingency has been provided, as well as a 30% allowance for indirect project costs and engineering. The total estimated project cost, in June 2011 dollars, is $2,373,000.

There are many variables related to the recycled water pricing that need to be worked out before performing a detailed project financing plan. However, the Tierra Oaks Golf Course pays around $100,000 per year for 400 AC-FT of water from BVWD, which equates to about $240 per AC-FT. The District is currently considering water rate increases, which could drive this number even higher.

Recycled water will need to be delivered to recycled water customers at a discount in order to provide enough incentive to take on the added responsibility for using this water. For the sake of comparison purposes, we will assume the City of Shasta Lake will receive $100 per AC-FT from BVWD (Tierra Oaks Golf Course). The annual revenue for delivering 400 AC-FT of recycled water would be about $40,000.

It is estimated the annual pumping cost to deliver 400 AC-FT of recycled water to Tierra Oaks Golf Course would be about $16,000 per year.

Table 7 provides a comparison of the required grant funding percentage for different loan terms for the following scenarios:

1. City of Shasta Lake pays for the cost to pump recycled water to Tierra Oaks and utilizes the annual revenue to debt service a loan component. The annual revenue available to debt service a loan would be about $40,000.
2. City of Shasta Lake accounts for the annual pumping cost for determining the available annual revenue for debt servicing a loan to fund the improvements. The annual debt service revenue would be about $24,000 ($40,000 - $16,000).

As indicated in Table 7, with the Scenario No. 1 financing options, the project would need a 50% to 65% grant component in order to keep the annual loan payment equivalent to the annual revenue generated by the sale of recycled water. Under the Scenario No. 2 financing options, in which the City would offset annual pumping costs from the sale of recycled water, the necessary grant percentage would be about 70% to 79%.

Of course these grant percentages will change depending on the actual recycled water pricing policy and subsequent annual revenue generated.

APPENDIX A

TABLE 9.8
REDDING AREA WATERSHED SANITARY SURVEY
RAW WATER ANALYSES RESULTS
CITY OF SHASTA LAKE

Group	Constituent	Units	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Trihalomethanes	Total	µg/L	-	-	-	0	-	1.8	-	-	-	-	-	0	-
	Bromodichlormethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Bromoform	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Chloroform	µg/L	-	-	-	0	-	1.8	-	-	-	-	-	0	-
	Dibromochloromethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Dichlorodifluoromethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2,3-Trichloropropane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
Unregulated	P-Isopropyltoluene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
General	Bromobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Bromochloromethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Bromomethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Chloroethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Chloromethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Dibromomethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Hexachlorobutadiene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Isopropylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	N-Butylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Naphthalene	µg/L	-	-	-	0	-	-	-	-	-	-	-	-	-
	Sec-Butylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Tert-Butylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1-Phenylpropane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1-Dichloropropene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1,1,2-Tetrachlorethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2,3-Trichlorobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2,4-Trimethylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,3-Dichlorobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,3-Dichloropropane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,3,5-Trimethylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	2-Chlorotoluene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	2,2,-Dichloropropane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	4-Chlorotoluene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
Regulated SOCs	Simazine	µg/L	-	-	-	-	-	-	-	< 0.3	-	-	-	-	-

TABLE 9.8

REDDING AREA WATERSHED SANITARY SURVEY

RAW WATER ANALYSES RESULTS

CITY OF SHASTA LAKE

Group	Constituent	Units	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Nitrate/Nitrite	Nitrates	mg/L	< .05	-	0	0	0	0	0	-	0	0	0	0	0
	Nitrite	µg/L	-	-	0	-	-	0	-	-	0	-	-	0	-
Radiological	Gross Alpha	pCi/L	-	0	-	-	-	< 1	-	-	-	0.2	-	-	0
	Radium 228	pCi/L	-	-	-	-	-	-	-	-	-	-	-	0	-
Regulated VOCs	Benzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Carbon Tetrachloride	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	CIS-1,2-Dichloroethylene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Dichloromethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Ethylbenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Methyl-Tert-Butyl-Ether (MTBE)	µg/L	-	-	0.57	0.99	0	0	0	0	0	-	-	0	-
	Monochlorobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Styrene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Tetrachloroethylene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Toluene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Trans-1,2-Dichloroethylene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Trichloroethylene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Trichlorofluoromethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Vinyl Chloride	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	Xylene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1-Dichloroethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1-Dichloroethylene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1,1-Trichloroethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1,2-Trichloro-1,2,2-Trifluoroethane	µg/L	-	-	-	0	-	-	-	-	-	-	-	-	-
	1,1,2-Trichloroethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,1,2,2-Tetrachloroethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2-Dichlorobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2-Dichloroethane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2-Dichloropropane	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,2,4-Trichlorobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	-	-
	1,3-Dichloropropene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-
	1,4-Dichlorobenzene	µg/L	-	-	-	0	-	0	-	-	-	-	-	0	-

TABLE 9.8
REDDING AREA WATERSHED SANITARY SURVEY
RAW WATER ANALYSES RESULTS
CITY OF SHASTA LAKE

Group	Constituent	Units	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Secondary	Aggressive Index	-	-	-	-	-	-	-	-	-	-	10.4	-	-	-
	Bicarbonate Alkalinity	mg/L	72	-	-	-	-	-	-	-	-	59	-	-	-
	Calcium	mg/L	10.7	-	-	-	-	-	-	-	-	9	-	-	-
	Carbonate Alkalinity	mg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Chloride	mg/L	4	-	-	-	-	-	-	-	-	1.6	-	-	-
	Color	units	-	-	-	-	-	-	-	-	-	0	-	-	-
	Copper	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Foaming Agents	µg/L	0.03	-	-	-	-	-	-	-	-	0.03	-	-	-
	Hardness	mg/L	54	-	44	42	46	41	47	-	47	36	-	-	-
	Hydroxide Alkalinity	mg/L	-	-	-	-	-	-	-	-	-	0	-	-	-
	Iron	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Magnesium	mg/L	5.53	-	-	-	-	-	-	-	-	4	-	-	-
	Manganese	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Odor Threshhold	TON	-	-	-	-	-	-	-	-	-	0	-	-	-
	pH	-	7.65	-	-	-	-	-	-	-	-	7.33	-	-	-
	Silver	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Sodium	mg/L	6.76	-	10	4	4	5	6	-	6	5	-	-	-
	Specific Conductance	µS	130	-	-	-	-	-	-	-	-	110	-	-	-
	Sulfate	mg/L	< 5	-	-	-	-	-	-	-	-	3.12	-	-	-
	Total Dissolved Solids	mg/L	84	-	-	-	-	-	-	-	-	64	-	-	-
	Turbidity	NTU	-	-	-	-	-	-	-	-	-	1.5	-	-	-
	Zinc	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
Inorganic	Aluminum	µg/L	0	-	-	-	-	-	-	-	-	65	-	-	-
	Antimony	µg/L	-	-	0	0	0	-	-	-	-	0	-	-	-
	Arsenic	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Barium	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Beryllium	µg/L	-	-	0	0	0	-	-	-	-	0	-	-	-
	Cadmium	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Chromium	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Fluoride	mg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Lead	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Mercury	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Nickel	µg/L	-	-	0	8	4	-	-	-	-	0	-	-	-
	Selenium	µg/L	0	-	-	-	-	-	-	-	-	0	-	-	-
	Thallium	µg/L	-	-	0	0	0	-	-	-	-	0	-	-	-

APPENDIX B

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Points 001 and 002

1. Final Effluent Limitations – Discharge Points 001 and 002

The Discharger shall maintain compliance with the following effluent limitations at Discharge Point 001 and Discharge Point 002, with compliance measured at Monitoring Location EFF-001 and Monitoring Location EFF-002, respectively, as described in the attached MRP (Attachment E):

a. The Discharger shall maintain compliance with the effluent limitations specified in Table 6:

Table 6. Effluent Limitations

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Average Dry Weather Flow[1]	mgd	1.3	--	--	--	--
BOD 5-day @ 20 ° C[2]	mg/L	10	15	30	--	--
	lbs/day[(3)]	108	163	325	--	--
Total Suspended Solids (TSS)[2]	mg/L	10	15	30	--	--
	lbs/day[(3)]	108	163	325	--	--
pH	standard units	--	--	--	6.0	9.0
Copper, Total Recoverable	µg/L	25	--	46	--	--
Zinc, Total Recoverable	µg/L	42	--	81	--	--
Lead, Total Recoverable	µg/L	5	--	10	--	--
Chlorodibromomethane	µg/L	2.0	--	4.0	--	--
Dichlorobromomethane	µg/L	3.7	--	7.3	--	--
Nitrate Nitrogen, Total (as N)	mg/L	60	--	--	--	--
Heptachlor Epoxide	µg/L	--	--	--	--	ND

1 Combined discharge flow limit from both EFF-001 and EFF-002.
2. EFF-001 only.
3. Based upon a design average dry weather treatment capacity of 1.3 mgd.

b. **Percent Removal:** The average monthly percent removal of BOD 5-day 20°C and total suspended solids shall not be less than 85 percent.

c. **Acute Whole Effluent Toxicity.** Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70%, minimum for any one bioassay; and
ii. 90%, median for any three consecutive bioassays.

d. **Total Residual Chlorine.** Effluent total residual chlorine shall not exceed:

i. 0.01 mg/L, as a 4-day average;

ii. 0.02 mg/L, as a 1-hour average;

e. **Turbidity.** Effluent turbidity shall not exceed the following from Discharge Point 001 when flow in Churn Creek provides less than 20:1 dilution. The following effluent turbidity limitations do not apply to Discharge 002:

i. 2 NTU, as a daily average; and
ii. 5 NTU, more than 5% of the time within a 24-hour period; and
iii. 10 NTU, at any time.

f. **Total Coliform Organisms.** Effluent total coliform organisms shall not exceed the following for Discharge 001. The following limitations do not apply to Discharge 002:

i. 2.2 most probable number (MPN) per 100 mL, as a 7-day median; and
ii. 23 MPN/100 mL, more than once in any 30-day period; and
iii. 240 MPN/100 mL, at any time

g. **Average Daily Discharge Flow.** The monthly average dry weather (June through September) discharge flow shall not exceed 1.3 mgd.

2. Interim Effluent Limitations

a. During the period beginning with the effective date of this Order and ending on 18 May 2010, the Discharger shall maintain compliance with the following limitations at Discharge Points 001 and 002, with compliance measured at Monitoring Location EFF-001 and EFF-002 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameter during the time period indicated in this provision.

Table 7. Interim Effluent Limitations (permit effective date through 18 May 2010)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Heptachlor Epoxide	µg/L	--	--	0.087	--	--

b. During the period beginning on 19 May 2010 and ending five years after the effective date of this Order, the Discharger shall maintain compliance with the following limitations at Discharge Points 001 and 002, with compliance measured at Monitoring Location EFF-001 and EFF-002 as described in the attached MRP. These interim effluent limitations shall apply in lieu of the corresponding final effluent limitations specified for the same parameter during the time period indicated in this provision.

Table 8. Interim Effluent Limitations (19 May 2010 until permit expiration)

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Heptachlor Epoxide	µg/L	--	--	0.0002	--	--

B. Discharge Specifications (Discharge into Reclamation Reservoir) – Discharge Point PND-001

1. The Discharger shall maintain compliance with the following limitations at PND-001, with compliance measured at Monitoring Location PND-001 as described in the attached MRP.

Table 9. Discharge into Reclamation Reservoir Specifications

Parameter	Units	Discharge Specifications		
		Average Monthly	Average Weekly	Maximum Daily
BOD 5-day @ 20 ° C	mg/L	10	15	30
	lbs/day[1]	108	163	325
Total Suspended Solids (TSS)	mg/L	10	15	30
	lbs/day[1]	108	163	325

1 Based upon a design average dry weather treatment capacity of 1.3 mgd.

a. **Percent Removal**. The arithmetic mean of 20°C BOD (5-day) and total suspended solids in effluent samples collected over a monthly period shall not exceed 15 percent of the arithmetic mean of the values for influent samples collected at approximately the same times during the same period (85 percent removal).

b. **Total Coliform Organisms.** The median concentration of total coliform bacteria measured in the disinfected effluent shall not exceed an MPN of 2.2 per 100 mL utilizing the bacteriological results of the last seven days for which analyses have been completed and the number of total coliform bacteria does not exceed an MPN of 23 per 100 mL, in more than one sample in any 30 day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 mL.

c. **Turbidity.** Effluent turbidity shall not exceed the following:

ii. 2 NTU, as a daily average; and
ii. 5 NTU, more than 5% of the time within a 24-hour period; and
iii. 10 NTU, at any time.

B. Land Discharge Specifications – Discharge Point LND-001

1. Spray field water shall only come from the reclamation reservoir.

2. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the wastewater treatment and disposal areas *(or property owned by the Discharger)*.

City of Shasta Lake
Wastewater Treatment Plant
Jan-2007
Flow Amounts

DATE	INF/MGD	EFF/MGD	TO RECLAIMED	SIERRA P. /MGD	001/MGD	002/MGD	CH.CR.EFF/MGD	CH. CR. FLOW/ MGD
1	1.22	1.10			1.24	1.93	3.17	55.04
2	1.06	0.97			1.09	0.32	1.41	48.64
3	1.14	1.10			1.10	0.08	1.18	42.88
4	1.29	1.29			1.30		1.30	55.04
5	1.22	1.14			1.25		1.25	42.88
6	1.23	1.15			1.28		1.28	37.76
7	1.19	1.09			1.23		1.23	42.88
8	1.23	1.13			1.27		1.27	42.88
9	1.10	1.02			1.15		1.15	42.88
10	1.07	1.07			1.15		1.15	42.88
11	1.03	0.96			1.15		1.15	42.88
12	1.03	0.93			1.15		1.15	42.88
13	0.95	0.88			0.90		0.90	42.88
14	1.04	0.95			1.08		1.08	42.88
15	1.02	0.96			1.05		1.05	42.88
16	1.11	1.03			1.14		1.14	37.76
17	0.93	0.87			0.97		0.97	37.76
18	0.97	0.91			1.00		1.00	42.88
19	0.91	0.87			0.95		0.95	37.76
20	0.98	0.95			1.02		1.02	37.76
21	0.93	0.90			0.97		0.97	37.76
22	0.94	0.89			0.96		0.96	37.76
23	0.92	0.89			0.96		0.96	37.76
24	0.91	0.93			1.01		1.01	37.76
25	0.88	0.85			0.92		0.92	37.76
26	0.89	0.84			0.91		0.91	37.76
27	0.84	0.90			0.98		0.98	37.76
28	0.89	0.84			0.91		0.91	37.76
29	1.18	0.99			1.05		1.05	33.28
30	0.88	0.85			0.90		0.90	33.28
31	0.91	0.86			0.93		0.93	33.28
TOTAL MGD	31.89	30.11	0.00	0.00	32.97	2.33	35.30	1264.00
AVG. MGD	1.03	0.97	#DIV/0!	#DIV/0!	1.06	0.78	1.14	40.77
HIGH MGD	1.29	1.29	0.00	0.00	1.30	1.93	3.17	55.04
LOW MGD	0.84	0.84	0.00	0.00	0.90	0.08	0.90	33.28

COMMENTS: 001 and 002 readings are 24 hour readings. Creek flow readings are from the previous day and reflect dilution levels for our discharge.

City of Shasta Lake
Wastewater Treatment
Jan-2007
Influent monitoring

DATE	Inf. Flow	S.S. /mg/l	S.S. / LBS	BOD/mg/l	BOD/ LBS
1	1.22				
2	1.06				
3	1.14				
4	1.29	20	215.2	83	893.0
5	1.22				
6	1.23				
7	1.19				
8	1.23				
9	1.10				
10	1.07				
11	1.03				
12	1.03	57	489.6	114	979.3
13	0.95				
14	1.04				
15	1.02				
16	1.11				
17	0.93				
18	0.97				
19	0.91	36	273.2	110	834.8
20	0.98				
21	0.93				
22	0.94				
23	0.92				
24	0.91				
25	0.88				
26	0.89	81	601.2	169	1254.4
27	0.84				
28	0.89				
29	1.18				
30	0.88				
31	0.91				
TOTAL	31.89	194.00	1579.26	476.00	3961.50
AVG.	1.03	48.50	394.82	119.00	990.38
HIGH	1.29	81.00	601.23	169.00	1254.42
LOW	0.84	20.00	215.17	83.00	834.83

COMMENTS:

City of Sha. . Lake
Wastewater Treatment Plant
Jan-2007
001 Discharge

DATE	Flow/MGD		Cl2/ mg/l	Coliform MPN		S.S. /mg/l	S.S. / LBS		BOD/mg/l	BOD/ LBS	pH unit	NH3 - T	NH3 - UN-I	Temp. C	Turb./NTU
1	1.24	<	0.01								6.57			13.1	0.43
2	1.09	<	0.01	<2							6.38	0.3	0.00796	13.8	0.59
3	1.10	<	0.01	<2							6.18	0.21	0.00022	13.6	0.54
4	1.30	<	0.01	<2	<	2	21.68	<	3	32.53	6.14			14	0.66
5	1.25	<	0.01								6.27			12.8	0.59
6	1.28	<	0.01								6.12			12.8	0.61
7	1.23	<	0.01								6.11			13.2	1.01
8	1.27	<	0.01								6.21			14.2	0.73
9	1.15	<	0.01	<2							6.36	0.16	0.00041	13.6	1.06
10	1.15	<	0.01								6.15			14	1.16
11	1.15	<	0.01								6.26			12	0.8
12	1.15	<	0.01	<2	<	2	19.18	<	3	28.77	6.2			11.6	0.92
13	0.90	<	0.01								6.33			11.4	1.2
14	1.08	<	0.01								6.37			11.3	1.26
15	1.05	<	0.01								6.35			12.4	1.38
16	1.14	<	0.01	4							6.63	0.28	0.00049	12.5	1.46
17	0.97	<	0.01								6.64			12.1	1.47
18	1.00	<	0.01								6.64			14	1.53
19	0.95	<	0.01	2	<	2	15.85	<	3	23.77	6.65			12.6	1.39
20	1.02	<	0.01								6.41			13.9	1.32
21	0.97	<	0.01								7.2			13	1.28
22	0.96	<	0.01								6.37			13.6	1.13
23	0.96	<	0.01	2							6.16	0.24	0.00105	12.7	1.16
24	1.01	<	0.01								6.17			13.3	1.74
25	0.92	<	0.01								6.11			13.6	1.37
26	0.91	<	0.01	4	<	2	15.18	<	3	22.77	6.1			12.9	1.29
27	0.98	<	0.01								6.35			13.2	1.76
28	0.91	<	0.01								6.27			12.9	1.79
29	1.05	<	0.01								6.61			13.8	1.49
30	0.90	<	0.01	<2							6.32	0.55	0.00115	13.2	1.2
31	0.93	<	0.01								6.7			13.6	0.97
TOTAL	32.97		0.31	MEDIAN	<	8.00	71.89	<	12.00	107.84	197.33	1.74	0.01	404.70	35.29
AVG.	1.06	<	0.01		<	2.00	17.97	<	3.00	26.96	6.37	0.29	0.00	13.05	1.14
HIGH	1.30	<	0.01	2	<	2.00	21.68	<	3.00	32.53	7.20	0.55	0.01	14.20	1.79
LOW	0.90	<	0.01		<	2.00	15.18	<	3.00	22.77	6.10	0.16	0.00	11.30	0.43

0.01 mg/l

Peak 4-day Avg. Cl2

City of Shasta Lake
Wastewater Treatment Plant
Jan-2007
002 Discharge

DATE	Flow		Cl2/mg/l	pH unit	NH3 -T	NH3 -un -I	Temp. C	Turb./NTU
1	1.93	<	0.01	6.75	0.14	<.000008	12.8	16.7
2	0.32	<	0.01	6.81			11.2	9.97
3	0.08	<	0.01					
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
TOTAL	2.33		0.03	13.56	0.14	0	24	26.67
AVG.	0.776667		0.01	6.78	0.14	#DIV/0!	12	13.335
HIGH	1.93		0.01	6.81	0.14	0	12.8	16.7
LOW	0.08		0.01	6.75	0.14	0	11.2	9.97

Peak 4-day Cl2 #N/A mg/l

COMMENTS: Flows reported on a specific date represent what was discharged for the previous 24 hrs. This accounts for lab results for days showing no flow.

City of Shasta Lake
Wastewater Treatment Plant
Jan-2007
R-Samples

R-1					R-2				
Date	D.O. Units	pH/Units	Temp. C	Turb./Units	Date	D.O. Units	pH/Units	Temp. C	Turb./Units
3-Jan	11.0				3-Jan	10.8			
12-Jan	12.2				12-Jan	11.6			
19-Jan	11.7				19-Jan	11.1			
26-Jan	11.5				26-Jan	10.9			
R-3					R-4				
Date	D.O. Units	pH/Units	Temp. C	Turb./Units	Date	D.O. Units	pH/Units	Temp. C	Turb./Units
3-Jan					3-Jan				
12-Jan					12-Jan				
19-Jan					19-Jan				
26-Jan					26-Jan				

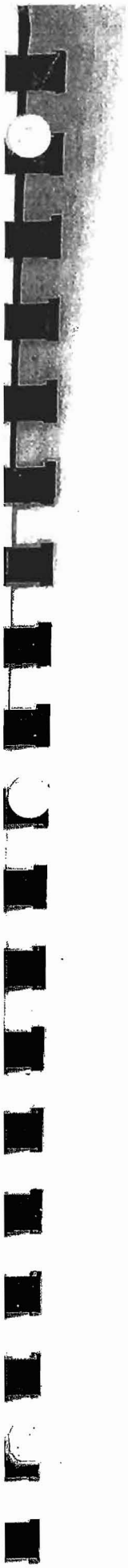
Date	A	B	C	D	E	F	G
3-Jan	a	a	a	p	a	a	a
12-Jan	a	a	a	p	a	a	a
19-Jan	a	a	a	p	a	a	a
26-Jan	a	a	a	p	a	a	a

a= absence p=presence tt = too turbid due to rain
A= Floating or suspended matter
B= Discoloration
C= Bottom Deposits
D= Aquatic life
E= Visible, films, sheens, or coating
F= Fungi, slimes or objectional growths
G= Potential nuisance conditions

CITY OF SHASTA LAKE
TESTING RESULTS FOR CHURN CREEK
DISCHARGE AT 001 & 002 AND UNDERDRAIN
Jan-2007

Date	Test Performed	OO1	OO2	Underdrain
1/2/2007	Bio Assay	100%	100%	
	Specific Conductance	471umhos/cm		
	TDS	270mg/l		
	Fecal Coliform	<2		
1/3/2007	Fecal Coliform	<2		
1/4/2007	Nitrate as N	14.7mg/l		
	TKN	1.1mg/l		
	Total Phosphorus as P	3.38mg/l		
	Orthophosphate as P	3.45mg/l		
	Total Coliform			130
	Fecal Coliform			2
	Total Cadmium	<1.0ug/l		
	Total Chromium	<1ug/l		
	Total Copper	13ug/l.		
	Total Lead	<3ug/l		
	Total Nickel	30ug/l		
	Total Zinc	38ug/l		
	Dissolved Cadmium	<1ug/l		
	Dissolved Copper	13/ug/l		
	Dissolved Zinc	38ug/l		
	Hardness	84mg/l		
	Alkalinity as CaCO3	27mg/l		
	Bicarbonate	33mg/l		
	Carbonate	<1mg/l		
	Chloride	56.5mg/l		
	Nitrate as N	14.7mg/l		
	Sulfate as SO4	20.3mg/l		
	Specific Conductance	373umhos/cm		
	TDS	252mg		
	Ammonia as N	.17mg/l		
	Total Phosphorus as P	3.20mg/l		
	Boron	133ug/l		
	Calcium	21mg/l		
	Iron	26ug/l		
	Magnesium	7mg/l		
	Potassium	8mg/l		
	Silica	12mg/l		
	Sodium	33mg/l		
	Silica	25.7mg/l		
1/16/2007	Fecal Coliform	<2		
1/19/2007	Fecal Coliform	<2		
1/23/2007	Fecal Coliform	<2		
1/26/2007	Fecal Coliform	<2		

APPENDIX C



Lawrence and Associates
Evaluation of Spray Field Expansion Area

006134.00

July 27, 2006

Mr. Clay Guzi
EnPlan
3179 Bechelli Ln., Suite 100
Redding, CA 96002

Dear Mr. Guzi:

SUBJECT: EVALUATION OF SPRAY FIELD EXPANSION AREA, CITY OF SHASTA LAKE, CALIFORNIA

Introduction

Lawrence & Associates was retained by EnPlan to provide a cursory evaluation of the suitability of the 180-acre parcel owned by the City of Shasta Lake for expansion of the sprinkling area for their wastewater treatment.

To obtain background data, I met with Mr. Tom Chism, manager of the City of Shasta Lake Wastewater Treatment Plant on July 13, 2006. During my visit, Mr. Chism described the current operation of the wastewater treatment plant and provided wastewater influent and treated effluent flow data for the period of January 2005 though June 2006.

Summary

An additional 200 million gallons of treated wastewater per year could be disposed by sprinkler irrigating the proposed 180-acre expansion area. Converting 180 acres of the expansion area to spray fields would almost quadruple the amount of water disposed by sprinkling. A combination of the existing area and expansion area would dispose of 69% of the total annual effluent discharge (as compared to data from the 2005 calendar year), and well over 100% of the summer (April through October) discharge. Adding other discharges of reclaimed wastewater, the total would be near 90% of the wastewater generated during the summer.

While the sprinkling areas do not provide a method to dispose of all of the wastewater, it does provide a method of disposal during the summer months when water cannot be discharged to

Churn Creek. In effect, the spray fields provide a method of reducing the amount of water that has to be stored through the summer for later discharge to Churn Creek. Use of the expansion area will improve this ability significantly, but may not compensate for future growth and the likelihood that the Regional Water Quality Control Board (RWQCB) will further restrict discharges to Churn Creek. Use of the expansion area for spray fields should be included in a comprehensive planning and cost-benefit analyses for short-term (next 5 years) and long term future of wastewater disposal.

Background

According to Mr. Chism, the treatment plant currently is designed for an average dry weather flow (during the summer when infiltration into the piping system is negligible) of 1.3 million gallons per day (Mgd). Based on the data provided, the current dry day demand averages 0.84 Mgd during the summer months. Because of rain- and ground-water infiltration into the piping system, flow increases significantly during the winter with peak flows occurring during extended periods of rainfall. During wet months the average flow is more than double the dry day flow (for example an average of 1.7 Mgd during the month of March 2006). The highest observed peak day flow was 4.1 Mgd in March 2006. The wastewater master plan prepared in 2005 by PACE Civil, predicts an average dry weather flow of 4 Mgd in 20 years.

Table 2 shows the monthly totals for influent received at the wastewater treatment plant and treated effluent reclamation and disposal using various methods. According to the data, 71% of the treated wastewater is discharged to Churn Creek during the winter months. Discharge occurs only when there is sufficient flow in the Creek to provide dilution; the higher the flow in the Creek, the more wastewater that can be released. During drought years, when flows are lower in Churn Creek, the ability to dispose of wastewater into Churn Creek could be severely affected (fortunately infiltration of surface water into the sewer system also would be lower during a drought period).

During the summer months, sprinkling may dispose of as much as 57% (August 2005) of the treated wastewater, although the annual average is about 16%. Treated wastewater also is reclaimed by providing it to Knauf for irrigation and process uses (although use of process water has ceased for the time being), Sierra Pacific for log-deck make-up water, and more recently to CalTrans for landscape irrigation along Intertstate 5. These uses amount to about 8% of the total amount of treated wastewater generated and a higher proportion of the summer total. For April through October, sprinkling and other uses average 64% of the treated waste water generated. The highest month is in August in which almost all of the treated wastewater generated during

that month is disposed through sprinkling and other uses. During drought years these uses could be significantly higher.

Table 2
Influent and Effluent Summary

Month	Total Monthly Influent (Mg)	Knauf Process (MGD)	Knauf Irrigation (MGD)	Sierra Pacific (MGD)	CalTrans (MGD)	Churn Creek (MGD)	Total Monthly Sprinkling (gal)	Total Discharge (MGD)
Jan-05	43.33	1.84	0.00	0.57		53.29	0.00	55.70
Feb-05	32.80	1.91	0.02	1.13		31.97	0.00	35.04
Mar-05	40.75	0.53				50.78	0.83	52.13
Apr-05	32.85	2.27	0.87			15.69	2.32	21.15
May-05	36.71	2.15	0.68				3.23	6.06
Jun-05	28.01	2.59	1.93				7.71	12.24
Jul-05	24.40	3.28	2.35	2.29			11.87	19.79
Aug-05	21.64	0.77	2.11	6.35			12.30	21.53
Sep-05	20.53	0.00	1.36	3.77			10.71	15.84
Oct-05	22.01		0.94	4.42			7.68	13.04
Nov-05	28.10		0.65			62.45	3.61	66.71
Dec-05	51.27		0.13			59.52	1.37	61.03
Jan-06	50.46	15.34	0.14			81.32	0.61	82.07
Feb-06	34.82		0.09			0.00	1.69	1.78
Mar-06	52.15		0.00			66.88	0.00	66.88
Apr-06	45.43		0.04			43.82	2.03	45.89
May-06	29.58		1.94	0.10			7.61	9.65
Jun-06	23.52		2.16	0.96	2.03		10.20	15.00
Totals	618.36	15.34	15.43	19.59	2.03	465.72	83.76	601.87
Percentage of Total		2.48%	2.50%	3.17%	0.33%	75.32%	13.55%	
Percentage of 2005		4.01%	2.89%	4.85%	0.00%	71.57%	16.11%	

1847 AC-FT

Treated water is stored in a large "reclaimed water reservoir" until it can be discharged. The reservoir must be managed so that it does not overflow. The reservoir level slowly increases during the summer, until discharges into Churn Creek can begin in the fall; it is generally at its lowest in the Spring when flows are high in Churn Creek, and the pond level can be kept relatively low. Evaluation of rainfall inflows, evaporation, and infiltration from site ponds were not included in the scope of this evaluation.

Although sprinkling removes a relatively small proportion of the total amount or treated wastewater, it plays an important role in reducing the rate at which the reclaimed water reservoir fills during the summer months.

According to Mr. Chism, the RWQCB has increased restrictions on discharges to Churn Creek and would like, in the future, to eliminate discharges to tributaries such as Churn Creek wherever possible and route wastewater directly to the Sacramento River. The City has been evaluating methods to accomplish this task.

Evaluation of Expansion Property

To provide a quantitative evaluation of the property we first estimated the feasible wastewater dispersal rate using available data. Because the City of Shasta Lake currently spray irrigates a portion of their wastewater on land adjacent to their waste-water treatment plant, data is available for their current application rate. Based on a site visit, it appears that the application rate is appropriate, *i.e.* it does not produce runoff and does not underutilize the available evapotranspiration. Therefore, the discharge data can be used to predict the optimal sprinkling rate for the new property.

Using an aerial photograph of the sprinkling area, we calculated (1) the "gross area" of the spray fields (54.46 acres) which includes unsprinkled areas, such as gaps in sprinkler alignment and setbacks from boundaries and structures, and (2) the "net" or actual area wetted by sprinklers (40.95 acres). Using the sprayfield discharge data provided by the City, we developed a table showing the gallons of treated wastewater discharged per month and average gallons discharge per day for each month (**Table 2**). By dividing the gallons per day by both the gross and net sprinkling areas, application rates in gallons per day per square foot (gpd/sf) of sprinkling area were calculated.

In the 2005 calendar year, 61.62 million gallons of treated wastewater were disposed in the spray field. The average annual sprinkling rate for the net area is 0.094 gpd/sf although the application rate during the months of April through October (when most of the water is applied) averaged 0.16 gpd/sf. For the gross area, the average annual application rate is 0.07gpd/sf and the summer months is 0.13 gpd/sf. We recommend using the gross area annual rate to provide an estimate of wastewater disposal from the expansion area because it includes allowance for setbacks. At 0.07 gpd/sf, each acre of the expansion area could infiltrate roughly 1,113,000 gallons per year. Assuming 180 acres are available for sprinkling, 200 million gallons of water could be disposed annually in the expansion area.

613 AC-FT

Table 2
Sprayfield Data

Month	Total Monthly Sprinkling (gal)	Average Monthly Influent (Mg/d)	Average Monthly Sprayfield Discharge (gpd)	Average Monthly Sprayfield Discharge (Mg/d)	Discharge Intensity, Net Area (40.95 acres) (gpd/sf)	Discharge Intensity, Gross Area (54.46 acres) (gpd/sf)
Jan-05	0	1.40	0	0		0
Feb-05	0	1.17	0	0.00		0.000
Mar-05	825,007	1.31	26,613	0.03	0.015	0.011
Apr-05	2,318,629	1.10	77,288	0.08	0.043	0.033
May-05	3,227,911	1.18	104,126	0.10	0.058	0.044
Jun-05	7,712,747	0.93	257,092	0.26	0.144	0.108
Jul-05	11,865,975	0.79	382,773	0.38	0.215	0.161
Aug-05	12,297,070	0.70	396,680	0.40	0.222	0.167
Sep-05	10,707,139	0.68	356,905	0.36	0.200	0.150
Oct-05	7,683,277	0.71	247,848	0.25	0.139	0.104
Nov-05	3,608,195	0.94	120,273	0.12	0.067	0.051
Dec-05	1,374,806	1.65	44,349	0.04	0.025	0.019
Jan-06	611,090	1.63	1,971	0.00	0.001	0.001
Feb-06	1,690,112	1.24	60,361	0.06	0.034	0.025
Mar-06	0	1.68	0	0.00	0.000	0.000
Apr-06	2,025,491	1.51	67,516	0.07	0.038	0.028
May-06	7,610,432	0.95	245,498	0.25	0.138	0.103
Jun-06	10,202,909	0.78	340,097	0.34	0.191	0.143
Totals	83,760,790					
Annual Avg.		1.13	151,633	0.15	0.094	0.071
Irrig. Season Avg.		1.02			0.163	0.123

Using the 2005 calendar year as a basis for comparison, and assuming the existing sprayfield and if the entire expansion property are used for sprinkling, 69% of the annual discharge could be disposed by sprinkling. Assuming 8% can be disposed by reclamation (Knauff, Sierra Pacific, and Cal Trans), the remaining 24% would need to be discharged to Churn Creek. This would require that water be stored over the winter and sprinkled during the summer months when 147% of the water generated could be disposed by sprinkling and reclamation.

Another approach would be to maintain the current discharges to Churn Creek and increase the sprayfield as demand grows. Using this approach, 200-million gallons would provide a 53%

increase in disposal without increasing flows to Churn Creek. This would require evaluation of reservoir storage capacity to confirm that enough treated water could be stored over the winter.

Within the next five years, sprinkling in the expansion area could help to offset greater restriction on the use of Churn Creek, and provide back-up in case of drought. In the long term, it is likely that the City will need to find a way to discharge directly to the Sacramento River. Similar to Churn Creek, the discharge rate to the Sacramento River will vary depending upon the flow in the River, although for the Sacramento River, the discharge typically is reduced but not eliminated during summer months. In the case of discharge to the Sacramento River, the spray fields may serve to offset flow that cannot be discharge to the river during the summer and, therefore, reduce the amount of storage capacity. Evaluation of the use of expansion area versus the cost for treated wastewater storage is not within our scope.

Please call me at (530) 244-9703 if you have any questions regarding our calculations.

Sincerely,

Clayton E. Coles
Principal Engineering Geologist

Cc: Mr. Tom Chism, City of Shasta Lake WWTP

Enc. Figure showing location of subject property
Figure showing sprinkling areas at WWTP

APPENDIX D

BELLA VISTA WATER DISTRICT
COUNTY OF SHASTA, CALIFORNIA

Resolution No. 09-05

A Resolution of the Board of Directors of the
Bella Vista Water District
SUPPORTING THE CITY OF SHASTA LAKE'S GRANT APPLICATION FOR
WASTEWATER RECLAMATION AND REUSE

****

Whereas, the Bella Vista Water District's Board of Directors recognizes the benefits of wastewater reclamation and reuse where practicable to assure the maximum benefit from available fresh water resources and to minimize the discharge of wastewater to surface waters;

Whereas, the District supports the use of wastewater reuse for irrigation purposes within the District to maximize the benefit from available fresh water resources;

Whereas, the District seeks to augment its existing water supplies and to provide additional water supply reliability to its customers that have been subject to shortages and reduced allocations from the Central Valley Project due to hydrological drought and regulatory imposed curtailment;

* * * * *

Now Therefore, it is Hereby Resolved by the Board of Directors of the Bella Vista Water District that we support the City of Shasta Lake's grant application and efforts to accomplish wastewater reclamation and reuse for irrigation purposes within the District.

Passed and Adopted this 27th day of April 2009 by the following vote:

Ayes: 4 Noes: 0 Absent: 1 Abstain: 0

BELLA VISTA WATER DISTRICT

By: Lynette Blaisdell
Lynette Blaisdell, Vice-President of the
Board of Directors

ATTEST:
David J. Coxey
David J. Coxey, Secretary

BELLA VISTA WATER DISTRICT

STATE OF CALIFORNIA)
) ss
COUNTY OF SHASTA)

I, DAVID J. COXEY, Secretary of the Bella Vista Water District DO HEREBY CERTIFY that the foregoing resolution was duly adopted by the Board of Directors of said District at a Regular Meeting of said Board of Directors by the following vote:

Ayes: 4

Noes: 0

Absent: 1

Abstained: 0

David J. Coxey, Secretary of the
Board of Directors

STATE OF CALIFORNIA)
) ss
COUNTY OF SHASTA)

I, DAVID J. COXEY, Secretary of the Bella Vista Water District DO HEREBY CERTIFY that the foregoing is a full and correct copy of Resolution No. 09-05 of said Board of Directors, and that the same has not been amended or repealed.

David J. Coxey, Secretary of the
Board of Directors

APPENDIX E

City of Shasta Lake

1650 Stanton Drive P.O. Box 777 Shasta Lake, CA 96019
(916) 275-7400 FAX (916) 275-7414

TRANSMISSION COVER SHEET

TO: **NAME:** BOB DIETZ
BELLA VISTA W.D.

ADDRESS:

FAX NO.: 241-8354

FROM: JOHN PODRI

PHONE NO.:

RE: RECLAMATION WATER USE AGREEMENT

DATE: 5-11-94 **TIME:** 11:45 AM

NUMBER OF PAGES TRANSMITTED (INCLUDING COVERSHEET) 13

BOB —

ATTACHED IS FINAL VERSION OF AGREEMENT BETWEEN GOLFCO & THE CITY.

THANKS FOR YOUR HELP IN NEGOTIATING AGREEMENT

USER AGREEMENT

THIS AGREEMENT, made and entered into this 17th day of May, 1994, by and between CITY OF SHASTA LAKE, a municipal corporation, hereinafter referred to as "CITY" and GOLFCO, a California corporation, hereinafter referred to as "USER."

RECITALS

A. California's potable water supply is limited and, therefore, water conservation is a primary concern.

B. CITY intends to construct and operate facilities at its wastewater treatment plant that will generate reclaimed (unrestricted/non-potable) water of satisfactory quality to irrigate landscaped areas with unrestricted public access.

C. USER owns, operates, and maintains an eighteen hole golf course with associated landscaped and/or pasture areas that USER desires to irrigate with reclaimed water supplied by CITY. Such use of reclaimed water will replace BELLA VISTA WATER DISTRICT ("DISTRICT") supplied potable water for said irrigation and thereby will allow DISTRICT, and USER to maximize efforts to conserve the potable water supply.

D. USER desires to accept reclaimed water for landscape and/or pasture/golf course area irrigation and CITY desires to supply reclaimed water to USER for the considerations and under the terms and conditions as hereinafter set forth.

NOW, THEREFORE, CITY and USER agree as follows:

1. DEFINITIONS.

The following definitions of terms, words and phrases shall apply to this Agreement unless the context in which the word or phrase is used clearly has a different meaning:

a. **On-site** shall mean the area which is bounded by the peripheral property lines of the developing area owned by the USER. (Golf course.)

b. **Off-site** shall mean areas other than on-site areas.

c. **Regulation** shall mean the current edition of, or any amendment or revision to, specifications of the CITY OF SHASTA LAKE, Department of Health Services, California Water Quality Control Board, Shasta County Environmental Health Department and applicable provisions of EPA regulations.

d. **Standard Specification** shall mean the current edition of the CITY OF SHASTA LAKE'S construction, operation and maintenance specifications.

e. **Reclaimed Water** means water which, as a result of treatment of domestic wastewater, is suitable for a direct beneficial use or a controlled use that would not otherwise occur.

f. **Pump Facilities** shall mean those facilities necessary to deliver reclaimed water at adequate pressures to properly irrigate the golf course, and shall be under the ownership of GOLFCO.

2. TERM.

The term of this Agreement is for twenty (20) years commencing on the date first written above and terminating on April 12, 2014, unless terminated earlier under the conditions of Section 16 of this Agreement. This Agreement shall be automatically extended for successive ten (10) year terms unless notice is given at least one (1) year prior to the expiration date of the initial term of any subsequent ten (10) year term by either party that the Agreement shall not be extended.

3. AREA OF USE (SITE).

USER shall use reclaimed water supplied by CITY on property commonly known as Tierra Oaks Golf Course, which is referred to as the "Site." The location of the application area is described in Exhibit "A" attached.

4. DELIVERY OF RECLAIMED WATER.

CITY shall deliver reclaimed water into USER'S irrigation system at the USER'S westerly most boundary of the property described in Exhibit "A." at an operating pressure not less than 15 psi and in the amount not less than three hundred (300) acre-feet annually. Should USER desire additional water, CITY shall supply the water pursuant to the "interruptible" provision of paragraph 6. Said delivery shall be on a full demand basis (maximum fifteen hundred (1500) gpm), and the normal daily delivery period shall be between 8 p.m. of each day and 7 a.m. of the following day. However, under normal conditions, reclaimed water will be available in the reclaimed water distribution system continually and shall comply with wastewater reclamation criteria for landscape set forth in Title 22, Division 4 at Section 60313, a copy of which is attached hereto, labeled Exhibit "B" and made a part hereof. USER shall provide continuous observation of the use of the reclaimed water to minimize public contact with the reclaimed water. All the use of the reclaimed water will be governed by state and local health agency requirements, and as

specified in Section 5 below.

5. RECEIPT AND APPLICATION OF RECLAIMED WATER.

USER agrees to receive, accept and apply reclaimed water supplied by CITY during the term of this Agreement for irrigation of USER'S golf course, pasture and associated landscaped areas at no cost to CITY except as otherwise provided herein. USER agrees to use only reclaimed water for irrigation for all areas on the Site identified in Section 3 of this Agreement, except for portions of the Site and/or landscaped areas where application of the reclaimed water may be prohibited by the California Department of Health Services (Title 22), California Regional Water Quality Board (discharge requirements), applicable EPA regulations, local health agencies and other pertinent government regulations or guidelines. This Section shall become effective as soon as CITY can deliver reclaimed water to the Site.

6. LIMITATIONS PRECLUDING DELIVERY OF RECLAIMED WATER.

Notwithstanding the requirements for CITY to deliver reclaimed water as stated in Section 4 of this Agreement, both parties recognize and agree that such delivery of reclaimed water may at times be precluded for reasons beyond control of CITY. In this respect, CITY shall be required to deliver reclaimed water, as stated in Section 4 of this Agreement, unless said delivery is prevented by causes outside the control of CITY including, but not limited to, Acts of God, malfunction of the CITY'S treatment or distribution systems, which is not caused by the sole negligence of CITY, acts of a third party, or by order of a governmental regulatory authority. In the event that reclaimed water is not delivered to USER by CITY due to CITY's sole negligence, then USER shall not pay more than the reclaimed water rate for replacement water delivered.

Whenever the delivery of reclaimed water is interrupted, CITY shall pursue corrective action and restore delivery of reclaimed water to USER as soon as possible. If reclaimed water is interrupted for more than twenty-four (24) hours because of a malfunction of CITY'S treatment plant that prevents the delivery of reclaimed water, or results in production of inadequately treated reclaimed water, CITY will provide makeup potable water for USER either directly or pursuant to an agreement attached as Exhibit "C" between CITY and BELLA VISTA WATER DISTRICT at standard CITY or BELLA VISTA commercial water rates paid by USER until CITY can deliver adequate quantities and satisfactory quality of reclaimed water.

7. QUALITY OF RECLAIMED WATER.

The reclaimed water delivered to USER by CITY shall comply with wastewater reclamation criteria for landscape required by Water Code Sections 13521, *et seq.* USER understands and agrees that the quality of the reclaimed water, especially total

salinity (or other conditions), is different from that of USER'S potable water supply and that a possibility exists that, with long-term use of reclaimed water, some landscape species may eventually have to be replaced with more tolerant species. Such replacement shall be the responsibility of USER.

8. RECLAIMED WATER USE REQUIREMENTS.

USER understands and agrees that the use of reclaimed water is regulated by the California Department of Health Services, California Water Quality Control Board, and the CITY. Some of the requirements for use of reclaimed water are contained in attached Exhibit "D." CITY and USER shall abide by said reclaimed water use requirements as appropriate, and USER, at its sole cost, shall operate and maintain all facilities for reclaimed water use on the Site.

9. RECLAIMED WATER SUPERVISOR.

USER shall designate an individual as USER'S Reclaimed Water Supervisor who shall be USER'S coordinator and direct contact person between CITY and USER. USER agrees that the Reclaimed Water Supervisor shall be responsible for the proper operation of USER'S reclaimed water system, training of USER'S employees in handling reclaimed water, implementing the requirements of this Agreement relative to the on-site use of reclaimed water, monitoring of USER'S reclaimed water system for prevention of potential hazards, and coordination with CITY and the regulatory agencies, when necessary. CITY shall assist in the training of USER'S Reclaimed Water Supervisor.

USER shall inform CITY of the name, position, and telephone number of USER'S Reclaimed Water Supervisor not later than two (2) months prior to start up of USER'S reclaimed water system and shall promptly inform CITY of any change of the designated Reclaimed Water Supervisor and/or the Supervisor's telephone number during the term of this Agreement.

10. ON-SITE FACILITY MODIFICATION.

USER understands and agrees that certain modifications and/or changes in existing on-site facilities will be required to conform to the special reclaimed water use requirements identified in Section 8 of this Agreement. CITY shall assist USER in identifying the modifications and/or changes required in USER'S on-site facilities.

USER shall be responsible for all costs of the on-site irrigation system including pump facilities, if required. USER'S responsibility for the off-site reclaimed water system shall include, and is limited to:

a. Providing and installing required reclaimed water meters at actual cost plus time and materials, not to exceed

$3,500;

b. Connection of USER'S irrigation system to CITY'S reclaimed water delivery system at the east side of Interstate 5 will include all materials supplied by CITY and USER shall supply all labor requirements;

c. Provide replacement for any CITY/District potable water interconnection which is disconnected as a result of connection to the reclaimed water system if economically and physically feasible.

USER and CITY agree that CITY'S actual construction, modification and installation activities shall be restricted to CITY'S existing public rights-of-way. USER and CITY further agree that all construction, modification, and installation activities required on USER'S Site, as determined and approved by CITY, shall be performed by USER using USER'S plans and specifications required for the work, as approved by CITY.

USER shall perform, and shall be responsible for, all costs of all other on-site modifications that are not specifically the responsibility of CITY as stated herein and any other modifications desired by USER. Such modifications shall include, but are not limited to:

d. Any modifications to USER'S reclaimed water irrigation system necessary to meet the special reclaimed water use requirements stated in Section 8 of this Agreement that are not the responsibility of CITY;

e. Special protection of potable water or other facilities from reclaimed water contact;

f. All initial and on-going on-site management and operation of USER'S reclaimed water system to ensure meeting CITY and regulatory agencies' requirements for use of the reclaimed water as stated in Section 8 of this Agreement.

The installation, modification or construction of new facilities performed by USER on its on-site irrigation system, shall be in accordance with the requirements of state and local regulatory agencies pertaining to non-potable water systems including (see Exhibit "D"), but not limited to, the proper marking of piping, valves, valve boxes, controllers and all other components to differentiate them from the on-site potable water facilities. Provided that USER shall not be required to properly mark existing facilities if it is uneconomical to do so or reclaimed water facility components can be distinguished from potable water facility components by utilizing other more economical forms of notice.

USER shall be responsible for labor costs only to connect to the CITY'S grant-funded reclaimed water pipeline in the vicinity of the east side of Interstate 5 Highway. The CITY will pay for the cost of all pipes, valves, fittings and appurtenances from the end of the grant-funded pipeline to the storage and pumping facility at the Golf Course westerly boundary.

what type

11. AS-BUILT DRAWINGS.

At the completion of all on-site modifications and changes to USER'S reclaimed water and potable water systems, USER shall provide CITY with as-built drawings of USER'S completed reclaimed water system(s) and potable water system(s) on USER'S Site. The as-built drawings shall be accurate to the best knowledge of USER and shall show the locations of all pipelines, controllers, valves, fountains, building, structures, property boundaries, and any other features known or considered to be important to the on-site use of reclaimed water. USER shall not change or modify the reclaimed water system(s) on the Site without prior written approval of City Engineer. Such approval shall not be unreasonably withheld and City Engineer shall respond to a written request for a change or modification within ten (10) working days. Failure by CITY to give a timely response shall be deemed to be automatic approval. However, USER shall give CITY notice when the change or modification is completed.

12. PRICE OF RECLAIMED WATER.

For the purpose of this Section 12, "reclaimed water" includes all reclaimed water delivered to USER through CITY'S reclaimed water delivery system. USER shall pay CITY a reclaimed water charge at a rate to include the following items:

a. Electrical pumping costs to deliver the reclaimed water to USER;

b. Overhead and maintenance costs solely related to delivering and pumping equipment to user;

how much ?

c. BELLA VISTA WATER DISTRICT "actual net revenue lost" described in the Agreement between BELLA VISTA WATER DISTRICT and the CITY OF SHASTA LAKE which agreement is attached hereto as Exhibit "C."

The Schedule of Rates shall be as follow:

(1) 1998-2006 - $70 per acre foot measured at the reclaimed water meter for the first eight (8) year period of water delivery but not beyond 12/31/2006.

(2) Above-referenced actual costs, which are not to exceed one-half of BELLA VISTA WATER DISTRICT commercial rates commencing January 1, 2007 for the balance of the term, including any extensions.

CITY shall read the reclaimed water meter approximately monthly, consistent with CITY'S normal meter reading schedule for billing purposes and shall bill USER for the total quantity delivered during the billing period in accordance with CITY'S standard billing practices. USER may periodically review CITY'S meter readings if desired. USER shall pay CITY within twenty (20) days of receipt of CITY'S bill.

13. GENERAL CONDITIONS.

a. This Agreement shall be construed and interpreted in accordance with the laws of the State of California, and venue shall be in the State Courts in the County of Shasta.

b. This Agreement contains all agreements of the parties with regard to the subject of this Agreement and cannot be enlarged, modified, or changed in any respect except by written agreement between the parties.

c. The unenforceability, invalidity, or illegality of any provision of this Agreement shall not render the other provisions unenforceable, invalid, or illegal, but the parties shall not negotiate as to the effect of said unenforceability, invalidity, or illegality on the rights of obligations of the parties.

d. The captions, titles and headings in this Agreement shall have no effect on the interpretation of this Agreement or any part thereof.

e. This Agreement shall be binding on the heirs, successors, lessees, sub-lessees, assigns and transferees of the parties.

f. To the extent any provisions of this Agreement are for the benefit of District, such provisions may, in the absence of action taken by a party to the Agreement, be enforced or arbitrated by District.

14. OTHER CONDITIONS.

CITY shall charge a plan review fee for any improvement plans, including irrigation plans of the Tierra Oaks Golf Course property, based on time and materials, and

subject to conditions as defined in the CITY'S Code.

15. INDEMNIFICATION.

CITY shall indemnify, defend and save USER and USER'S agents, officers, employees or contractors harmless from and against any and all liability, expense, including defense costs and legal fees, and claims for damages of any nature whatsoever arising from or connected with CITY'S construction, ownership, operation or maintenance of CITY'S own delivery facilities or other reclaimed water-related activities, including any Workers' Compensation suits, liability or expense arising from or connected with services for or on behalf of CITY.

USER shall indemnify, defend and save CITY and CITY'S agents, officers, employees or contractors harmless from and against any and all liability, expense, including defense costs and legal fees, and claims for damages of any nature whatsoever arising from or connected with USER'S construction, ownership, operation or maintenance of USER'S own delivery or application facilities or other reclaimed water-related activities, including any Workers' Compensation suits, liability or expense arising from or connected with services for or on behalf of USER.

USER, on behalf of itself and its insurance carrier, hereby fully and completely waives any subrogation or reimbursement rights of any type against CITY for any claims, judgments, settlements, defense costs or liabilities of any type paid as the result of USER'S use of reclaimed water or in any way associated with such use.

16. TERMINATION.

Should one party breach any of the terms and conditions in this Agreement, written notice of such breach shall be given to the breaching party by the other party. If reasonable steps toward correcting the breaching conditions are not taken within five (5) days from such notice, the other party may, in addition to any remedies provided in this Agreement and/or by law, terminate this Agreement on ten (10) days written notice to the breaching party, or if feasible, correct the breach and charge the cost of correction to the other party.

In addition:

a. CITY may terminate this Agreement immediately if:

(1) CITY in its sole and reasonable determination is, or will be, unable to deliver properly and adequately treated reclaimed water to USER for any reason whatsoever for a period

greater than ten (10) days, provided the reason for non-delivery is outside the reasonable control of CITY;

(2) The State of California changes CITY'S discharge requirements for irrigation of landscaped areas to a more stringent level, and CITY cannot reasonably meet the new requirements;

(3) CITY is ordered to cease delivery of reclaimed water to USER by a governmental authority having appropriate jurisdiction to do so.

b. USER may terminate this Agreement if CITY is not able to provide continuous delivery or timely delivery of reclaimed water.

c. In the event CITY determines to terminate this Agreement for any of the reasons set forth in (a) or (b) above, CITY shall provide alternate water and water services to USER upon mutually agreed upon terms unless, District determines to provide water service in accordance with the terms of the District/CITY Agreement attached hereto as Exhibit "C".

change
what if city can not provide the water

17. NOTICES.

Any notices necessary to be given by either party to the other relative to this Agreement shall be in writing. Both parties agree that any such notice shall be effective when signed by an officer of CITY or USER, as appropriate, and personally delivered or deposited, postage paid, in the United States Mail addressed as follows:

CITY:

City Engineer
City of Shasta Lake
P.O. Box 777
Shasta Lake, CA 96019

USER:

Golfco, Inc.
P.O. Box 7750
Chico, CA 95927

18. REPRESENTATION AND WARRANTY OF AUTHORITY.

Each person executing this Agreement on behalf of USER or CITY, whether a corporation, partnership, joint-venture, association or otherwise, represents and warrants that he or she has authority to execute this Agreement on behalf of said USER or CITY, pursuant to a resolution authorizing such execution.

19. COVENANT RUNNING WITH THE LAND.

why city land?

The obligations of USER herein are expressly declared to be for the benefit of CITY and the lands and property of CITY, including CITY'S wastewater treatment plant and reclamation Site as shown and described on Exhibit "E" attached hereto and made a part hereof. The right of CITY to deliver water to USER for application to USER'S Site described in Exhibit "A" is expressly declared to be a covenant running with the land pursuant to California Civil Code Section 1468 and shall be binding upon each successive owner of any portion of the Site described on Exhibit "A."

20. RECORDATION.

Either party to this Agreement may record a Memorandum of Agreement in the form attached hereto as Exhibit "F" that gives constructive notice of this Agreement to future owners, lessees, and other occupants of the Site and requires that they comply with the terms and conditions of this Agreement.

21. ARBITRATION.

If any party shall object to any act or performance under this Agreement, the party shall notify all other parties in writing and shall specify the nature of the objection and the specific alternatives proposed by the objecting party. Thereafter, if the parties shall not agree within 10 days from the date of mailing such written specification, an arbitrator shall be appointed and serve to determine all the issues disputed.

a. The determination of the arbitrator shall be final and binding upon each party and each party specifically waives any right to claim that the arbitrator has exceeded the scope of the arbitration, has disregarded evidence or principles of law, and, further, waives any right to disclaim the qualification or function of the arbitrator in any manner or fashion.

b. Appointment of the arbitrator shall be made by mutual agreement of the parties or their successors. If the parties cannot agree upon the identification of the arbitrator, the arbitrator shall be chosen by the superior court in and for the County of Shasta. The arbitrator shall be a registered civil engineer.

c. The arbitrator's fees and fees and costs of petitioning for the appointment of the arbitrator shall be paid by one or both parties to the arbitration in accordance with the determination of the arbitrator as to the fair apportionment of such fees and costs. The arbitrator upon rendering its award shall determine the party that prevailed based upon written statements made by each party at the commencement of the arbitration as to the position of parties and their alternatives for settling the matter. A statement of a proposed settlement shall not be binding upon any party and shall not be considered as evidence by the arbitrator except to the extent that the arbitrator upon

making his sole and independent determination shall determine the party which prevailed based upon the proposals for settlement of the matter made by each party and shall determine that the nonprevailing party shall pay some or all of the costs of arbitration including any costs incurred by the arbitrator and in employing experts to advise the arbitrator in regard to specific subjects or questions. The arbitrator may further award the cost of attorneys' fees or expert witnesses consulted or employed in the preparation or presentation of evidence to the arbitrator by the prevailing party if, in the arbitrator's determination, the position of the nonprevailing party was not reasonably taken or maintained or was based upon a failure to properly exchange or communicate information with the prevailing party in regard to the subject submitted to arbitration.

d. The arbitrator's determination may further provide for prospective enforcement and directions for the parties to comply with. Under such circumstances, the arbitrator's award shall be binding upon the parties and shall be undertaken and performed by each of the parties until such time as the arbitrator's directions to the party shall lapse by their terms, or the arbitrator shall notify the parties that those terms are no longer in force or effect or shall modify those terms. The arbitrator may require the respective parties to execute further easements, documents or covenants to enforce the terms of this agreement or of the arbitrator's award. Each party shall promptly do so if so ordered.

IN WITNESS WHEREOF, CITY and USER have executed this Agreement as of the date and year first written above.

CITY OF SHASTA LAKE

By: _____
JOHN BEAUDET, Mayor

Approved as to form:

_____
City Attorney

GOLFCO, INC.

By: _____
STEVE HARE, Vice-President

CITY OF SHASTA LAKE

)ctober 7, 1997

Mr. Greg Kinney
American Golf
999 Yosemite Drive
Chico, CA. 95928

Dear Mr. Kinney:

The purpose of this letter is to suggest that the City and Golfco terminate their May 17, 1997 Agreement concerning the provision of reclaimed water to Tierra Oaks.

From the City's position, we recently settled a lawsuit with F.E. Peri Inc. that involved the commitment of 400 acre feet of reclaimed water to meet potential needs that would occur as a result of the development of the property on the west side of I-5 south of Wonderland Boulevard. While that agreement anticipated the potential development of a housing, commercial and golf course project on the property, the timing of actual development is unclear. Notwithstanding that ambiguity, the City must be in a position to be able to supply the reclaimed water to that user. In addition, the City is committed to providing water to a major industrial user if a Use Permit and related Environmental Impact Report are approved. Finally, the City is not fiscally able to commit funds to an extension of service to Tierra Oaks, thus, unless Golfco is able to fund the entire cost of the extension, the project would have to be delayed until the City can fund its share.

As the City grows from its current approximately 900 acre feet of reclaimed water per year to its ultimate production of 1,300 acre feet per year, there will be a need to consider additional customers. The City intends to limit its contracts for use of reclaimed water to major projects requiring significant quantities.

Therefore, as a result of these factors, the City is requesting your concurrence to terminate the agreement with the clear understanding that the City and Tierra Oaks keep this option available as our respective situations become clearer. We have considered your suggestion to simply suspend or defer implementation of the agreement that you discussed with Cliff Faith, Public Services Director. However, it is our conclusion that the Agreement should be terminated to free both parties to consider all options that may be available.

We would appreciate your consideration of this suggestion. With your concurrence, we would prepare a termination agreement that would provide for our continued cooperation to meet Tierra Oaks' irrigation needs. Thank you for your consideration. If you have any questions or want to discuss this with us personally, please don't hesitate to contact me.

We look forward to hearing from you soon.

Sincerely yours,

ALAN N. HARVEY
City Manager

cc: City Council
Cliff Faith, Director of Public Services
John Kenny, City Attorney
Sam Smith, PACE Engineering

1650 Stanton Drive / P.O. Box 777 / Shasta Lake, CA 96019 / (916) 275-7400 / FAX (916) 275-7414

TABLES

Table 1
Current and Potential Recycled Water Users

User Name	Location	Current User (yes/no)	Contracted Annual Usage (AC-FT)	(1) Current Annual Usage (AC-FT)	Agreement Expiration	Reclaimed Water Cost ($/AC-FT)	(2) Approx. Potential Area (AC)	Potential Reclaimed Water Use Volume (AC-FT)
Caltrans	City of Shasta Lake/Redding	yes	36	24	2010	75	7	36
Knauf Fiberglass	City of Shasta Lake	yes	145-190	36	annual	75	-	190
Sierra Pacific Industries	City of Shasta Lake	yes	?	62	?	?	-	?
City Disposal Field	City of Shasta Lake	yes	-	198	-	-	40	200 (3)
City Industrial Park	City of Shasta Lake	no	-	-	-	-	135	613 (4)
Tierra Oaks Golf Club	Bella Vista Water District	no	-	-	-	-	115	401
Gold Hills Golf Club	Bella Vista Water District	no	-	-	-	-	86	184
Lassen Canyon Nursery	Bella Vista Water District	no	-	-	-	-	328	1393
Mtn. Gate at Shasta Development	City of Shasta Lake	no	-	-	-	-	Unknown	Unknown
			Totals:	320			711	3017

NOTES:
1. Current usage based on October 2006 through September 2007 disposal quantities.
2. Based on effective irrigation area of sites.
3. Based on average annual discharges since October 2000.
4. Based on 2006 evaluation of spray field expansion area by Lawrence and Associates and Enplan.

Date: 6/6/2009

TABLE 2
Site 1-Tierra Oaks Golf Course
Preliminary Project Cost Estimate

COST ESTIMATE	QTY	UNITS	UNIT COST	TOTAL COST
Recycled Water Main to Tierra Oaks Property Line				
12" PVC With Class "A1" Backfill	60	FT	$100	$6,000
12" PVC With Class "A4" Backfill	60	FT	$81	$4,860
12" PVC With Class "C" Backfill	4,500	FT	$75	$337,500
ARV	3	EA	$2,000	$6,000
Recycled Water Main On Tierra Oaks Property				
12" PVC With Class "A1" Backfill	1,250	FT	$100	$125,000
12" PVC With Class "C" Backfill	100	FT	$75	$7,500
8" PVC With Class "A1" Backfill	950	FT	$75	$71,250
8" PVC With Class "B" Backfill	2,250	FT	$70	$157,500
8" PVC With Class "C" Backfill	4,500	FT	$65	$292,500
ARV				
Easments				
Easment acquisition	4	EA	$15,000	$60,000
Recycled Water Storage Reservoir				
Excavation	4,200	CY	$15	$63,000
Native Compacted Fill	4,200	CY	$20	$84,000
Concrete	20	CY	$300	$6,000
Aerator	2	EA	$2,500	$5,000
Recycled Water Irrigation Pump Station				
Pump House/Structure	200	SF	$250	$50,000
Mechanical	1	LS	$40,000	$40,000
Electrical	1	LS	$30,000	$30,000
Backflow Prevention				
DOUBLE RPP	1	EA	$20,000	$20,000
Restroom Tie In				
1" meter w/ box	2	EA	$500	$1,000
1" water service line with class "A1" backfill	110	FT	$40	$4,400
1" water service line with class "B" backfill	600	FT	$25	$15,000
1" water service line with class "C" backfill	270	FT	$20	$5,400

Subtotal Construction Cost:	**$1,392,000**
Construction Contingency at 20%:	**$278,000**
Inflation from 2008 to 2011 Dollars @ 3% per Year:	**$154,854**
TOTAL ESTIMATED CONSTRUCTION COST:	**$1,825,000**
Indirect and Engineering Costs at 30%:	**$548,000**
TOTAL ESTIMATED PROJECT COST IN JUNE 2011 DOLLARS: (excluding financing costs)	**$2,373,000**

Date: 6/6/2009

TABLE 3
Site 2-Lassen Canyon Nursery
Preliminary Project Cost Estimate

COST ESTIMATE	QTY	UNITS	UNIT COST	TOTAL COST
Recycled Water Main to Lassen Canyon Nursery Property Line				
12" PVC With Class "A1" Backfill	3,000	FT	$100	$300,000
12" PVC With Class "A4" Backfill	50	FT	$81	$4,050
12" PVC With Class "B" Backfill	1,400	FT	$78	$109,200
12" PVC With Class "C" Backfill	11,600	FT	$75	$870,000
ARV	10	EA	$2,000	$20,000
Recycled Water Main On Lassen Canyon Nursery Property				
12" PVC With Class "C" Backfill	2,500	FT	$75	$187,500
Easments				
Easment acquisition	10	EA	$15,000	$150,000
Recycled Water Storage Reservoir				
Excavation	3,800	CY	$15	$57,000
Imported Compacted Fill	3,800	CY	$20	$76,000
Concrete	20	CY	$300	$6,000
Aerator	2	EA	$2,500	$5,000
Backflow Prevention				
RPP	2	EA	$15,000	$30,000
Recycled Water Irrigation Pump Station				
Pump House	200	SF	$250	$50,000
Mechanical	1	LS	$40,000	$40,000
Electrical	1	LS	$20,000	$20,000

Subtotal Construction Cost:	**$1,925,000**
Construction Contingency at 20%:	**$385,000**
Inflation from 2008 to 2011 Dollars @ 3% per Year:	**$214,199**
TOTAL ESTIMATED CONSTRUCTION COST:	**$2,524,000**
Indirect and Engineering Costs at 30%:	**$757,000**
TOTAL ESTIMATED PROJECT COST IN JUNE 2011 DOLLARS: (excluding financing costs)	**$3,281,000**

Date: 6/6/2009

TABLE 4
Sites 3, 4 and 5-Gold Hills Golf Course and Caltrans Irrigation
Project Cost Estimate

COST ESTIMATE	QTY	UNITS	UNIT COST	TOTAL COST
Recycled Water Main to Gold Hills Property Line				
8" PVC With Class "A1" Backfill	5,200	FT	$75	$390,000
8" PVC With Class "A4" Backfill	13,500	FT	$73	$985,500
8" ARV	16	EA	$2,000	$32,000
Culvert crossings	2	EA	$5,000	$10,000
Bridge crossings	1	EA	$10,000	$10,000
Recycled Water Main At the Gold Hills Site				
8" PVC With Class "A1" Backfill	300	FT	$75	$22,500
8" PVC With Class "B" Backfill	2,000	FT	$70	$140,000
8" PVC With Class "C" Backfill	750	FT	$65	$48,750
6" PVC With Class "A1" Backfill	600	FT	$67	$40,200
6" PVC With Class "B" Backfill	4,800	FT	$62	$297,600
6" PVC With Class "C" Backfill	2,800	FT	$57	$159,600
Recycled Water Main to Caltrans Irriagtion Areas				
6" PVC With Class "C" Backfill	1,000	FT	$57	$57,000
Easments				
Easment Acquisition	5	EA	$15,000	$75,000
Easment Acquisition From Gold Hills	7	EA	$1,000	$7,000
Recycled Water Storage Reservoir				
Excavation	3,000	CY	$15	$45,000
Native Compacted Fill	3,000	CY	$20	$60,000
Concrete	20	CY	$300	$6,000
Aerator	2	EA	$2,500	$5,000
Recycled Water Irrigation Pump Station				
Pump House	200	SF	$250	$50,000
Mechanical	1	LS	$40,000	$40,000
Electrical	1	LS	$20,000	$20,000

Subtotal Construction Cost:	**$2,501,000**
Construction Contingency at 20%:	**$500,000**
Inflation from 2008 to 2011 Dollars @ 3% per Year:	**$278,274**
TOTAL ESTIMATED CONSTRUCTION COST:	**$3,279,274**
Indirect and Engineering Costs at 30%:	**$984,000**
TOTAL ESTIMATED PROJECT COST IN JUNE 2011 DOLLARS: (excluding financing costs)	**$4,263,000**

Date: 6/6/2009

TABLE 5
Site 6-Existing City Property
Preliminary Project Cost Estimate

COST ESTIMATE	QTY	UNITS	UNIT COST	TOTAL COST
Recycled Water Main				
8" PVC With Class "C" Backfill	1,300	FT	$65	$84,500
Irrigation Area Improvents (1)				
Infrastucture	138	AC	$15,000	$2,070,000
Runoff Return System	2	EA	$300,000	$600,000
			Subtotal Construction Cost:	**$2,755,000**
			Construction Contingency at 20%:	**$551,000**
			Inflation from 2008 to 2011 Dollars @ 3% per Year:	**$306,555**
			TOTAL ESTIMATED CONSTRUCTION COST:	**$3,613,000**
			Indirect and Engineering Costs at 30%:	**$1,084,000**
			TOTAL ESTIMATED PROJECT COST IN JUNE 2011 DOLLARS: (excluding financing costs)	**$4,697,000**

NOTES:
1. Area assumes appoximately 80% of total parcel area can be developed for spray irrigation.

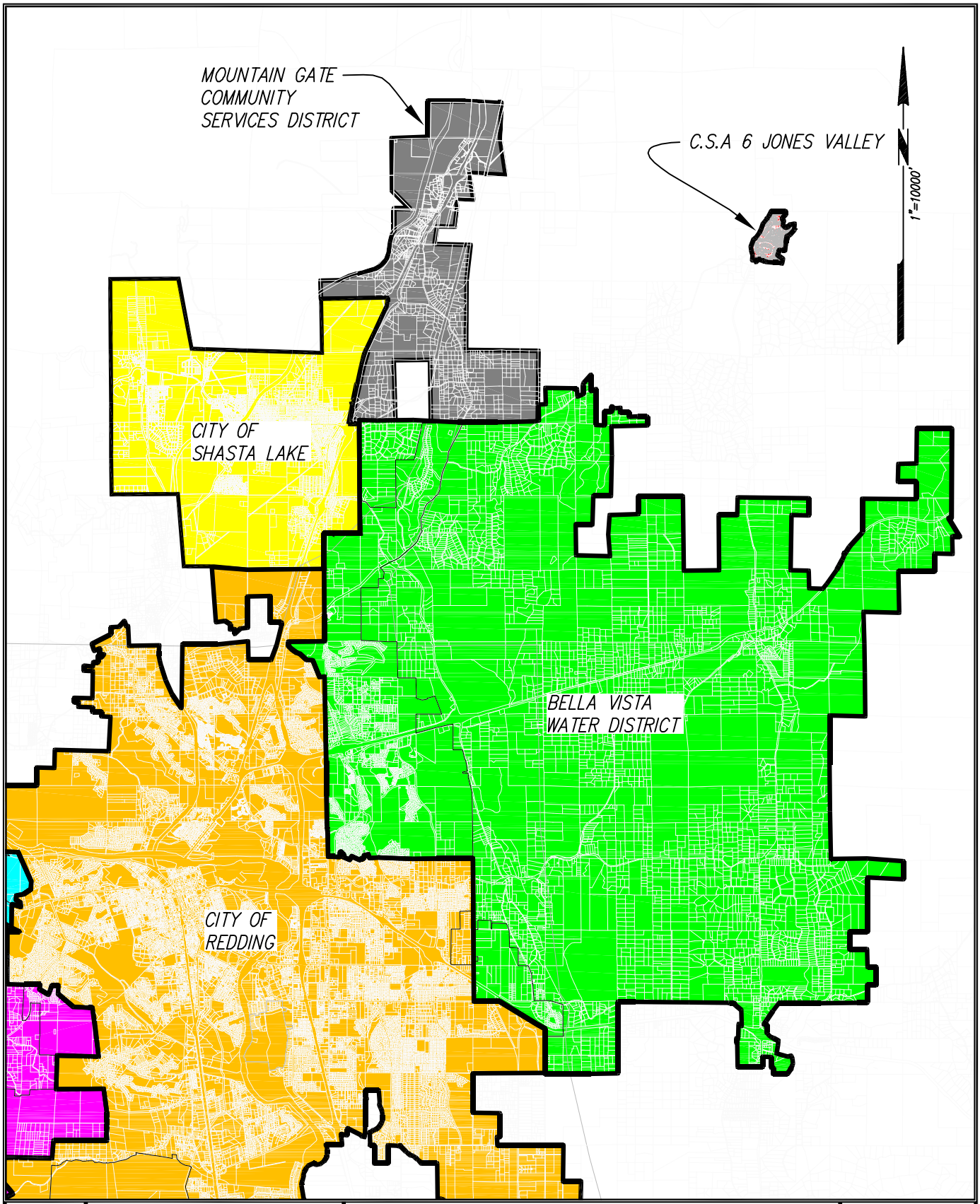
Table 6
Cost Summary and Comparison Table

Site No.	User Name	Project Cost Estimate	Irrigation Disposal Potential (AC-FT)	Cost ($/AC-FT)
1	**Tierra Oaks Golf Club**	$2,373,000	402	$5,903
2	**Lassen Canyon Nursery**	$3,281,000	828	$3,963
3, 4 & 5	**Gold Hills Golf Club and Caltrans Irrigation**	$4,263,000	237	$17,987
6	**City Industrial Park**	$4,697,000	613	$7,662

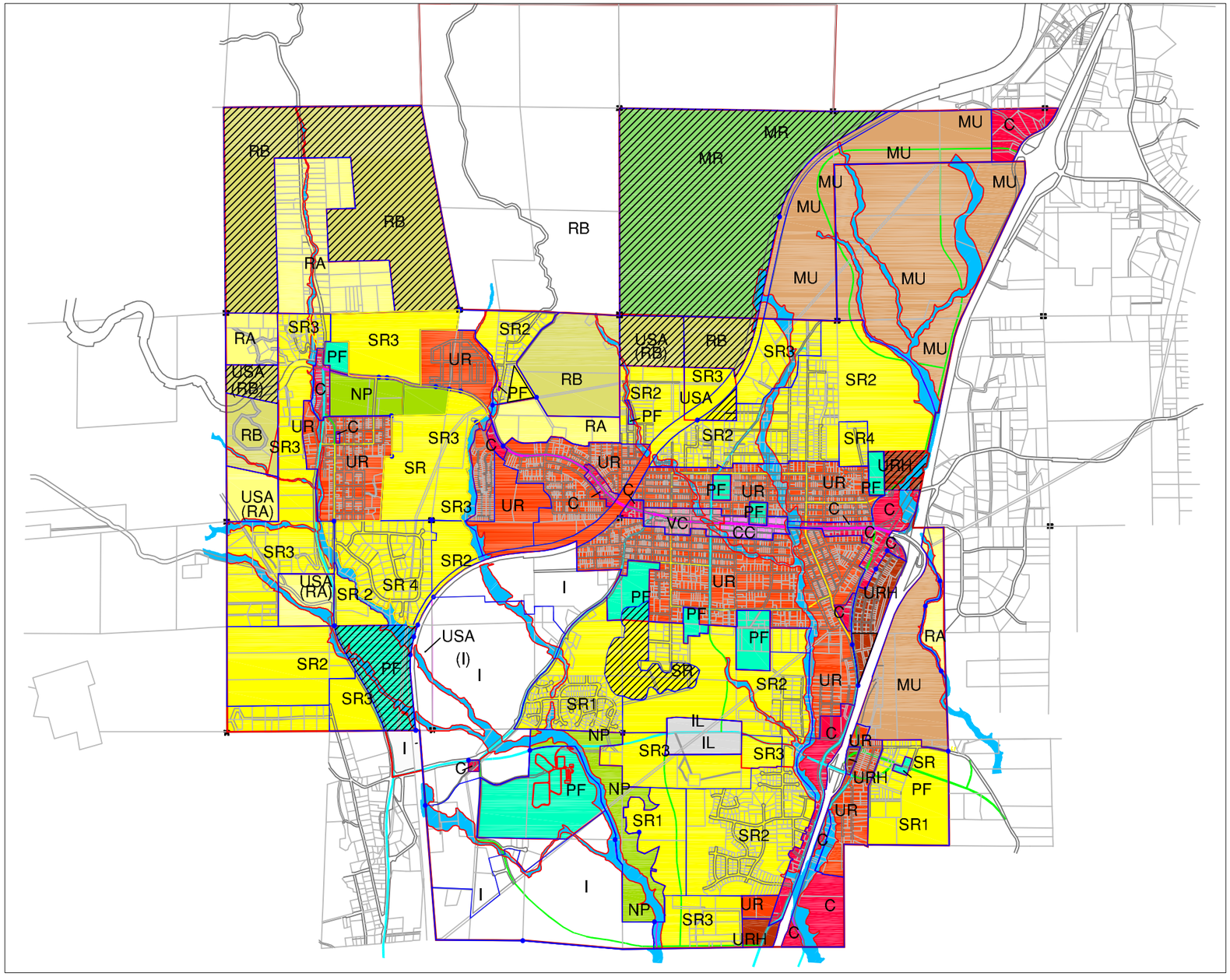
TABLE 7
PROJECT FINANCING OPTIONS

	LOAN TERM AND INTEREST RATE	CAPITAL RECOVERY FACTOR	LOAN AMOUNT FOR ANNUAL DEBT SERVICE	TOTAL ESTIMATED PROJECT COST	REQUIRED GRANT AMOUNT	MINIMUM GRANT % REQUIRED
SCENARIO 1 - CITY PAYS ANNUAL PUMPING COST TO TIERRA OAKS ANNUAL REVENUE = $40,000						
	40-Yr @ 2.75%	0.0415	$963,124	$2,400,000	$1,436,876	**60%**
	30-Yr @ 2.5%	0.0478	$837,212	$2,400,000	$1,562,788	**65%**
	30-Yr @ 0%	0.0333	$1,201,201	$2,400,000	$1,198,799	**50%**
SCENARIO 2 - CITY ACCOUNTS FOR ANNUAL PUMPING COST TO TIERRA OAKS ANNUAL REVENUE = $24,000						
	40-Yr @ 2.75%	0.0415	$577,874	$2,400,000	$1,822,126	**76%**
	30-Yr @ 2.5%	0.0478	$502,327	$2,400,000	$1,897,673	**79%**
	30-Yr @ 0%	0.0333	$720,721	$2,400,000	$1,679,279	**70%**

FIGURES



DATE			
2/08	PACE CIVIL, INC. REDDING, CALIFORNIA	RECYCLED WATER FEASIBILITY STUDY LOCAL AGENCY BOUNDARIES	FIGURE 1 JOB #110.81



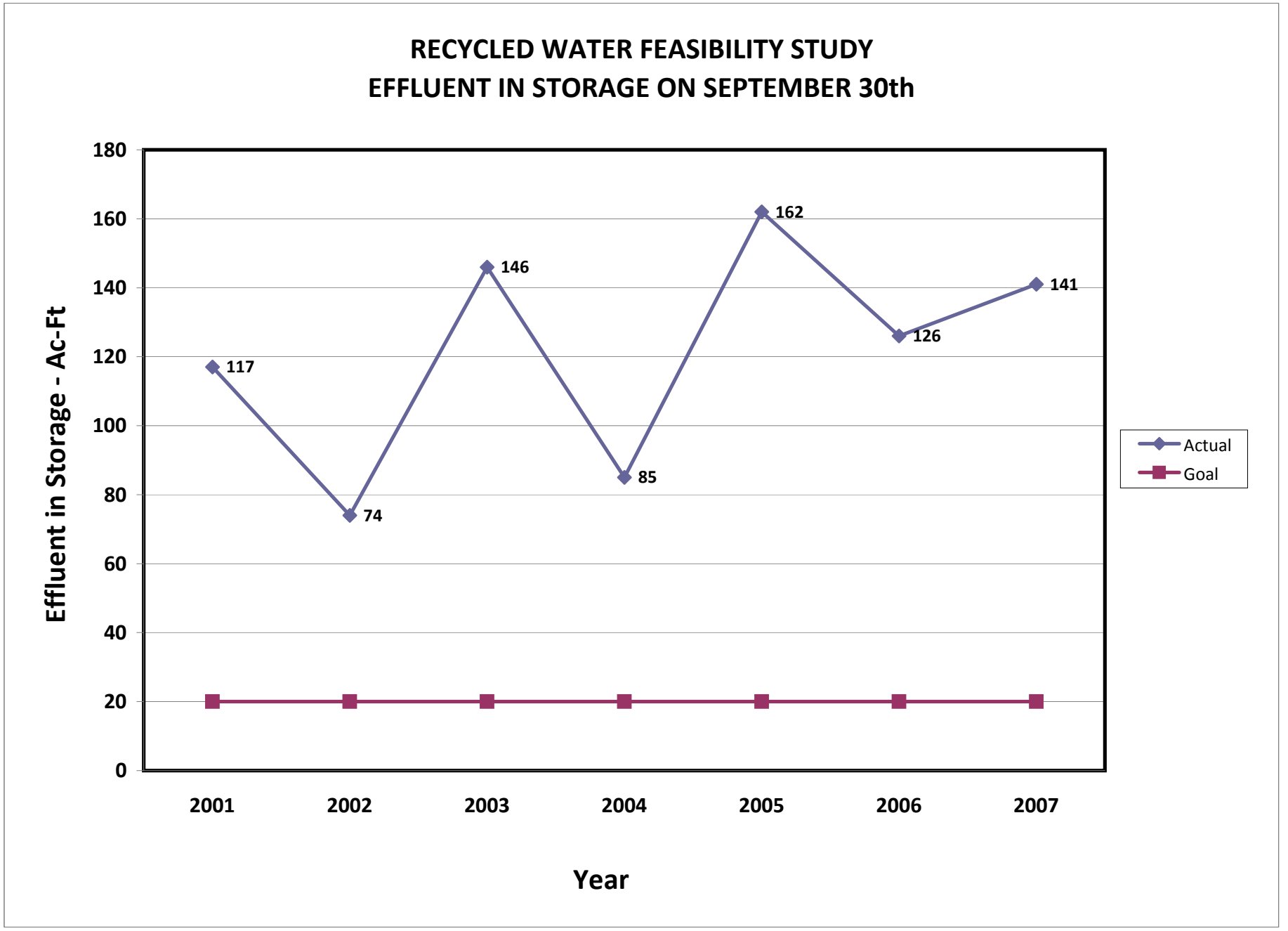
LEGEND

- Existing City Limit
- Future City Limit
- Sphere of Influence
- Minor Arterial
- Existing Collector
- Future Collector
- Residential Collector
- Trail System
- Land Use Limit
- 100 Year Floodplain
- RB — Rural Residential B (5 acres/unit)
- RA — Rural Residential A (2 acres/unit)
- SR — Suburban Residential (3 units/acre)
- UR — Urban Residential (10 units/acre)
- URH — Urban Residential High (20 units/acre)
- MU — Mixed Use
- C — Commercial
- CC — City Center Commercial
- VC — Village Commercial
- I — Industrial
- IL — Industrial Light
- MR — Mineral Resource
- NP — Community Park
- PF — Public Facilities
- USA — Federal Government

PACE CIVIL, INC.
REDDING, CALIFORNIA

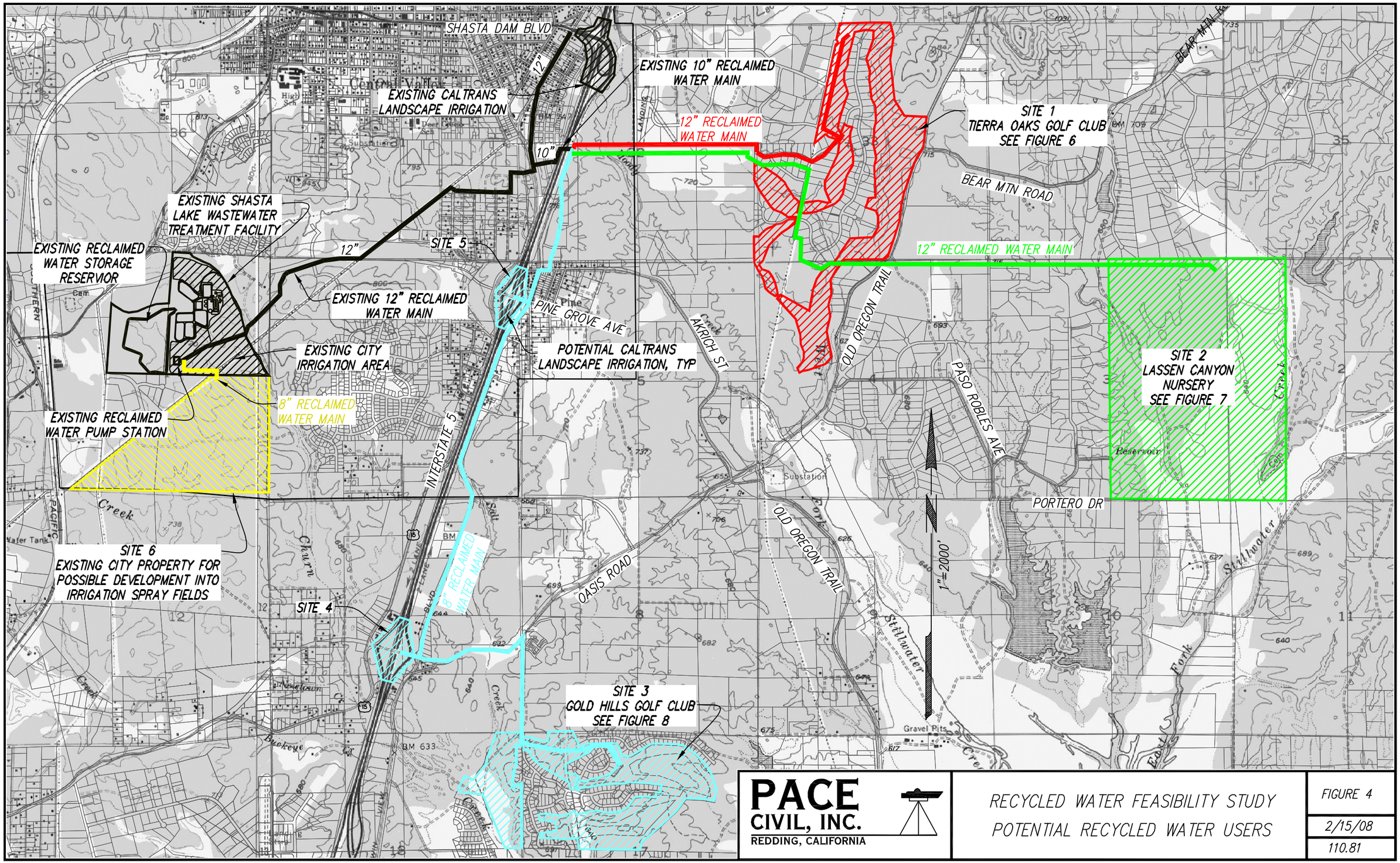
RECYCLED WATER FEASIBILITY STUDY
LAND USE

FIGURE 2
2/15/08
110.81



M:\Jobs\0110\0110.81\Spreadsheets\Efluent In Storage.xls

FIGURE 3



PACE CIVIL, INC.
REDDING, CALIFORNIA

RECYCLED WATER FEASIBILITY STUDY
POTENTIAL RECYCLED WATER USERS

FIGURE 4
2/15/08
110.81

Plot Date: March 06, 2008 - 1:07 pm Login Name: ghattenhauer
File Name: M:\Land Projects\01\81 Recycled Water Feasibility Study\dwg\Site Plan\dwg, Layout: FIG

POTENTIAL RECLAIMED WATER IRRIGATION AREAS

RECLAIMED WATER MAIN

1"=600'

PALA MESA CIRCLE

12"

4"

6"

8"

12"

ALICIA PARKWAY

EXISTING IRRIGATION INFRASTRUCTURE

EXIST RESTROOM

WATER SERVICE TO RESTROOM

WATER METER

MITCHELLINDA DRIVE

8"

EXIST RESTROOM

EXPAND EXISTING POND

IRRIGATION PUMP STATION

EXISTING POND

TIERRA HEIGHTS ROAD

APPROX. LOACATION OF EXISTING IRRIGATION PIPING, TYP

OLD OREGON TRAIL

PROVIDE BACKFLOW PREVENTION

TIERRA OAKS GOLF CLUB

EXIST PUMPING STATION

POTENTIAL 12" RECLAIMED WATER PIPELINE TO LASSEN CANYON NURSERY PROPERTY

PASO ROBLES AVE

800

PACE CIVIL, INC. REDDING, CALIFORNIA	RECYCLED WATER FEASIBILITY STUDY TIERRA OAKS GOLF CLUB	FIGURE 5
		2/15/08
		110.81

Plot Date: March 06, 2008 - 1:11 pm Login Name: gnatterinauer
File Name: M:\Land Projects\110.81 Recycled Water Feasibility Study\dwg\Tierra Oaks.dwg, Layout: FIGURE 5

PROPERTY LINE

1"=500'

PORTERO DR

Reservoir

12" RECLAIMED WATER MAIN

8"

6"

EXIST WATER METER

EXIST BVWD VAULT

APPROX. LIMITS OF EXIST IRRIGATION AREA, TYP

EXIST 4" TO NURSERY

EXIST 40 HP PUMP

BVWD 27"

EXIST LASSEN CANYON NURSERY FACILITIES, TYP

APPROX. LIMITS OF FUTURE 65 ACRES TO BE IRRIAGTED WITH RECLAIMED WATER

EXIST WATER METER

EXIST 100 HP PUMP

EXISTING ROAD, TYP

EXIST POND

EXIST WATER METER

LASSEN CANYON NURSERY

EXPANSION OF EXISTING POND FOR RECLAIMED WATER STORAGE RESERVIOR

12"

APPROX. LIMITS OF EXIST IRRIGATION AREA, TYP

IRRIGATION PUMP STATION

APPROX. LIMITS OF POTENTIAL 130 ACRES TO BE IRRIAGTED WITH RECLAIMED WATER

640

CREEK

STILLWATER

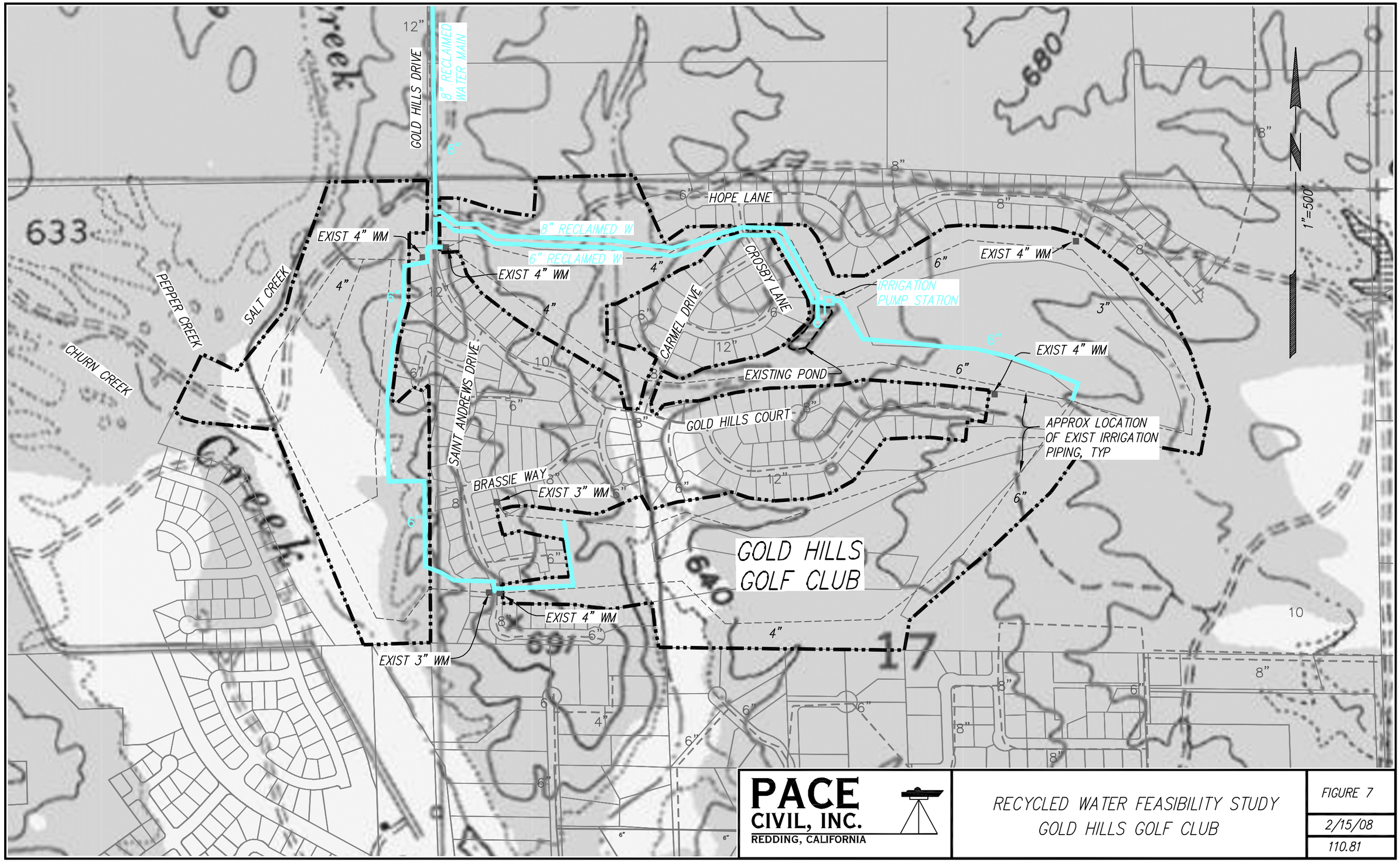
STILLWATER CREEK

Creek

PACE CIVIL, INC.
REDDING, CALIFORNIA

RECYCLED WATER FEASIBILITY STUDY
LASSEN CANYON NURSERY PROPERTY

FIGURE 6
2/15/08
110.81



PACE CIVIL, INC.
REDDING, CALIFORNIA

RECYCLED WATER FEASIBILITY STUDY
GOLD HILLS GOLF CLUB

FIGURE 7
2/15/08
110.81

Appendix G

2015 CONSUMER CONFIDENCE REPORT

2015 Consumer Confidence Report

Water System Name: **City of Shasta Lake** Report Date: March 22, 2016

We test the drinking water quality for many constituents as required by state and federal regulations. This report shows the results of our monitoring for the period of January 1 - December 31, 2015 and may include earlier monitoring data.

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo ó hable con alguien que lo entienda bien.

Type of water source(s) in use: Surface Water

Name & general location of source(s): Lake Shasta

Drinking Water Source Assessment information: A ***source water assessment*** was conducted for the City of Shasta Lake's Raw Water Intake in January 2003. The source is considered vulnerable to the following activities not associated with any detected contaminants: Automobile gas stations, chemical/petroleum, processing/storage, and concentrated animal production facilities as defined in the federal regulations. A copy of the ***assessment*** may be viewed at the City of Shasta Lake, 1650 Stanton Dr.

Time and place of regularly scheduled board meetings for public participation: 6:00 pm, 1st and 3rd Tuesday of each month. Shasta Lake Council Chambers, 4488 Red Bluff St.

For more information, contact: Tony Thomasy Phone: (530) 275-7488

TERMS USED IN THIS REPORT

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the U.S. Environmental Protection Agency (USEPA).

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Primary Drinking Water Standards (PDWS): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Secondary Drinking Water Standards (SDWS): MCLs for contaminants that affect taste, odor, or appearance of the drinking water. Contaminants with SDWSs do not affect the health at the MCL levels.

Treatment Technique (TT): A required process intended to reduce the level of a contaminant in drinking water.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Variances and Exemptions: State Board permission to exceed an MCL or not comply with a treatment technique under certain conditions.

ND: not detectable at testing limit

ppm: parts per million or milligrams per liter (mg/L)

ppb: parts per billion or micrograms per liter (µg/L)

ppt: parts per trillion or nanograms per liter (ng/L)

ppq: parts per quadrillion or picogram per liter (pg/L)

pCi/L: picocuries per liter (a measure of radiation)

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring

minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

- *Microbial contaminants*, such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- *Inorganic contaminants*, such as salts and metals, that can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- *Pesticides and herbicides* that may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- *Organic chemical contaminants*, including synthetic and volatile organic chemicals that are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- *Radioactive contaminants* that can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, the USEPA and the State Water Resources Control Board (State Board) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

Tables 1, 2, 3, 4, 5, 7, and 8 list all of the drinking water contaminants that were detected during the most recent sampling for the constituent. The presence of these contaminants in the water does not necessarily indicate that the water poses a health risk. The State Board allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of the data, though representative of the water quality, are more than one year old.

TABLE 1 – SAMPLING RESULTS SHOWING THE DETECTION OF COLIFORM BACTERIA

Microbiological Contaminants (complete if bacteria detected)	**Highest No. of Detections**	**No. of months in violation**	**MCL**	**MCLG**	**Typical Source of Bacteria**
Total Coliform Bacteria	(In a mo.) **0**	0	More than 1 sample in a month with a detection	0	Naturally present in the environment
Fecal Coliform or *E. coli*	(In the year) **0**	0	A routine sample and a repeat sample detect total coliform and either sample also detects fecal coliform or *E. coli*	0	Human and animal fecal waste

TABLE 2 – SAMPLING RESULTS SHOWING THE DETECTION OF LEAD AND COPPER

Lead and Copper (complete if lead or copper detected in the last sample set)	**Sample Date**	**No. of samples collected**	**90th percentile level detected**	**No. sites exceeding AL**	**AL**	**PHG**	**Typical Source of Contaminant**
Lead (ppb)	2013	30	ND	0	15	0.2	Internal corrosion of household water plumbing systems; discharges from industrial manufacturers; erosion of natural deposits
Copper (ppm)	2013	30	92	0	1.3	0.3	Internal corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives

TABLE 3 – SAMPLING RESULTS FOR SODIUM AND HARDNESS

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Sodium (ppm)	2012	6.92	N/A	none	none	Salt present in the water and is generally naturally occurring
Hardness (ppm)	2012	50	N/A	none	none	Sum of polyvalent cations present in the water, generally magnesium

						and calcium, and are usually naturally occurring

***Any violation of an MCL or AL is asterisked. Additional information regarding the violation is provided later in this report.*

TABLE 4 – DETECTION OF CONTAMINANTS WITH A PRIMARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
Aluminum (ppb)	2012	.073	N/A	1000	.6	Erosion of natural deposits; residue from some surface water treatment processes.
Chlorine (mg/l)	2015	1.92	.1 to 2.5	4.0	4.0	Disinfection required by regulation to be added to drinking water
Fluoride	2012	0.1	0.1 to 0.3	2	1	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories
Total Trihalomethanes (ppb) (Distribution System)	Quarterly 2015	30.0	26.3 to 35.7	80	N/A	By-product of drinking water disinfection
Total of Five Haloacetic Acids-HAA5 (ppb) (Distribution System)	Quarterly 2015	15.6	12.5 to 22.7	60	N/A	By-product of drinking water disinfection

TABLE 5 – DETECTION OF CONTAMINANTS WITH A SECONDARY DRINKING WATER STANDARD

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**MCL**	**PHG (MCLG)**	**Typical Source of Contaminant**
Chloride (ppm)	2012	2.1	N/A	500	N/A	Runoff/leaching from natural deposits; seawater influence
Sulfate (ppm)	2012	3.5	N/A	500	N/A	Runoff/leaching from natural deposits; industrial wastes
Specific Conductance	2012	120	N/A	1600	N/A	Runoff/leaching from natural deposits; seawater influence
TDS (ppm)	2012	81	N/A	1000	N/A	Runoff/leaching from natural deposits

TABLE 6 – DETECTION OF UNREGULATED CONTAMINANTS

Chemical or Constituent (and reporting units)	**Sample Date**	**Level Detected**	**Range of Detections**	**Minimum Reporting Level**	**Typical Source of Contamination**
Chromium (ppb)	2015	0.32	.23 to .36	.20	Naturally-occurring element; used in making steel and other alloys; chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation.
Hexavalent Chromium (ppb)	2015	0.31	.24 to .37	.030	Naturally-occurring element; used in making steel and other alloys; chromium-3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation.

Strontium (ppb)	2015	57	55.7 to 59.3	0.3	Naturally-occurring element; historically, commercial use of strontium has been in the faceplate glass of cathode-ray tube televisions to block x-ray emissions.

***Any violation of an MCL, MRDL, or TT is asterisked. Additional information regarding the violation is provided later in this report.*

Additional General Information on Drinking Water

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA's Safe Drinking Water Hotline (1-800-426-4791).

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Lead-Specific Language for Community Water Systems: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Shasta Lake is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. [Optional: If you do so, you may wish to collect the flushed water and reuse it for another beneficial purpose, such as watering plants.] If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/lead.

Summary Information for Violation of a MCL, MRDL, AL, TT, or Monitoring and Reporting Requirement

VIOLATION OF A MCL, MRDL, AL, TT, OR MONITORING AND REPORTING REQUIREMENT				
Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**

For Water Systems Providing Ground Water as a Source of Drinking Water

TABLE 7 – SAMPLING RESULTS SHOWING FECAL INDICATOR-POSITIVE GROUND WATER SOURCE SAMPLES

Microbiological Contaminants (complete if fecal-indicator detected)	**Total No. of Detections**	**Sample Dates**	**MCL [MRDL]**	**PHG (MCLG) [MRDLG]**	**Typical Source of Contaminant**
E. coli	(In the year)		0	(0)	Human and animal fecal waste
Enterococci	(In the year)		TT	n/a	Human and animal fecal waste
Coliphage	(In the year)		TT	n/a	Human and animal fecal waste

Summary Information for Fecal Indicator-Positive Ground Water Source Samples, Uncorrected Significant Deficiencies, or Ground Water TT

SPECIAL NOTICE OF FECAL INDICATOR-POSITIVE GROUND WATER SOURCE SAMPLE

SPECIAL NOTICE FOR UNCORRECTED SIGNIFICANT DEFICIENCIES

VIOLATION OF GROUND WATER TT				
TT Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**

For Systems Providing Surface Water as a Source of Drinking Water

TABLE 8 - SAMPLING RESULTS SHOWING TREATMENT OF SURFACE WATER SOURCES	
Treatment Technique [(a)] (Type of approved filtration technology used)	Approved Alternative Technology
Turbidity Performance Standards [(b)] (that must be met through the water treatment process)	Turbidity of the filtered water must: 1 – Be less than or equal to __0.2___ NTU in 95% of measurements in a month. 2 – Not exceed __1.0___ NTU for more than eight consecutive hours. 3 – Not exceed __5.0__ NTU at any time.
Lowest monthly percentage of samples that met Turbidity Performance Standard No. 1.	100
Highest single turbidity measurement during the year	.96 NTU
Number of violations of any surface water treatment requirements	0

(a) A required process intended to reduce the level of a contaminant in drinking water.

(b) Turbidity (measured in NTU) is a measurement of the cloudiness of water and is a good indicator of water quality and filtration performance. Turbidity results which meet performance standards are considered to be in compliance with filtration requirements.

** Any violation of a TT is marked with an asterisk. Additional information regarding the violation is provided below.*

Summary Information for Violation of a Surface Water TT

VIOLATION OF A SURFACE WATER TT				
TT Violation	**Explanation**	**Duration**	**Actions Taken to Correct the Violation**	**Health Effects Language**

Summary Information for Operating Under a Variance or Exemption

The City did not violate any primary or secondary drinking water standard, monitoring requirement, or reporting requirement during 2015. In addition, the City's surface water treatment plant did not violate any performance standards during 2015.

Appendix H

WATER CONSERVATION AND DROUGHT CONTINGENCY PLAN

Chapter 13.14 - WATER CONSERVATION AND DROUGHT CONTINGENCY PLAN

Sections:

13.14.010 - Purpose.

The purpose of this chapter is to implement the city's water shortage contingency plan detailing the stages of action to be undertaken during a reduction in available water supply, either due to reductions in the city's available water supply during drought years, or due to catastrophic interruption due to flooding, major fire emergencies, earthquake, regional power outages, water contamination or other situations that could impact the city's water supply.

On May 9, 2016, the Governor of California issued an Executive Order declaring the following practices be permanently prohibited:

- Hosing off sidewalks, driveways, and other hardscapes;
- Washing automobiles with hoses not equipped with a shut-off nozzle;
- Using non-recirculated water in a fountain or other decorative water feature;
- Watering lawns in a manner that causes runoff, or within 48 hours after measurable precipitation; and
- Irrigating ornamental turf on public street medians.

In the event any provision of this Chapter conflicts or overlaps with any mandatory State regulation related to water conservation, the most stringent shall apply.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.020 - Definitions.

A. The following words and phrases as used in this Chapter have the following meanings:

1. "Available water supply" means the amount of potable water available to the city in any given water year, including water available through long-term water purchase agreements/contracts, taking into consideration reductions to the allocations during drought years, and any supplemental water purchased from other water purveyors under short-term agreements.
2. "Bubbler" means an irrigation device that bubbles water only a short distance from the device, generally used for watering trees and shrubs on a per-tree/shrub basis.
3. "City" means the City of Shasta Lake.
4. "Drip irrigation" means a landscape watering system using low water pressure and flexible tubing placed on the ground to target the roots of plants, thereby conserving moisture that would be lost to evaporation with sprinkler systems
5. "Emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.
6. "Landscape irrigation system" means an irrigation system with pipes, spray heads or sprinkling devices that are operated through an automated or manual valving system.
7. "Large water user" means schools, commercial, industrial, civic/social/fraternal and government customers with a one-inch meter or larger, or more than one meter serving a property or facility,

and single-family residential users with a water use of over ten thousand (10,000) cubic feet per month over the prior 12-month period.

8. "Ornamental pond" or "ornamental fountain" means a design element where open water performs solely an aesthetic function.
9. "Person" means property owners, occupants, tenants, lessees, sub-lessees, individuals, partnerships, corporations, joint ventures, receivers, limited liability companies, trust, estates, cooperatives, associations public or private agency, government agency or institution, school district or any other user of water provided by the city.
10. "Potable water" means water that is provided to customers through the city's water treatment and distribution system. This does not include reclaimed water.
11. "Reclaimed water" means former wastewater that is treated to remove solids and impurities pursuant to state water quality requirements and used for landscape irrigation and/or to meet commercial and industrial water needs.
12. "Retrofit kit" means water saving devices that can assist customers to save water, including, but not limited to, low-flow showerheads, faucet aerators, spray hose nozzles, and hose timers.
13. "Shut-off nozzle" shall mean a device attached to the end of a hose that must be manually operated, pressed or otherwise held in place to allow water to flow out of the hose.
14. "Soaker hose" means a garden hose with small holes that allow water to seep into the ground to the roots of plants, conserving moisture that would be lost to evaporation with sprinkler systems.
15. "Station" means a landscaped area served by one valve or by a set of valves that operate simultaneously.
16. "Unnecessary and wasteful use of water" means the application or usage of water for functions or activities which do not have any health or safety purpose, are not required by regulation, and are not part of the core function or business process at a site.
17. "Water year" means the period from and including March 1 of each calendar year through the last day of February of the following calendar year as established by the long-term water contract between the City of Shasta Lake and the U.S. Bureau of Reclamation.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.030 - Declaration of water shortage emergency.

By resolution adopted after a noticed public hearing, city council may declare a water shortage emergency and impose voluntary or mandatory water conservation restrictions by identifying the applicable Stage outlined in Sections 13.14.040 through 13.14.080. Unless the resolution specifies an ending date, the declaration of water shortage emergency shall remain in effect until rescinded or otherwise modified by subsequent resolution of the city council.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.040 - Stage 1: Water shortage alert.

In Stage 1, there is a ten (10) percent reduction in the city's available water supply. The city's water supply (treatment) and/or distribution system is able to meet much of or most of the water demands of its customers in the immediate future. The following voluntary restrictions are encouraged in an effort to reduce water consumption.

Stage 1: Water Shortage Alert
1. Water shall be used for beneficial uses only; all unnecessary and wasteful uses of water shall be prohibited.
2. Water from landscape irrigation shall be confined to the consumer's property and shall not be allowed to run off to adjoining property or to the roadside ditch or gutter.
3. Free flowing hoses for any use shall be prohibited. Water shall not be used for washing cars, boats, trailers, or other vehicles by hose without a shutoff nozzle and bucket, except to wash such vehicles at commercial or fleet vehicle washing facilities.
4. Water shall not be used to wash buildings, structures, sidewalks, walkways, driveways, parking lots, open ground or other hard surfaced areas except where necessary for public health or safety.
5. The application of potable water to outdoor landscape during and within 48 hours of measurable rainfall is prohibited.
6. Faulty sprinklers and/or breaks within the customer's plumbing system shall be repaired within twenty-four (24) hours after the customer is notified or discovers the break.
7. All wading/portable pools, spas, and ornamental fountains/ponds shall be equipped with a recirculating pump, and shall be constructed to be leak-proof. Swimming pool/spa covers are encouraged to prevent evaporative water loss.
8. All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, etc., shall develop a water conservation plan indicating a ten percent reduction in water usage and submit the plan to the city's water conservation coordinator for approval within thirty (30) calendar days.
9. Use of landscape irrigation systems for all customers, including parks and school grounds, shall be limited between the hours of 9:00 p.m. and 9:00 a.m. to reduce evaporation.
10. Irrigated landscaped areas shall include efficient irrigation systems (e.g., drip irrigation systems, timed sprinklers, rain sensors, low-flow spray heads, etc.)
11. Restaurant customers shall receive water only upon request.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.050 - Stage 2: Moderate water shortage.

In Stage 2, there is an eleven (11)—twenty (20) percent reduction in the city's available water supply. There is a probability that the city's supply (treatment) and/or distribution system will not be able to meet all water demands of city customers with the city's available water supply for the current water year. Mandatory restrictions apply in an effort to increase conservation by ten percent above Stage 1.

Stage 2: Moderate Water Shortage
All measures from Stage 1 become mandatory in Stage 2 unless noted as more restrictive.
1. Water use for ornamental ponds and fountains shall be prohibited.
2. All large water users, such as industrial uses, schools, supermarkets, etc., shall develop or update their water conservation plans and submit the plan to the city's water conservation coordinator for approval within thirty (30) calendar days. The plan shall address all rationing stages of this chapter as follows: Stage 2: Demonstrate a twenty (20) percent reduction in water usage; Stage 3: Demonstrate a thirty (30) percent reduction in water usage; Stage 4: Demonstrate a forty (40) percent reduction in water usage; Stage 5: Demonstrate a fifty (50) percent reduction in water usage.
3. School grounds shall be watered at night only between the hours of 9:00 p.m. and 9:00 a.m., no more than three nights per week, and shall achieve a twenty (20) percent reduction in water use. The reduction shall be measured based on the amount of water used in the previous calendar month compared to the same calendar month in the most recent non-drought year.
4. Use of landscape irrigation systems for all other customers shall be limited between the hours of 9:00 p.m. and 9:00 a.m. no more than three nights per week.
The limitation for times does not apply to:
a. Drip, bubbler, or soaker irrigation hardware or emitters;
b. Use of an irrigation system for the express purposes of repairing or completing routine maintenance.
c. Watering by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle.
d. Watering by use of a hose-end sprinkler with a radius of not more than ten feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.

5. The city will implement excessive water use penalties or tier water rates to discourage excessive water use and shall penalize water customers who fail to meet the reduced consumption amount.

(Ord. No. 14-236, § 2, 9-16-2014)

In Stage 3, there is a twenty-one (21)—thirty (30) percent reduction in the city's available water supply. There is a probability that the city's supply (treatment) and/or distribution system will not be able to meet all water demands of city customers with the city's available water supply for the current water year. Mandatory restrictions apply in an effort to increase conservation by ten percent above Stage 2.

Stage 3: Emergency Water Shortage
All measures from Stages 1 and 2 become mandatory in Stage 3 unless noted as more restrictive.
1. School grounds shall be watered at night only between the hours of 9:00 p.m. and 9:00 a.m., no more than two nights per week, and shall achieve a thirty (30) percent reduction in water use.
2. Use of landscape irrigation systems for all other customers shall be limited between the hours of 9:00 p.m. and 9:00 a.m. no more than two nights per week for a maximum total run time of fifteen (15) minutes per station per night.
The limitation for times does not apply to:
a. Drip, bubbler, or soaker irrigation hardware or emitters;
b. Use of an irrigation system for the express purposes of repairing or completing routine maintenance.
c. Watering by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle.
d. Watering by use of a hose-end sprinkler with a radius of not more than ten feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.
3. Installation of irrigated landscaping for all new development shall be prohibited for Stages 3, 4, 5. Any landscaping required pursuant to the Shasta Lake Municipal Code or conditions of approval for a discretionary permit (e.g., use permit, subdivision, parcel map, etc.) shall be deferred pursuant to a written agreement with the City.

4. No new landscape irrigation systems shall be installed on developed parcels. This restriction shall not apply to the replacement of inefficient irrigation systems with systems that incorporate water-savings technologies, such as the installation of high efficiency sprinkler heads, weather-based irrigation controllers, and/or drip irrigation systems.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.070 - Stage 4: Severe water shortage.

In Stage 4, there is a thirty-one (31)—forty (40) percent reduction in the city's available water supply. The city's supply (treatment) or distribution system will not be able to meet all demands of city customers with the city's available water supply for the current water year. Mandatory restrictions apply in an effort to increase conservation by ten percent above Stage 3.

Stage 4: Severe Water Shortage
All measures from Stages 1, 2 and 3 become mandatory in Stage 4 unless noted as more restrictive.
1. Water use shall be restricted so as to meet the minimum requirements for personal health and safety. Priority shall be given to supplying adequate water to ensure public/community health and safety (i.e., fire suppression, medical, veterinarian, and educational institutions).
2. Swimming pools that have been filled prior to Stage 4 shall not be emptied and refilled.
3. Building permits for new swimming pools shall not be issued as of the effective date of the Stage 4 declaration.
4. Flushing of sewers and fire hydrants shall be prohibited except in cases of emergency.
5. Potable water from the city system may be used for construction purposes, such as dust control, compaction, or trench jetting.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.080 - Stage 5: Critical water shortage emergency.

In Stage 5, there is a forty-one (41)—fifty (50) percent reduction in the city's available water supply. The city's supply (treatment) or distribution system will not be able to meet all demands of city customers with the city's available water supply for the current water year. In Stage 5, the city is experiencing a major

failure of supply, storage, or distribution facilities. The city is not able to meet all customer water requirements with Stage 4 measures. Mandatory restrictions apply in an effort to increase conservation by ten percent above Stage 4.

Stage 5: Critical Water Shortage Emergency
All measures from Stages 1, 2, 3 and 4 become mandatory in Stage 5 unless noted as more restrictive.
1. No new residential development shall be permitted unless the developer has submitted a complete building permit application to the city prior to the Stage 5 declaration.
2. Use of landscape irrigation systems, except drip irrigation, for all customers shall be prohibited. Using a hand-held container for watering is allowed. Watering by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle is allowed.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.090 - Enforcement.

The city manager, building official, development services director, water conservation coordinator and each of their respective designees are each authorized to administer and enforce all provisions of this chapter, including the issuance of citations.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.100 - Penalties and violations.

A. It is unlawful for any person, to violate or cause or permit the violation of any of the provisions of this chapter or provide false information to the city in response to city requests for information. The penalties for violations of any provision of this chapter are as follows:

   1. First Violation. No penalty shall be imposed. The city shall provide notice of the violation and a copy of this chapter to the current property owner and/or billing address.

   2. Second Violation. No penalty shall be imposed. The city shall issue a written notice of the violation by certified mail to the current property owner and/or billing address and provide notice that additional violations may result in penalties or termination of service.

   3. Third Violation. A third violation within twelve (12) calendar months of the second violation shall result in a penalty not to exceed one hundred dollars ($100.00). The city shall issue a written notice of the violation by certified mail to the current property owner and/or billing address. The amount of the penalty shall be added to the next water bill thirty (30) days after the date of the written notice of the violation, if not paid in full or protested pursuant to Section 13.12.100(F) of this chapter. If the penalty is added to the water bill, failure to pay the penalty shall be treated as nonpayment of the water bill and water service may be terminated as a result.

   4. Fourth Violation. A fourth violation within twelve (12) calendar months of the third violation shall result in a penalty not to exceed two hundred dollars ($200.00). The city shall issue a written notice of the violation by certified mail to the current property owner and/or billing address. The

amount of the penalty shall be added to the next water bill thirty (30) days after the date of the written notice of the violation, if not paid in full or protested pursuant to Section 13.12.100(F) of this chapter. If the penalty is added to the water bill, failure to pay the penalty shall be treated as nonpayment of the water bill and water service may be terminated as a result.

5. Fifth and Subsequent Violations. A fifth violation and subsequent violations within twelve (12) calendar months of the fourth violation shall result in a penalty not to exceed five hundred dollars ($500.00). The city shall issue a written notice of the violation by certified mail to the current property owner and/or billing address. The amount of the penalty shall be added to the next water bill thirty (30) days after the date of the written notice of the violation, if not paid in full or protested pursuant to Section 13.12.100(F) of this chapter. If the penalty is added to the water bill, failure to pay the penalty shall be treated as nonpayment of the water bill and water service may be terminated as a result.

B. Each separate day or portion thereof in which any violation of the chapter occurs or continues without a good faith effort by the customer to correct the violation shall constitute a separate violation.

C. Termination of Service. In addition to any penalties, the city may disconnect and/or terminate a customer's water service. If water service is disconnected, it shall be restored only upon payment of the connection charge fixed by city council.

D. Civil Enforcement. Violations of this chapter may also be redressed by civil action. In addition to being subject to prosecution, any person who violates any of the provisions of this chapter may be made the subject of a civil action. Appropriate civil action includes, but is not limited to, injunctive relief and cost recovery.

E. Remedies Cumulative. The remedies available to the city to enforce this chapter are in addition to any other remedies available under the Shasta Lake Municipal Code or any state statutes or regulations and do not replace or supplant any other remedy but are cumulative thereto.

F. Protesting Penalties/Fines.

1. A protest of penalties/fines shall be in writing on a form prescribed by the City and shall be filed with the city no later than fourteen (14) calendar days from the date of notice of a violation. The protest shall be accompanied by photographs, maps, drawings or other information showing why the protest should be granted.

2. The city manager or his/her designee shall consider all protests and make a determination on the request no later than ten calendar days after submittal and may approve, conditionally approve or deny the protest. The applicant shall be notified in writing of any action taken.

3. The decision of the city manager or his/her designee may be appealed to the city council by written notice within ten (10) calendar days of the date of action taken on the protest request. The appeal shall be scheduled for city council consideration at the next possible city council meeting. Upon granting any protest request, city council may impose any conditions it determines to be appropriate. The decision of city council shall be prepared in writing, and provided to the applicant.

(Ord. No. 14-236, § 2, 9-16-2014)

13.14.110 - Hardship variances.

A. If, due to unique circumstances, a specific requirement of this chapter would result in undue hardship to a person using water or to property upon which water is used, that is disproportionate to the impacts to water users generally or to similar properties or classes of water users, then the person may apply for a variance from the provisions of this chapter.

B. An application for a variance shall be in writing on a form prescribed by the city. The application shall be accompanied by photographs, maps, drawings or other information showing why the request should be granted.

C. The city manager or his/her designee shall consider all variance applications and make a determination on the request no later than ten calendar days after submittal and may approve, conditionally approve or deny the variance request. The applicant shall be notified in writing of any action taken.

D. An application for a variance shall be denied unless the city manager or his/her designee finds, based on the information provided in the application, supporting documents, or such additional information as may be requested by the city, and on water use information for the property as shown by the records of the city, all of the following:

1. Due to unique circumstances a specific requirement would result in undue hardship; and
2. The variance does not constitute a grant of special privilege inconsistent with the limitations upon other residents and businesses; and
3. Because of special circumstances applicable to the property or its use, the strict application of this chapter would have a disproportionate impact on the property or use that exceeds the impacts to residents and businesses generally; and
4. Granting the variance will not be of substantial detriment to adjacent properties and will not be detrimental to the general welfare of the public; and
5. The conditions of the subject property or the intended use of the property for which the variance is sought is not common, recurrent or general in nature; and
6. Proposed alternative water use restrictions for the property would result in equal or greater water savings than the existing water use restrictions and the customer has achieved the maximum practical reduction in water consumption.

E. Appeals to City Council. Any interested person may appeal the decision of the city manager or his/her designee to the city council by written notice within ten calendar days of the date of the decision on the variance request. The appeal shall be scheduled for city council consideration at the next possible city council meeting. Upon granting any appeal, city council may impose any conditions it determines to be appropriate. City council's decision on the variance request shall be prepared in writing, and provided to the appellant. The decision of city council shall be final.

F. Previous Violations. Any approved or conditionally approved variance is valid from the date it was approved or conditionally approved. Any previous violations and subsequent penalties associated with those violations are final and will not be reimbursed.

(Ord. No. 14-236, § 2, 9-16-2014)

Appendix I

CALIFORNIA URBAN WATER CONSERVATION COUNCIL
2015 BMP REPORT

CUWCC BMP Retail Coverage Report **2015**

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.1 Operation Practices

91 City of Shasta Lake

1. Conservation Coordinator provided with necessary resources to implement BMPs?

Name:	Tony Thomasy
Title:	Water Department Superintendent
Email:	tthomasy@cityofshastalake.org

On Track

2. Water Waste Prevention Documents

WW Document Name	WWP File Name	WW Prevention URL	WW Prevention Ordinance Terms Description
Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.		https://www.municode.com/library/ca/shasta_lake/codes/code_of_ordinances?nodeId=TIT13PUSE_CH13.14WACODRCOPL	Water Shortage Emergency Ordinance: Imposes mandatory water use restrictions on all customers; Includes enforcement and penalty provisions.
Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.		http://www.ecodes.biz/ecodes_support/Free_Resources/2013california/13green/13green_main.html	The City adopted and complies with the 2013 California Green Building Standards Code, which includes mandatory measures for water efficiency and conservation.
Option C Describe any documentation of support for legislation or regulations that prohibit water waste.		http://www.cityofshastalake.org/index.aspx?nid=992#Restrictions	The City website is very informative regarding legislative requirements regarding water waste. There is a process customers can follow to report violations.
Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.			The City coordinates water conservation efforts with the U.S. Bureau of Reclamation as shown in the Water Management Plan prepared for the Bureau. This document includes a Water Shortage Contingency Plan which was updated in 2014.
Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.			
Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.	Chapter_15.10___Water_Efficient_Landscaping.pdf		

On Track

CUWCC BMP Retail Coverage Report **2015**

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.1 Operation Practices

BMP1.1 Operation Practices - Retail Only 2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Conservation Coordinator: **Yes**

Contact Information

First Name:	Tony
Last Name:	Thomasy
Title:	Water Department Superintendent
Phone:	530-275-7488
Email:	tthomasy@cityofshastalake.org

Water Waste Prevention

Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.

File Name:	
URL:	https://www.municode.com/library/ca/shasta_lake/codes/code_of_ordinances?nodeId=TIT13PUSE_CH13.14WACODRCOPL

Description:

Water Shortage Emergency Ordinance: Imposes mandatory water use restrictions on all customers; Includes enforcement and penalty provisions.

Comments:

BMP1.1 Operation Practices - Retail Only 2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Conservation Coordinator: **Yes**

Contact Information

First Name:	Tony
Last Name:	Thomasy
Title:	Water Department Superintendent
Phone:	530-275-7488
Email:	tthomasy@cityofshastalake.org

Water Waste Prevention

Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.

File Name:	
URL:	http://www.ecodes.biz/ecodes_support/Free_Resources/2013california/13green/13green_main.html

Description:

The City adopted and complies with the 2013 California Green Building Standards Code, which includes mandatory measures for water efficiency and conservation.

Comments:

BMP1.1 Operation Practices - Retail Only 2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Conservation Coordinator: **Yes**

Contact Information

First Name:	Tony
Last Name:	Thomasy
Title:	Water Department Superintendent
Phone:	530-275-7488
Email:	tthomasy@cityofshastalake.org

Water Waste Prevention

Option C Describe any documentation of support for legislation or regulations that prohibit water waste.

File Name:	
URL:	http://www.cityofshastalake.org/index.aspx?nid=992#Restrictions

Description:

The City website is very informative regarding legislative requirements regarding water waste. There is a process customers can follow to report violations.

Comments:

BMP1.1 Operation Practices - Retail Only 2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Conservation Coordinator: **Yes**

Contact Information

First Name:	Tony
Last Name:	Thomasy
Title:	Water Department Superintendent
Phone:	530-275-7488
Email:	tthomasy@cityofshastalake.org

Water Waste Prevention

Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.

File Name:

URL:

Description:

The City coordinates water conservation efforts with the U.S. Bureau of Reclamation as shown in the Water Management Plan prepared for the Bureau. This document includes a Water Shortage Contingency Plan which was updated in 2014.

Comments:

BMP1.1 Operation Practices - Retail Only 2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Conservation Coordinator: **Yes**

Contact Information

First Name:	Tony
Last Name:	Thomasy
Title:	Water Department Superintendent
Phone:	530-275-7488
Email:	tthomasy@cityofshastalake.org

Water Waste Prevention

Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.

File Name:	
URL:	

Description:

Comments:

BMP1.1 Operation Practices - Retail Only 2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Conservation Coordinator: **Yes**

Contact Information

First Name:	Tony
Last Name:	Thomasy
Title:	Water Department Superintendent
Phone:	530-275-7488
Email:	tthomasy@cityofshastalake.org

Water Waste Prevention

Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.

File Name:	Chapter_15.10___Water_Efficient_Landscaping.pdf
URL:	

Description:

Comments:

CUWCC BMP Coverage Report 2015

Foundational Best Management Practices For Urban Water Efficiency

Foundational BMPs

BMP 1.2 Water Loss Control

91 City of Shasta Lake

Completed Standard Water Audit Using AWWA Software?	**Yes**	**On Track**
AWWA File provided to CUWCC?	**No**	

City of Shasta Lake BMP1.2 FY15

AWWA Water Audit Validity Score?

Complete Training in AWWA Audit Method

Complete Training in Component Analysis Process?

CompComponent Analysis?

Repaired all leaks and breaks to the extent cost effective?

Locate and Repar unreported leaks to the extent cost effective?

Maintain a record keeping system for the repair of reported leaks, including time of report, leak location, type of leaking pipe segment or fitting, and leak running time from report to repair.

Provided 7 Types of Water Loss Control Info

Leaks Repars	Value Real Losses	Value Apparent Losses	Miles Surveyed	Press Reduction	Cost Of Interventions	Water Saved (AF)
44			30			

On Track

At Least As Effective As

In lieau of an active leak detection program, the City has opted to replace 1% of distribution system lines each year. Lines are replaced based on age and other asset management factors. Attached documentation shows the reduction in main breaks due to 91 City of Shasta Lake BMP 1.2 Results from Main Replacement Program.

We encourage them every year to join.

BMP 1.2 Water Loss Control

2015

Agency name: City of Shasta Lake

Reporting unit number: 91

Reporting unit name (District name): City of Shasta Lake

AWWA Water Audit

Agency to complete a Water Audit & Balance Using The AWWA Software: Yes

Water Audit Validity Score from AWWA spreadsheet: 82

Email to office@cuwcc.org - Worksheets (AWWA Water Audit). Enter the name of the file below:

Agency Completed Training In The AWWA Water Audit Method: Yes

Agency Completed Training In The Component Analysis Process: Yes

Completed/Updated the Component Analysis (at least every 4 years)? Yes

Component Analysis Completed/Updated Date: 8/13/2014 12:00:00 AM

Water Loss Performance

Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective: No

Recording Keeping Requirements:

- Date/Time Leak Reported
- Type of Leaking Pipe Segment or Fitting
- Leak Volume Estimate
- Leak Location
- Leak Running Time From Report to Repair
- Cost of Repair

Agency Located and Repaired Unreported Leaks to the Extent Cost Effective: Yes

Type of Program Activities Used to Detect Unreported Leaks

Patrol water transmission mains/air reliefs/blow offs in remote areas at least annually.

Does your agency maintain in-house records of audit results or the completed AWWA worksheet for the completed audit which could be forwarded to CUWCC? No

Does your agency keeps records of each component analysis performed, and incorporates results into future annual standard water balances? Yes

Annual Summary Information

Complete the following table with annual summary information (required for reporting years 2-5 only)

Total Leak Repaired	Economic Value Of Real Loss	Economic Value Of Apparent Loss	Miles Of System Surveyed For Leaks	Pressure Reduction Undertaken For Loss Reduction	Cost Of Interventions	Water Saved (AF/Year)
44			30			

Comments:

CUWCC BMP Coverage Report 2015

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.3 Metering With Commodity

91	City of Shasta Lake

Numbered Unmetered Accounts	No	**On Track**
Metered Accounts billed by volume of use	Yes	**On Track**
Number of CII Accounts with Mixed Use Meters	0	
Conducted a feasibility study to assess merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	No	**Not On Track**
Feasibility Study provided to CUWCC?	No	**Not On Track**
Completed a written plan, policy or program to test, repair and replace meters	No	**Not On Track**

At Least As Effective As **No**

BMP 1.3 Metering With Commodity

2015

Agency name:	City of Shasta Lake	Reporting unit number:	
Reporting unit name (District name)	City of Shasta Lake	91	

Implementation

Does your agency have any unmetered service connections?	No
If YES, has your agency completed a meter retrofit plan?	No
Enter the number of previously unmetered accounts fitted with meters during reporting year:	
Are all new service connections being metered?	Yes
Are all new service connections being billed volumetrically?	Yes
Has your agency completed and submitted electronically to the Council a written plan, policy or program to test, repair and replace meters?	No

Meters Matrix

Error: Subreport could not be shown.

Number of CII Accounts with Mixed-use Meters	0	Number of CII Accounts with Mixed-use Meters Retrofitted with Dedicated Irrigation Meters during Reporting Period	0

Feasibility Study

Has your agency conducted a feasibility study to assess the merits of a program to provide incentives to switch mixed-use accounts to dedicated landscape meters?	No

If YES, please fill in the following information:

A. When was the Feasibility Study conducted	1/1/0001 12:00:00 AM	B. Describe,	N/A
		upload or provide an electronic link to the Feasibility Study Upload File	

Comments:

Institutional connections included with Commercial. Most meters are read by the Orion Electronic System except a small percentage, which are read physically each month.

CUWCC BMP Coverage Report 2015

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.4 Retail Consrvation Pricing

CUWCC BMP Coverage Report 2015

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 1.4 Retail Consrvation Pricing

91 City of Shasta Lake

Implementation (Water Rate Structure)

Customer Class	Water Rate Type	Conserving Rate?
Single-Family	Increasing Block	Yes
Multi-Family	Increasing Block	Yes
Commercial	Increasing Block	Yes
Industrial	Increasing Block	Yes
Other	Increasing Block	Yes

On Track

	Customer Class	Water Rate Type	(V) Total Revenue Comodity Charges	(M) Total Revenue Fixed Carges
	Single-Family	Increasing Block	725630.77	838049.48
	Multi-Family	Increasing Block	80396.54	61692.35
	Commercial	Increasing Block	86251.24	57624.69
	Industrial	Increasing Block	321469.57	58683.58
	Other	Increasing Block	240518.29	104421.23
			1454266.41	**1120471.33**

Calculate: V / (V + M) **56 %**

Implementation Option: Use Annual Revenue As Reported

Agency Provide Sewer Service: Yes

Customer Class	Rate Type	Conserving Rate?
Single-Family	Non-Volumetric Flat Rate	No
Multi-Family	Non-Volumetric Flat Rate	No
Commercial	Non-Volumetric Flat Rate	No
Industrial	Non-Volumetric Flat Rate	No
Other	Non-Volumetric Flat Rate	No

Not On Track

At Least As Effective As **No**

BMP 1.4 Retail Conservation Pricing

2015

Agency name: City of Shasta Lake

Reporting unit number: 91

Reporting unit name (District name): City of Shasta Lake

Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class

Water Rate Name	Customer Class Name	Total Revenue Commodity Charges	Total Revenue Customer Meter/Service (Fixed Charges)	
Increasing Block	Single-Family	725630.77	838049.48	
Increasing Block	Multi-Family	80396.54	61692.35	
Increasing Block	Commercial	86251.24	57624.69	
Increasing Block	Industrial	321469.57	58683.58	
Increasing Block	Other	240518.29	104421.23	

Implementation (Conservation Pricing Option)

[V] Use Annual Revenue As Reported

[ ] Use CWWA Rate Design Model

[ ] Use 3 years average instead of most recent year

Retail Waste Water (Sewer) Rate Structure by Customer Class

Agency Provide Sewer Service: Yes

Select the Retail Waste Water (Sewer) Rate Structure assigned to the majority of your customers within a specific customer class.

Sewer Rate Name	Customer Class Name	Sewer Total Revenue Commodity Charges	Sewer Total Revenue Customer Meter/Service (Fixed Charges)	
Non-Volumetric Flat Rate	Single-Family		2073043.02	
Non-Volumetric Flat Rate	Multi-Family		244452.79	
Non-Volumetric Flat Rate	Commercial		150413.91	
Non-Volumetric Flat Rate	Industrial		26174.49	
Non-Volumetric Flat Rate	Other		199610.87	

Comments:

CUWCC BMP Coverage Report 2015

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 2.1 Public Outreach

91 City of Shasta Lake Retail Only

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies

	Public Outreach Program List	Number
	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	4
	Website	4
	General water conservation information	1
	Total	**9**
		On Track

	Number Media Contacts	Number
	Articles or stories resulting from outreach	2
	Television contacts	2
	Total	**4**
		On Track

An actively maintained website that is updated regularly (minimum = 4 times per year, i.e., at least quarterly) Yes

	Annual Budget Category	Annual Budget Amount
	Water Conservation Program	39000
	Total Amount:	**39000**
		On Track

Description of all other Public Outreach programs

Post water shortage contingency plan, conservation kits, stage of plan, and steps to conserve water. Add language to City signage.

On Track

Public Outreah Additional Programs
Bill Stuffer

At Least As Effective As **No**

BMP 2.1 Public Outreach

2015

Agency name: City of Shasta Lake Reporting unit # 91

Reporting unit name (District name): City of Shasta Lake / Retail Only

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies Please provide the name of Agency if not CUWCC Group1 members

Is your agency performing public outreach?

Report a minimum of 4 water conservation related contacts your agency had with the public during the year.

Did at least one contact take place duringeach quarter of the reporting year? Yes

Public Information Programs List

Number of Public Contacts	Public Information Programs Name	
4	Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information packets	
4	Website	
1	General water conservation information	

Contact with the Media

Does a wholesale Agency implement Public Outreach Programs? Yes

List of wholesale Agencies Please provide the name of Agency if not CUWCC Group1 members

OR Retail Agency (Contacts with the Media)

Did at least one contact take place during each quarter of the reporting year? No

Media Contacts List

Number of Media Contacts	Public Outreach Media Contact Name List	
2	Articles or stories resulting from outreach	
2	Television contacts	

Does a wholesale Agency implement Public Outreach Programs? No

List of wholesale Agencies Please provide the name of Agency if not CUWCC Group1 members

Is Your Agency Performing Website Updates?

Enter your agency's URL (website address): http://www.cityofshastalake.org

Describe a minimum of four water conservationrelated updates to your agency's website thattook place during the year: Post water shortage contingency plan, conservation kits, stage of plan, and steps to conserve water. Add language to City signage.

Did at least one Website Update take place duringeach quarter of the reporting year?

BMP 2.1 Public Outreach

2015

Yes

Public Outreach Annual Budget

Enter budget for public outreach programs. You may enter total budget in a single line or brake the budget into discretecategories by entering many rows. Please indicate if personnel costs are included in the entry.

Annual Budget Category	Annual Budget Amount	Personal Cost Included?	Comments	
Water Conservation Program	39000	V		

Public Outreach Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question relatedto your budget (Section 2.1.7, above). For example, if you included personnel costs in the budget entered above, be sure to include them here as well.

Public Outreach Expense Category	Expense Amount	Personal Cost Included?	
Newsletter	4400	V	
Water Conservation Kits	2565	V	
Water Audits	455		
Landscape Surveys	2846.25		
Childrens books	208.72		

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of howyour agency views their importance / effectiveness with respect to conserving water, with the mostimportant/ effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? Yes

Public Outreach Additional Information

Public Information Additional Programs	Importance	
Bill Stuffer	1	

Social Marketing Programs

BMP 2.1 Public Outreach

2015

Branding

Does your agency have a water conservation"brand," "theme" or mascot?	Yes
Describe the brand, theme or mascot.	Signs at major roads in and out of the City and on our website " Every drop

Market Research

Have you sponsored or participated inmarket research to refine your message?	No
Market Research Topic	
Brand Message	
Brand Mission Statement	

Community Committees

Do you have a community conservationcommittee?	No
Enter the names of the community committees:	

Training

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Partnering Programs - Partners

	Name	Type of Program
☐	CLCA?	
☐	Green Building Programs?	
☐	Master Gardeners?	
☐	Cooperative Extension?	
☐	Local Colleges?	
☐	Other	

☐ Retail and wholesale outlet; name(s) and type(s) of programs:

Partnering Programs - Newsletters

Number of newsletters per year	
Number of customers per year	

Partnering with Other Utilities

Describe other utilities your agency partners with, including electrical utilities	Bella Vista Water District - Emergency Intertie (Water) City of Redding - Emergency Intertie (Water)

Conservation Gardens

BMP 2.1 Public Outreach

2015

Describe water conservation gardens at your agency or other high traffic areas or new homes	

Landscape contests or awards

Describe water wise landscape contest or awards program conducted by your agency	
Additional Programs supported by Agency but not mentioned above:	

Comments

CUWCC BMP Coverage Report 2015

Foundational Best Manegemant Practices for Urban Water Efficiency

Foundational BMPs

BMP 2.2 School Education Programs

91 City of Shasta Lake — Retail Only

Does a wholesale Agency implement School Education Programs? No

List of wholesale Agencies

U.S. Bureau of Reclamation

Materials meet state education framework requirements and are grade-level appropriate? Yes

Curriculum materials developed and/or provided by Agency:

School visit includes video, handouts, activities, and sometimes a tour.

Materials Distributed to K-6? Yes

Describe K-6 Materials

Children's coloring books.

Materials distributed to 7-12 students? No (Info Only)

Annual budget for school education program: 1000.00

Description of all other water supplier education programs

School visit includes video, handouts, activities, and sometimes a tour. Children's coloring books.

On Track

At Least As Effective As **No**

WMP 2.2 School Education Programs

2015

School Education Programs

91 City of Shasta Lake

Retail Only

Does a wholesale Agency implement School Education Programs? No

List of wholesale Agencies

U.S. Bureau of Reclamation

Please provide the name of Agency if not FORTECH Group1 members

V	Materials meet state education framework requirements?	Description: School visit includes video, handouts, activities, and sometimes a tour.
V	Materials distributed to K-6 Students?	Description: Children's coloring books.
	Number of students reached: 400	
	Materials distributed to 7-12 Students? (optional)	Description:

Annual budget for school education program: 1000.00

Description of all other water supplier educationprograms:

School Programs Activities

Classroom Presentation:

Number of presentation: Number of attendees:

Describe the topics covered in your classroom presentations:

Large group assemblies:

Number of presentation: Number of attendees:

Children's water festivals or other events:

Number of presentation: 1 Number of attendees: 200

Cooperative efforts with existing science/water education programs (various workshops, science fair awardsor judging) and follow-up:

Number of presentation: Number of attendees:

Other methods of disseminating information (i.e. themed age-appropriate classroom loaner kits):

Description: Number distributed:

Staffing children's booths at events & festivals:

Number of booths: Number of attendees:

Water conservation contests such as poster and photo:

Description: Number of participants:

Offer monetary awards/funding or scholarships to students:

WMP 2.2 School Education Programs

2015

Number offered | Total funding

Teacher training workshops:

Number of presentation | Number of attendees

Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens,etc.:

Number of tours or fieldtrips | Number of participants

College internships in water conservation offered:

Number of internship | Total funding

Career Fairs / Workshops:

Number of presentation | Number of attendees

Additional program(s) supported by agency but not mentioned above:

Description	Number of events	Number of participants

Comments

CUWCC BMP Coverage Report 2015

Traditional BMP4 - Commercial Industrial Institutional

Agency 91 City of Shasta Lake Date Agency Signed MOU: 07/01/1996

Primary Contact James Grabow jim.grabow@ci.shasta-lake.ca.us

Historical Credit: 0 Have been Used: No Water savings Credit (AF): 0

CII Baseline Water Use (AF): 555.47 Target CII Water Use Reduction (AF): 55.500

2 Years Target (AF): 2.800000

Water Efficiency Measures:	Quantity Installed:
1 High Efficiency Toilets (1.2 GPF or less)	0
2 High Efficiency Urinals (0.5 GPF or less)	0
3 Ultra Low Flow Urinals	0.00
4 Zero Consumption Urinals	0.00
5 Commercial High Efficiency Single Load Clothes Washers	0.00
6 Cooling Tower Conductivity Controllers	0.00
7 Cooling Tower pH Controllers	0.00
8 Connectionless Food Steamers	0.00
9 Medical Equipment Steam Sterilizers	0.00
10 Water Efficient Ice Machines	0.00
11 Pressurized Water Brooms	0.00
12 Dry Vacuum Pumps	0.00
13 Alternative On-Side Water Source	

Total Water Savings:

Not On Track

CUWCC BMP Coverage Report 2015

Traditional BMP4 - Commercial Industrial Institutional

Water Savings:

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

0.00

CUWCC BMP Coverage Report 2015

Traditional BMP4 - Commercial Industrial Institutional

CUWCC BMP Coverage Report 2015

91 City of Shasta Lake

GPCD in 2006: 286.66

GPCD in 2015

GPCD Target for 2018: 261.30

Biennial GPCD Compliance Table

ON TRACK

		Target		Highest Acceptable Bound	
Year	Report	% Base	GPCD	% Base	GPCD
2010	1	96.4%	**266.30**	100%	**276.30**
2012	2	92.8%	**256.40**	96.4%	**266.30**
2014	3	89.2%	**246.40**	92.8%	**256.40**
2016	4	85.6%	**236.50**	89.2%	**246.40**
2018	5	82.0%	**261.30**	82.0%	**226.50**

Appendix J

WATER WASTE PREVENTION ORDINANCE

15.10.160 - Water waste prevention.

A. It shall be unlawful for any property owner and/or individual having control of the property, to willfully permit runoff to leave the target landscape area due to low-head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways, parking lots or structures.

B. Restrictions regarding overspray and runoff may be modified with approval from the city manager or his/her designee if:

   1. The landscape area is adjacent to permeable surfacing and no runoff occurs; or

   2. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscaping.

(Ord. No. 10-206, § 2, 1-5-2010)

Appendix K

WATER RATE SCHEDULE

WATER RATES

	Oct 2014	July 2015	July 2016	July 2017	July 2018	
ANNUAL RATE INCREASE	**2.5%**	**2.5%**	**2.5%**	**2.5%**	**2.5%**	
CONSUMPTION CHARGES ($/100 CF)						
Lifeline Consumption Rate (1-1000 CF)	$1.02	$1.04	$1.07	$1.09	$1.12	
All Other Consumption Rate (1-1000 CF)	$1.27	$1.30	$1.34	$1.37	$1.40	
Consumption Rate (1001-5000CF)	$1.46	$1.50	$1.54	$1.57	$1.61	
Excess Consumption Rate (over 5000 CF)(see Note 1)	$1.78	$1.82	$1.87	$1.92	$1.96	
(Note 2) MONTHLY SERVICE CHARGES ($/MO)						Capacity Factor
5/8" Meter	$19.69	$20.18	$20.69	$21.20	$21.73	1.0
3/4" Meter	$29.54	$30.27	$31.03	$31.81	$32.60	1.5
(Note 2) 1" Meter	$49.23	$50.46	$51.72	$53.01	$54.34	2.5
11/2" Meter	$98.45	$100.91	$103.44	$106.02	$108.67	5.0
2" Meter	$157.52	$161.46	$165.50	$169.63	$173.87	8.0
3" Meter	$295.35	$302.74	$310.31	$318.06	$326.02	15.0
4" Meter	$492.26	$504.56	$517.18	$530.11	$543.36	25.0
6" Meter	$984.51	$1,009.13	$1,034.35	$1,060.21	$1,086.72	50.0
8" Meter	$1,575.22	$1,614.60	$1,654.97	$1,696.34	$1,738.75	80.0
10" Meter	$2,855.09	$2,926.46	$2,999.62	$3,074.62	$3,151.48	145.0
12" Meter	$4,233.40	$4,339.24	$4,447.72	$4,558.91	$4,672.89	215.0

NOTES: 1. Only applies to 5/8" meters and residential 1" meters
2. All residences that are required to install a 1" water meter to comply with new California Building Code requirements are charged the monthly service charge for a 5/8" meter.

WASTEWATER RATES

	Oct 2014	July 2015	July 2016	July 2017	July 2018
ANNUAL RATE INCREASE	**3.0%**	**3.5%**	**3.5%**	**3.5%**	**3.5%**
WASTEWATER RATES					
Single Family Monthly Service Charge	$58.40	$60.45	$62.56	$64.75	$67.02
Lifeline Single Family Monthly Service Charge	$46.72	$48.36	$50.05	$51.80	$53.61

Appendix L

COMPLETED UWMP CHECKLIST

Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	**Section 2.1**
10620(d)(2)	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.	Plan Preparation	Section 2.5.2	**Section 2.4.2**
10642	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.	Plan Preparation	Section 2.5.2	**Section 2.4.2**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Section 3.1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Section 3.3**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Section 3.4**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**Section 3.4.1**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Section 3.4 and 5.2**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Section 4.2**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Section 4.3**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**Section 4.5**
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**Section 5.5**
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and	Baselines and Targets	Chapter 5 and App E	**Chapter 5**

	compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.			
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Section 5.5.2**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**Section 5.6**
10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**N/A (Section 5.6)**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**N/A**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**Section 5.6**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Chapter 6**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Section 6.2**
10631(b)(1)	Indicate whether a groundwater management plan has 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.	System Supplies	Section 6.2.2	**Section 6.2**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**Section 6.2**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**N/A (Section 6.2)**
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**Section 6.2, Section 8.9**
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of	System Supplies	Section 6.2.4	**N/A (Section 6.2)**

	groundwater pumped by the urban water supplier for the past five years			
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**N/A (Section 6.9)**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Section 6.7**
10631(g)	Describe the expected future 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.	System Supplies	Section 6.8	**Section 6.8**
10631(h)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Section 6.6**
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	**N/A (Section 2.4.1)**
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**N/A**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Section 6.5.1**
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**Section 6.5.2**
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.	System Supplies (Recycled Water)	Section 6.5.2.2	**Section 6.5.2.2**
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Section 6.5.4.1**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**Section 6.5.5**
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	System Supplies (Recycled Water)	Section 6.5.4	**Section 6.5.3, Section 6.9**

	of the actual use of recycled water in comparison to uses previously projected.			
10633(f)	Describe the actions 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.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5.5**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Section 6.5.5**
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**Section 7.4**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years.	Water Supply Reliability Assessment	Section 7.2	**Section 7.2**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability.	Water Supply Reliability Assessment	Section 7.1	**Section 7.1**
10635(a)	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.	Water Supply Reliability Assessment	Section 7.3	**Section 7.3**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Section 8.1**
10632(a)(2)	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.	Water Shortage Contingency Planning	Section 8.9	**Section 8.9**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Section 8.8**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Section 8.2**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Section 8.4**

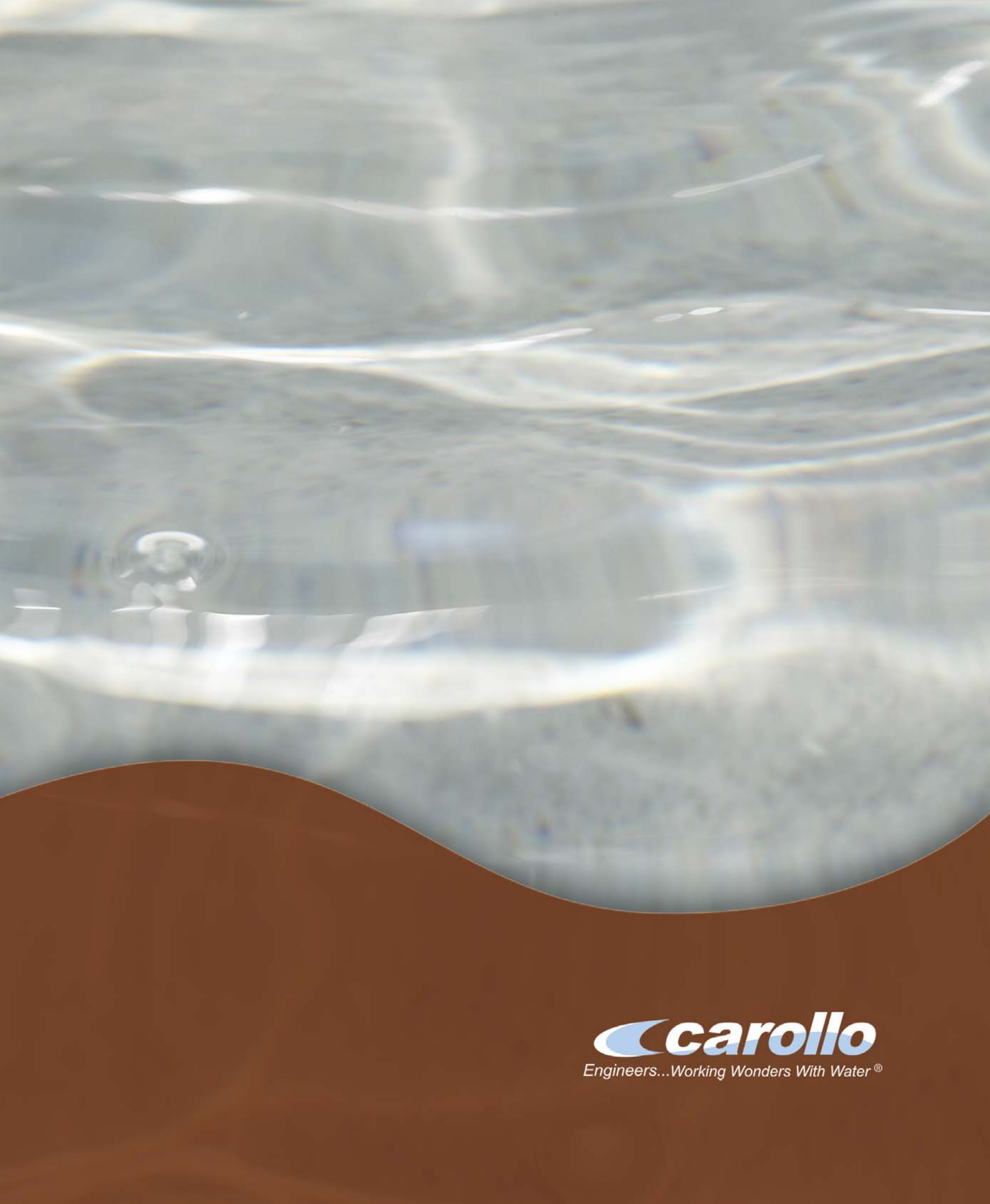
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**Section 8.3**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Section 8.6**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**Section 8.7**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Section 8.5**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**Chapter 9**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**N/A**
10631(i)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Chapter 9 (See Appendix I)**
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Section 10.3**
10621(b)	Notify, at least 60 days prior to the public hearing, 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.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Section 10.2.1**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Section 10.4.1. (See Commitment to Distribute in Appendix A)**
10635(b)	Provide supporting documentation that Water Shortage Contingency 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 the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 10.4.4**

10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Sections 10.2.2, 10.3, and 10.5**
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**Section 10.2.1.**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Section 10.3.1**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Section 10.4.3. (See Commitment to Distribute in Appendix A)**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Section 10.4.4. (See Commitment to Distribute in Appendix A)**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**Section 10.4.2 and 10.6**
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	**Section 10.5**

Appendix M

CITY ADOPTION RESOLUTION

To be included in the Final UWMP.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