2010 Urban Water Management Plan
Final Adopted • August 2014
City of Shasta Lake
2010 Urban Water Management Plan

Contact Sheet

Date plan submitted to the Department of Water Resources: (tentatively on) November 1, 2014

Name of person(s) preparing this plan:

   Carla Thompson, Development Services Director
   Phone: (530) 275-7460
   Fax: (530) 275-7406
   Email: cthompson@cityofshastalake.org

   Scott Parker, Project Manager
   Carollo Engineers
   Phone: (916) 565-4888
   Fax: (916) 565-4880
   Email: sparker@carollo.com

The Water supplier is a: Municipality

The Water supplier is a: Retailer

Utility services provided by the water supplier includes: Water, Electric, Sewer, Recycled Water

This Agency is a Bureau of Reclamation Contractor

This Agency is not a State Water Project Contractor
City of Shasta Lake

2010 URBAN WATER MANAGEMENT PLAN

FINAL ADOPTED
August 19, 2014
# City of Shasta Lake
## 2010 Urban Water Management Plan
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1.1 PURPOSE

The California Water Code requires urban water suppliers within the state to prepare and adopt Urban Water Management Plans (UWMPs) for submission to the California Department of Water Resources (DWR). The UWMPs, 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 and other applicable regulations. 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 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. The City of Shasta Lake (City) is behind schedule in its 2010 UWMP submittal principally due to wanting to wait for 2010 Census data and ongoing discussions between the City and the United States Bureau of Reclamation (USBR) regarding water supply sources and reliability. The City is currently seeking funding for a water supply enhancement project to improve reliability of the City’s water supply.

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 report, which was prepared in compliance with the California Water Code, and as set forth in the 2010 guidelines and format established by the DWR, constitutes the City 2010 UWMP.

1.2 BACKGROUND

1.2.1 Urban Water Management Planning Act

In 1983, State Assembly Bill 797 modified the California Water Code 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:

- Assembly Bill 1420: Requires implementation of DMMs/Best Management Practices (BMPs) and meeting the 20-by-2020 targets to qualify for water management grants or loans.
- Assembly Bill 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) (Effective beginning January 1, 2002): 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).
- Senate Bill 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.
- Senate Bill x7-7: Requires development and use of new methodologies for reporting population growth estimates, base per capita use, and water conservation. This water bill also extended the 2010 UWMP adoption deadline for retail agencies to July 1, 2011. An agency can choose from four methods to establish their interim (2015) and year 2020 water conservation targets.

1.2.2 Previous Urban Water Management Plan

Pursuant to the UWMPA, the City previously prepared an UWMP in 2005, which was approved and adopted on February 7, 2006. Following adoption, the 2005 UWMP was submitted to and formally approved by DWR. This 2010 UWMP report serves as an update to the 2005 UWMP.
1.2.3 Resource Maximization/Import Minimization

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.

1.3 PLAN PREPARATION

This 2010 UWMP was prepared in compliance with the UWMPA (California Water Code §10610 et seq.) and the Water Conservation Bill of 2009 (SBX7-7) by Carollo Engineers. Contact information for the City and Carollo Engineers is included in the Contact Sheet provided at the beginning of this document.

This section includes specific information on how the UWMP was prepared, coordinated with other agencies and the public, adopted, and implemented.

1.3.1 Coordination

The UWMPA requires that the UWMP identify the water agency’s coordination with appropriate nearby agencies; see excerpt below.

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

10621 (b). Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by 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. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.

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

The City coordinated its efforts with relevant agencies and parties to ensure that the data and issues discussed in the plan are presented accurately. Table 1 summarizes how the UWMP preparation was coordinated.
Table 1  Coordination with Appropriate Agencies (Guidebook Table 1)
2010 Urban Water Management Plan
City of Shasta Lake

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Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

The City provided formal written notification to the 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.
1.3.1.1 Public Participation

The UWMPA requires that the UWMP show the water agency solicited public participation; see excerpt below.

Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published… After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

On July 29, 2014 and August 5, 2014, 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 19, 2014. A copy of this notification is included in Appendix A. The Draft 2010 UWMP was made 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.¹

The City held a public hearing on August 19, 2014. The hearing provided 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 was discussed.

1.3.2 Plan Adoption, Submittal, and Implementation

The City prepared this 2010 UWMP during the summer of 2014. The plan was adopted at a public hearing by its City Council on August 19, 2014 (see City Council Resolution in Appendix B) followed by submittal of the UWMP to DWR. 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 for viewing of the Draft 2010 UWMP, submitted to the California State Library, and submitted to the County and USBR.

1.4 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.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACID</td>
<td>Anderson Cottonwood Irrigation District</td>
</tr>
<tr>
<td>AF</td>
<td>acre-feet</td>
</tr>
<tr>
<td>AFY</td>
<td>acre-feet per year</td>
</tr>
</tbody>
</table>

¹ www.cityofshastalake.org
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMPs</td>
<td>Best Management Practices</td>
</tr>
<tr>
<td>BVWD</td>
<td>Bella Vista Water District</td>
</tr>
<tr>
<td>CCF</td>
<td>Hundred Cubic Feet</td>
</tr>
<tr>
<td>CCR</td>
<td>California Code of Regulations</td>
</tr>
<tr>
<td>CDPH</td>
<td>California Department of Public Health</td>
</tr>
<tr>
<td>CEQA</td>
<td>California Environmental Quality Act</td>
</tr>
<tr>
<td>CF</td>
<td>Cubic Feet</td>
</tr>
<tr>
<td>CFS</td>
<td>Cubic Feet Per Second</td>
</tr>
<tr>
<td>City</td>
<td>City of Shasta Lake</td>
</tr>
<tr>
<td>County</td>
<td>Shasta County</td>
</tr>
<tr>
<td>CSD</td>
<td>Community Services District</td>
</tr>
<tr>
<td>CUWCC</td>
<td>California Urban Water Conservation Council</td>
</tr>
<tr>
<td>CVP</td>
<td>Central Valley Project</td>
</tr>
<tr>
<td>CVPIA</td>
<td>Central Valley Project Improvement Act</td>
</tr>
<tr>
<td>DOF</td>
<td>California Department of Finance</td>
</tr>
<tr>
<td>DMMs</td>
<td>Demand Management Measures</td>
</tr>
<tr>
<td>DWR</td>
<td>California Department of Water Resources</td>
</tr>
<tr>
<td>DWSAP</td>
<td>Drinking Water Source Assessment Program</td>
</tr>
<tr>
<td>EDD</td>
<td>California Employment Development Department</td>
</tr>
<tr>
<td>EIR</td>
<td>Environmental Impact Report</td>
</tr>
<tr>
<td>ETo</td>
<td>Evapotranspiration</td>
</tr>
<tr>
<td>°F</td>
<td>Degrees Fahrenheit</td>
</tr>
<tr>
<td>gpcd</td>
<td>Gallons Per Capita Per Day</td>
</tr>
<tr>
<td>gpm</td>
<td>Gallons Per Minute</td>
</tr>
<tr>
<td>I-5</td>
<td>Interstate 5</td>
</tr>
<tr>
<td>MFR</td>
<td>Multi-Family Residential</td>
</tr>
<tr>
<td>Acronym</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>MGD</td>
<td>Million Gallons Per Day</td>
</tr>
<tr>
<td>MG</td>
<td>Million Gallons</td>
</tr>
<tr>
<td>MOU</td>
<td>Memorandum of Understanding</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act</td>
</tr>
<tr>
<td>NPDES</td>
<td>National Pollutant Discharge Elimination System</td>
</tr>
<tr>
<td>RAWC</td>
<td>Redding Area Water Council</td>
</tr>
<tr>
<td>RHNP</td>
<td>Regional Housing Needs Plan</td>
</tr>
<tr>
<td>RWA</td>
<td>Regional Water Authority</td>
</tr>
<tr>
<td>RWQCB</td>
<td>Regional Water Quality Control Board</td>
</tr>
<tr>
<td>SCWA</td>
<td>Shasta County Water Agency</td>
</tr>
<tr>
<td>SDAPUD</td>
<td>Shasta Dam Area Public Utility District</td>
</tr>
<tr>
<td>SFR</td>
<td>Single-Family Residential</td>
</tr>
<tr>
<td>SWRCB</td>
<td>State Water Resources Control Board</td>
</tr>
<tr>
<td>USBR</td>
<td>United States Bureau of Reclamation</td>
</tr>
<tr>
<td>UWMP</td>
<td>Urban Water Management Plan</td>
</tr>
<tr>
<td>UWMPA</td>
<td>Urban Water Management Planning Act</td>
</tr>
<tr>
<td>WTP</td>
<td>Water Treatment Plant</td>
</tr>
<tr>
<td>WWTF</td>
<td>Wastewater Treatment Facility</td>
</tr>
</tbody>
</table>
Chapter 2
SYSTEM DESCRIPTION

The Urban Water Management Planning Act (UWMPA) requires that the Urban Water Management Plan (UWMP) include a description of the water purveyor’s service area and various aspects of the area served including climate, population, and other demographic factors; see excerpt below.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following: (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier’s water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

2.1 SERVICE AREA PHYSICAL 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 Lake Shasta and the Shasta Dam. The closest neighboring communities are Bella Vista, Redding, and Shasta to the south, Lakehead 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 drain-ways. The southern portion of the City is flatter, 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 10.9 square miles. The water service area encompasses the entire City limits. Figure 1 shows the City limits, water service area, and the main distribution system components (large diameter pipelines and water tanks). The Water Treatment Plant (WTP) is located outside of City limits, north of Fisherman’s Point adjacent to Shasta Dam.
2.1.1 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 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 60 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 has nine (9) treated water storage tanks, totaling 6.12 million gallons (MG), and one (1) raw water storage tank. The City has ten (10) pressure zones and 20 pressure regulating stations located throughout the City.

2.1.2 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 1.04 inches during January to 8.73 inches in July. Temperature, rainfall, and ETo averages for the City are presented in Table 2.
Table 2  Climate Characteristics
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Month</th>
<th>Standard Monthly Average ETo(^{(1)}) (inches)</th>
<th>Monthly Average Rainfall(^{(2)}) (inches)</th>
<th>Monthly Average Temperature(^{(2)}) (°F)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Minimum</td>
</tr>
<tr>
<td>January</td>
<td>1.04</td>
<td>11.12</td>
<td>38.9</td>
</tr>
<tr>
<td>February</td>
<td>1.81</td>
<td>10.05</td>
<td>41.0</td>
</tr>
<tr>
<td>March</td>
<td>3.46</td>
<td>8.74</td>
<td>43.0</td>
</tr>
<tr>
<td>April</td>
<td>5.03</td>
<td>4.37</td>
<td>47.7</td>
</tr>
<tr>
<td>May</td>
<td>6.62</td>
<td>2.58</td>
<td>54.8</td>
</tr>
<tr>
<td>June</td>
<td>7.91</td>
<td>1.30</td>
<td>62.2</td>
</tr>
<tr>
<td>July</td>
<td>8.73</td>
<td>0.20</td>
<td>68.3</td>
</tr>
<tr>
<td>August</td>
<td>7.40</td>
<td>0.40</td>
<td>66.6</td>
</tr>
<tr>
<td>September</td>
<td>5.75</td>
<td>1.05</td>
<td>62.3</td>
</tr>
<tr>
<td>October</td>
<td>4.06</td>
<td>3.40</td>
<td>54.4</td>
</tr>
<tr>
<td>November</td>
<td>1.80</td>
<td>7.86</td>
<td>45.6</td>
</tr>
<tr>
<td>December</td>
<td>1.13</td>
<td>10.74</td>
<td>40.1</td>
</tr>
<tr>
<td>Annual</td>
<td><strong>54.74</strong></td>
<td><strong>61.82</strong></td>
<td><strong>52.1</strong></td>
</tr>
</tbody>
</table>

Notes:

2.2 SERVICE AREA POPULATION

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 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 and the 2005 UWMP projected a 2.09 percent growth rate. 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. The DOF anticipates that the County annual average growth rate will be 0.95 percent from 2010 through 2050.

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 0.75 percent annually was utilized to project the population through 2035. These numbers will be updated in subsequent UWMP updates after the City’s General Plan is updated. The current and projected population for the City is contained in Table 3.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Population - Current and Projected (Guidebook Table 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Urban Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>City of Shasta Lake</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service Area Population(1)</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>10,164</td>
<td>10,252</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan” by DWR.
1. Service area population is defined as the population served by the distribution system.
2. 2010 Census data and an estimated 0.75 percent average annual growth rate.
2.2.1 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.

The median age in the City is 38.8, with 78.6 percent of the population being over 16 years of age. The population is split 49.9 to 50.1 percent male to female, respectively. The number of housing units was 4,209 and the median household income for the City was $42,901 in 2010 (2010 Census). The 2010 Census data showed that 53.3 percent of the 10,164 residents in the City are considered low moderate income, with an 80 percent of median income of $35,116 compared to the State average of $48,706. This defines the entire incorporated area of the City as a Disadvantaged Community.

The California Employment Development Department (EDD) reported an 18.1 percent unemployment rate for 2012 and a 14.8 percent unemployment rate for 2013.
2.3 PLANNED DEVELOPMENT

The UWMPA requires that the UWMP identify the major developments within the agency’s service area that would require water supply planning; see excerpt below.

This UWMP will serve as a foundational document for water analyses that may be required for future projects and water transactions, including water planning documentation required by California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), and other environmental laws.

At this time, the only planned development meeting the definition of “Project” is the Mountain Gate at Shasta project. This project as proposed includes between 829 and 1,604 dwelling units and up to 195,584 square feet of nonresidential development on approximately 590 acres. A draft EIR was recently prepared (April 2014) for this project which included preparation of a long-term water supply assessment for the project pursuant to the CEQA and the California Water Code.

This project has assumed that the City will provide water service and that a 1.0 MG water storage tank will be constructed near the project site, with a water main constructed from the proposed tank to the project. The project also intends to use recycled water within the project boundaries to the extent practicable. There is an existing recycled water main near the southern part of the project area.

I-5 serves as the primary transportation corridor in the County connecting the City to other communities, jobs, and services. As such, the areas along the I-5 corridor are anticipated to experience the most growth in the future. Recent subdivisions and planned projects are located in this area.
Chapter 3

SYSTEM DEMANDS

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; see excerpt below.

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

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

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

This section describes the baseline (base daily per capita daily) water use, the interim and urban water use targets, water system demands, water demand projections, and water use reduction plan.

3.1 BASELINES AND TARGETS

The UWMPA requires that the UWMP identify the baseline water demand, urban water use target, and interim urban water use target for the City of Shasta Lake (City); see excerpt below.

10608.20 (e) (1) An urban retail water supplier shall include in its urban water management plan…due in 2010 the baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.

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.

3.1.1 Baseline

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, and 5-year baseline range is included in Table 4.

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Base Period Ranges (Guidebook Table 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010 Urban Water Management Plan</td>
</tr>
<tr>
<td></td>
<td>City of Shasta Lake</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Base Parameter</th>
<th>Value</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 total water deliveries</td>
<td>2,853</td>
<td>AFY</td>
</tr>
<tr>
<td>2008 total volume of delivered recycled water</td>
<td>684</td>
<td>AFY</td>
</tr>
<tr>
<td>2008 recycled water as a percent of total deliveries</td>
<td>24</td>
<td>Percent</td>
</tr>
<tr>
<td>Number of years in base period</td>
<td>15</td>
<td>Years</td>
</tr>
<tr>
<td>Year beginning base period range</td>
<td>1996</td>
<td></td>
</tr>
<tr>
<td>Year ending base period range</td>
<td>2010</td>
<td></td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

The data used to calculate the 15-year baseline is included in Table 5. The UWMPA requires a continuous range, with the end of the range ending between December 31, 2004 and December 31, 2010, be used for baseline determination. If a City has process water data over the 15-year baseline period that meets UWMPA exclusion requirements, the City can exclude process water from the gross water use. The City does not currently have industrial process water data for the 15-year baseline.
<table>
<thead>
<tr>
<th>Sequence Year</th>
<th>Calendar Year</th>
<th>Distribution System Population(^{(1)})</th>
<th>Daily System Gross Water Use(^{(2)}) (mgd)</th>
<th>Annual Daily Per Capita Water Use (gpcd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>1996</td>
<td>8,953</td>
<td>1.9</td>
<td>211</td>
</tr>
<tr>
<td>Year 2</td>
<td>1997</td>
<td>8,910</td>
<td>1.8</td>
<td>207</td>
</tr>
<tr>
<td>Year 3</td>
<td>1998</td>
<td>8,968</td>
<td>1.7</td>
<td>195</td>
</tr>
<tr>
<td>Year 4</td>
<td>1999</td>
<td>8,946</td>
<td>2.0</td>
<td>225</td>
</tr>
<tr>
<td>Year 5</td>
<td>2000</td>
<td>9,008</td>
<td>2.0</td>
<td>220</td>
</tr>
<tr>
<td>Year 6</td>
<td>2001</td>
<td>9,289</td>
<td>2.0</td>
<td>214</td>
</tr>
<tr>
<td>Year 7</td>
<td>2002</td>
<td>9,516</td>
<td>2.3</td>
<td>241</td>
</tr>
<tr>
<td>Year 8</td>
<td>2003</td>
<td>9,875</td>
<td>2.2</td>
<td>221</td>
</tr>
<tr>
<td>Year 9</td>
<td>2004</td>
<td>10,038</td>
<td>2.3</td>
<td>229</td>
</tr>
<tr>
<td>Year 10</td>
<td>2005</td>
<td>10,180</td>
<td>2.2</td>
<td>212</td>
</tr>
<tr>
<td>Year 11</td>
<td>2006</td>
<td>10,195</td>
<td>2.4</td>
<td>240</td>
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<tr>
<td>Year 12</td>
<td>2007</td>
<td>10,237</td>
<td>2.3</td>
<td>224</td>
</tr>
<tr>
<td>Year 13</td>
<td>2008</td>
<td>10,243</td>
<td>2.5</td>
<td>248</td>
</tr>
<tr>
<td>Year 14</td>
<td>2009</td>
<td>10,269</td>
<td>2.2</td>
<td>217</td>
</tr>
<tr>
<td>Year 15</td>
<td>2010</td>
<td>10,164</td>
<td>2.0</td>
<td>201</td>
</tr>
</tbody>
</table>

**Base Daily Per Capita Water Use**  
220

**Notes:** 
1. "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.
2. Source: Department of Finance and Census (2000 and 2010),  
Source: Department of Water Resources Public Water System Statistics

The data used to calculate the 5-year baseline is included in Table 6. The UWMPA requires a continuous range, with the end of the range ending between December 31, 2007 and December 31, 2010, be used for baseline determination.
Table 6  
Base Daily Per Capita Water Use – 5-Year Range (Guidebook Table 15)  
2010 Urban Water Management Plan  
City of Shasta Lake

<table>
<thead>
<tr>
<th>Sequence Year</th>
<th>Calendar Year</th>
<th>Distribution System Population&lt;sup&gt;(1)&lt;/sup&gt;</th>
<th>Daily System Gross Water Use&lt;sup&gt;(2)&lt;/sup&gt; (mgd)</th>
<th>Annual Daily Per Capita Water Use (gpcd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>2006</td>
<td>10,195</td>
<td>2.4</td>
<td>240</td>
</tr>
<tr>
<td>Year 2</td>
<td>2007</td>
<td>10,237</td>
<td>2.3</td>
<td>224</td>
</tr>
<tr>
<td>Year 3</td>
<td>2008</td>
<td>10,243</td>
<td>2.5</td>
<td>248</td>
</tr>
<tr>
<td>Year 4</td>
<td>2009</td>
<td>10,269</td>
<td>2.2</td>
<td>217</td>
</tr>
<tr>
<td>Year 5</td>
<td>2010</td>
<td>10,164</td>
<td>2.0</td>
<td>201</td>
</tr>
</tbody>
</table>

Base Daily Per Capita Water Use  226

Notes: "Guidebook Table X" refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
2. Source: Department of Water Resources Public Water System Statistics

3.1.2 Targets

The UWMPA requires urban water suppliers to determine the interim and urban water use targets for 2015 and 2020, respectively. 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.

3.1.2.1 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 220 gallons per capita per day (gpcd) determined previously (Table 5), the target use for Method 1 is 176 gpcd.

3.1.2.2 Method 2 – Performance Standards

Method 2 requires water suppliers to use baseline commercial, industrial, institutional, 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.
3.1.2.3 **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. A map showing the California hydrologic regions and 2020 conservation goals is included in the final Guidebook to Assist Urban Water Suppliers to Prepare a 2010 UWMP. 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.

3.1.2.4 **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)
- Commercial, industrial, and institutional (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 184 gpcd.

3.1.2.5 **Minimum Water Use Reduction Requirement**

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 (226 gpcd) previously determined (Table 6) 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 215 gpcd.

3.1.3 **Summary of Baselines and Targets**

Based on the water use targets calculated above, the City’s water use target for 2020 is 184 gpcd. Based on the 15-year baseline of 220 gpcd, the 2015 interim water use target is 202 gpcd. This 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 215 gpcd. A summary of the various baselines, use target determined based on various methodologies, and the final use target and interim target are summarized in Table 7.
Table 7  Baseline and Targets Summary  
2010 Urban Water Management Plan  
City of Shasta Lake

<table>
<thead>
<tr>
<th>Baselines(^{(1)}) (gpcd)</th>
<th>Target Determination Methods (gpcd)</th>
<th>Minimum Reduction Requirement(^{(6)}) (gpcd)</th>
<th>Target(^{(7)}) (gpcd)</th>
<th>Interim Target(^{(8)}) (gpcd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-Year 220</td>
<td>5-Year 226</td>
<td>1(^{(2)}) 176 n/a 167 184</td>
<td>215</td>
<td>184</td>
</tr>
</tbody>
</table>

Notes:
1. Refer to Tables 4, 5, and 6 for source of data.
3. Method 2 – Insufficient data is available to determine an Urban Water Use Target.
4. Method 3 – 95 percent of the Regional Target.
6. Defined as 95 percent of the 5-year base daily per capita water use.
8. Interim Urban Water Use Target is the average of the 15-year baseline and the Target.

### 3.2 WATER DEMANDS

Water demands served by the City are primarily residential, commercial/institutional, industrial, and landscape irrigation. All connections in the City are metered. Tables 8 and 9 describe the actual number of connections and associated annual water deliveries by customer sector for the years 2005 and 2010, respectively.
<table>
<thead>
<tr>
<th>Water Use Sectors</th>
<th>Metered</th>
<th>Not Metered</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of accounts</td>
<td>Deliveries AFY</td>
<td># of accounts</td>
</tr>
<tr>
<td>Single-Family Residential</td>
<td>3,383</td>
<td>1,821</td>
<td>0</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>110</td>
<td>112</td>
<td>0</td>
</tr>
<tr>
<td>Commercial/Institutional</td>
<td>187</td>
<td>277</td>
<td>0</td>
</tr>
<tr>
<td>Industrial</td>
<td>11</td>
<td>203</td>
<td>0</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,691</td>
<td>2,413</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
Table 9  Water Deliveries – Actual 2010 (Guidebook Table 4)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Use Sectors</th>
<th>2010</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metered</td>
<td>Not Metered</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td># of accounts</td>
<td>Deliveries AFY</td>
<td># of accounts</td>
<td>Deliveries AFY</td>
</tr>
<tr>
<td>Single-Family Residential</td>
<td>3,351</td>
<td>1,637</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>99</td>
<td>92</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Commercial/Institutional</td>
<td>193</td>
<td>285</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Industrial</td>
<td>10</td>
<td>271</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>3,653</td>
<td>2,285</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

Future account and water use projections are shown in Table 10, Table 11, and Table 12. 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 2010. However, the customer sector water deliveries in Table 10, Table 11, and Table 12 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 13 shows the projected water demands from 2010 through 2035 with and without conservation. The demand projections with conservation are based on the City’s per capita water use targets for 2015 and 2020. The demand projections without conservation are based on the City’s selected 15-year baseline water use.
### Table 10  Water Deliveries – Projected 2015 (Guidebook Table 5)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Use Sectors</th>
<th># of accounts</th>
<th>Deliveries AFY</th>
<th># of accounts</th>
<th>Deliveries AFY</th>
<th>Deliveries AFY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Family Residential</td>
<td>3,380</td>
<td>1,664</td>
<td>0</td>
<td>0</td>
<td>1,664</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>100</td>
<td>94</td>
<td>0</td>
<td>0</td>
<td>94</td>
</tr>
<tr>
<td>Commercial/Institutional</td>
<td>195</td>
<td>289</td>
<td>0</td>
<td>0</td>
<td>289</td>
</tr>
<tr>
<td>Industrial</td>
<td>10</td>
<td>275</td>
<td>0</td>
<td>0</td>
<td>275</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,685</strong></td>
<td><strong>2,322</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>2,322</strong></td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
<table>
<thead>
<tr>
<th>Water Use Sectors</th>
<th># of accounts</th>
<th>Metered Deliveries AFY</th>
<th># of accounts</th>
<th>Not Metered Deliveries AFY</th>
<th>Total Deliveries AFY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Family Residential</td>
<td>3,509</td>
<td>1,573</td>
<td>0</td>
<td>0</td>
<td>1,573</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>104</td>
<td>88</td>
<td>0</td>
<td>0</td>
<td>88</td>
</tr>
<tr>
<td>Commercial/Institutional</td>
<td>202</td>
<td>274</td>
<td>0</td>
<td>0</td>
<td>274</td>
</tr>
<tr>
<td>Industrial</td>
<td>10</td>
<td>260</td>
<td>0</td>
<td>0</td>
<td>260</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,825</strong></td>
<td><strong>2,195</strong></td>
<td>0</td>
<td>0</td>
<td><strong>2,195</strong></td>
</tr>
</tbody>
</table>

Notes: "Guidebook Table X" refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
### Table 12: Water Deliveries – Projected 2025, 2030, 2035 (Guidebook Table 7)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Use Sectors</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Metered</td>
<td>Metered</td>
<td>Metered</td>
</tr>
<tr>
<td># of accounts</td>
<td>Deliveries AFY</td>
<td># of</td>
<td>Deliveries AFY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>accounts</td>
<td></td>
</tr>
<tr>
<td>Single-Family Residential</td>
<td>3,642</td>
<td>1,633</td>
<td>3,781</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>108</td>
<td>92</td>
<td>112</td>
</tr>
<tr>
<td>Commercial/Institutional</td>
<td>210</td>
<td>284</td>
<td>218</td>
</tr>
<tr>
<td>Industrial</td>
<td>11</td>
<td>270</td>
<td>11</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3,971</strong></td>
<td><strong>2,278</strong></td>
<td><strong>4,122</strong></td>
</tr>
</tbody>
</table>

**Notes:** "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.
### Table 13  Projected Water Demands 2010-2035
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Year</th>
<th>Distribution System Population</th>
<th>Project Water Use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>w/ Conservation (1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(mgd)</td>
</tr>
<tr>
<td>2010</td>
<td>10,164</td>
<td>2.2</td>
</tr>
<tr>
<td>2015</td>
<td>10,252</td>
<td>2.1</td>
</tr>
<tr>
<td>2020</td>
<td>10,642</td>
<td>2.0</td>
</tr>
<tr>
<td>2025</td>
<td>11,047</td>
<td>2.0</td>
</tr>
<tr>
<td>2030</td>
<td>11,468</td>
<td>2.1</td>
</tr>
<tr>
<td>2035</td>
<td>11,905</td>
<td>2.2</td>
</tr>
</tbody>
</table>

**Notes:**
- “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
- Demand projections with conservation are based on the City’s per capita water use targets for 2015 and 2020.
- Demand projections without conservation are based on the City’s selected 15-year baseline water use.

### 3.2.1 Sales to Other Agencies

The City sells treated water to the City of Redding and periodically to the Bella Vista Water District (BVWD). The amounts sold to both agencies between 2005 and 2013 are shown in Table 14. The sales to Redding are associated with the Summit City Pressure Zone Agreement and pressure changes to the system. It is an automatic connection based on system pressures. The City currently has no plans to sell water to BVWD in the future. The intertie with BVWD is a manual connection.
Table 14  
Sales to City of Redding and Bella Vista Water District 2005 – 2013
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Year</th>
<th>Water Use (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>City of Redding</td>
</tr>
<tr>
<td>2005</td>
<td>8.21</td>
</tr>
<tr>
<td>2006</td>
<td>27.11</td>
</tr>
<tr>
<td>2007</td>
<td>26.91</td>
</tr>
<tr>
<td>2008</td>
<td>31.06</td>
</tr>
<tr>
<td>2009</td>
<td>26.57</td>
</tr>
<tr>
<td>2010</td>
<td>22.07</td>
</tr>
<tr>
<td>2011</td>
<td>24.05</td>
</tr>
<tr>
<td>2012</td>
<td>28.01</td>
</tr>
<tr>
<td>2013</td>
<td>30.12</td>
</tr>
</tbody>
</table>

Notes: Information from City billing records.

The Water Delivery Agreement with the City of Redding covers a zone within the Redding sphere of influence called the Summit City Pressure Zone. A portion of the Summit City Pressure Zone lies within the incorporated boundaries of the City of Shasta Lake and a portion lies within the unincorporated area of Shasta County (County), but within the City of Redding sphere of influence. The water purchased by the City of Redding from the Bureau of Reclamation (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. 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 2005 and 2010 actual sales to the City of Redding and BVWD as well as the projected sales through 2035 are contained in Table 15.
Table 15  Sales to Other Water Agencies (Guidebook Table 9)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Agency</th>
<th>Water Use (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2005</td>
</tr>
<tr>
<td>Bella Vista Water District</td>
<td>40.05</td>
</tr>
<tr>
<td>City of Redding*(1)</td>
<td>8.21</td>
</tr>
<tr>
<td><strong>Total, AFY</strong></td>
<td>48.26</td>
</tr>
</tbody>
</table>

Notes: "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.
1. Predicted sales to Redding are based on the agreement amount of 30 AF.

3.2.2  Other Water Demands

Additional water uses and losses in the City’s service area are presented in Table 16. Additional water losses are accounted for in Table 8 through Table 12.

Table 16  Additional Water Uses and Losses (Guidebook Table 10)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Use*(1)</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saline Barriers</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Groundwater Recharge</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Conjunctive Use</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Raw Water</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Recycled Water</td>
<td>336</td>
<td>284</td>
<td>344</td>
<td>112</td>
<td>112</td>
<td>112</td>
<td>112</td>
</tr>
<tr>
<td>Other*(2)</td>
<td>295</td>
<td>257</td>
<td>262</td>
<td>249</td>
<td>258</td>
<td>267</td>
<td>276</td>
</tr>
<tr>
<td>System Losses*(3)</td>
<td>68</td>
<td>59</td>
<td>60</td>
<td>57</td>
<td>59</td>
<td>61</td>
<td>63</td>
</tr>
<tr>
<td><strong>Total, AFY</strong></td>
<td>698</td>
<td>600</td>
<td>667</td>
<td>419</td>
<td>429</td>
<td>440</td>
<td>451</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan” by DWR.
1. Any water accounted for in Guidebook Tables 3 through 7 are not included in this table (Table 8 through 12 in this report).
2. Other includes water lost during treatment at the WTP (filter backwash, etc). It is estimated that 2.3 percent of the raw water is lost due to consumptive use.
3. System losses are assumed to be 10.0 percent of the water produced.

3.2.3  Total Water Demands

The City’s total water demands, based on the figures presented in Table 8 through Table 12 and 16, are summarized in Table 17.
### Table 17

**Total Water Use (Guidebook Table 11)**  
**2010 Urban Water Management Plan**  
**City of Shasta Lake**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total water deliveries(^{(1)})</td>
<td>2,413</td>
<td>2,285</td>
<td>2,322</td>
<td>2,195</td>
<td>2,278</td>
<td>2,365</td>
<td>2,455</td>
</tr>
<tr>
<td>Sales to other water agencies(^{(2)})</td>
<td>48.3</td>
<td>22.1</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Additional water uses and losses(^{(3)})</td>
<td>698</td>
<td>600</td>
<td>667</td>
<td>419</td>
<td>429</td>
<td>440</td>
<td>451</td>
</tr>
<tr>
<td><strong>Total, AFY</strong></td>
<td>3,160</td>
<td>2,907</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
</tbody>
</table>

Notes: **“Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan” by DWR.**

1. Data from Tables 8 through 12 and 14.
2. Data from Table 15.
3. Data from Table 16.

### 3.2.4 Lower Income Household Water Use Projections

The information contained below is based on the 2009-2014 Housing Element and the 2010 Census. The 2010 Census reported that 53.3 percent of the 10,164 residents in the City are considered low moderate income. Table 18 projects water demands associated with lower income water users through year 2035. It should be noted that the lower income demand projections presented in Table 18 are included in the total water use projections provided in Table 8 through Table 12, and Table 14.

### Table 18

**Low Income Projected Water Demands (Guidebook Table 8)**  
**2010 Urban Water Management Plan**  
**City of Shasta Lake**

<table>
<thead>
<tr>
<th>Low Income Water Demands</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family Residential</td>
<td>887</td>
<td>838</td>
<td>870</td>
<td>903</td>
<td>938</td>
</tr>
<tr>
<td>Multi-Family Residential</td>
<td>50</td>
<td>47</td>
<td>49</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td><strong>Total, AFY</strong></td>
<td>937</td>
<td>885</td>
<td>919</td>
<td>954</td>
<td>990</td>
</tr>
</tbody>
</table>

Notes: **“Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare of 2010 Urban Water Management Plan” by DWR.**
3.3 WATER DEMAND PROJECTIONS

Since the City purchases water from the USBR, the USBR is considered a wholesale supplier by DWR. Table 19 includes demand projections provided to the USBR.

<table>
<thead>
<tr>
<th>Wholesaler</th>
<th>Contracted Volume(^{(f)}) AFY</th>
<th>2010(^{(2)})</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Bureau of Reclamation</td>
<td>4,430</td>
<td>2,572</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
<tr>
<td>Total</td>
<td>2,572</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
<td></td>
</tr>
</tbody>
</table>

Notes: *Guidebook Table X* refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.
1. Contract 4,430 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. In 2010, USBR allowed 100 percent of the allocation, but the City only used 2,572 AF.
3. Demand projections include conservation based on the City's per capita water use targets for 2015 and 2020.

3.4 WATER USE REDUCTION PLAN

The City determined its 15-year baseline water use and urban water use targets in accordance with the methods described in the DWR 2010 UWMP Guidebook. After doing so, it is evident that the City met the interim target for 2015 (202 gpcd) in 2010 (201 gpcd). If the City can maintain and improve 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.
Chapter 4

SYSTEM SUPPLIES

This section describes the sources of water available to the City of Shasta Lake (City).

4.1 WATER SOURCES

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 description of water supplies must include detailed information on the groundwater basin such as water rights, determination if the basin is in overdraft, adjudication decree, and other information from the groundwater management plan; see excerpt below.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a) [to 20 years or as far as data is available]. If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:

10631 (b) (1) A copy of any groundwater management plan adopted by the urban water supplier…

10631 (b) (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or board has adjudicated the rights to pump groundwater…For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted…

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

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

The City's water supply is 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. The City has inter-ties with the City of Redding and Bella Vista Water District (BVWD) in which transfers of water can be made. In conjunction with the Redding Area Water Council (RAWC), the City is exploring the issue of transfers of local groundwater for temporary water supply during shortages. In addition, the USBR is determining the feasibility of raising Shasta Dam to increase storage, which would ultimately increase the reliability of the main water source.
Table 20 summarizes the annual entitlement under each contract/agreement. Each contract/agreement is detailed separately below.

<table>
<thead>
<tr>
<th>Water Supplier</th>
<th>AFY</th>
<th>Source</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Bureau of Reclamation (USBR)(1)</td>
<td>4,430</td>
<td>CVP</td>
<td>40 years</td>
</tr>
<tr>
<td>Shasta County Water Agency (SCWA)</td>
<td>50</td>
<td>CVP</td>
<td>Annual</td>
</tr>
<tr>
<td>Anderson-Cottonwood Irrigation District (ACID)(2)</td>
<td>2,000</td>
<td>CVP</td>
<td>40 years</td>
</tr>
<tr>
<td>MCM Properties(3)</td>
<td>325</td>
<td>CVP</td>
<td>40 years</td>
</tr>
<tr>
<td>McConnell Foundation</td>
<td>Varies</td>
<td>CVP</td>
<td>Annual</td>
</tr>
<tr>
<td>City of Redding</td>
<td>224</td>
<td>GW</td>
<td>Annual</td>
</tr>
</tbody>
</table>

Notes:
1. Contract 4,430 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. Transfer not currently approved by USBR due to Cold Water Pool (CWP) issues.
3. Transfer not currently approved by USBR due to Cold Water Pool (CWP) issues.

### 4.1.1 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 4,400 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 2005 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 an effort to improve reliability of this source, 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. The probability of the City receiving the additional allocation is unknown.

4.1.2 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 City treats water and delivers it to the City of Redding through an intertie to provide water service to parcels within the Zone that are located in the unincorporated area of Shasta County. The City invoices the City of Redding monthly for this water through a master water meter.

The agreement allowed the City to acquire 30 AF of the 40 AF CVP water allocated to the Summit City Pressure Zone. This supply is subject to constraints discussed above with the USBR contract.

4.1.3 MCM Properties Transfer Agreement

The City has a long-term transfer agreement with MCM Properties Inc. (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 Lake Shasta. This supply is subject to constraints discussed above with the USBR contract.

This transfer agreement was put on hold due to Cold Water Pool (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 Lake Shasta. The USBR indicated that withdrawal of water from Lake Shasta 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.

4.1.4 Anderson Cottonwood Irrigation District Transfer Agreement

The City has a long-term transfer agreement with the Anderson Cottonwood Irrigation District (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 Lake Shasta. 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.

4.1.5 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 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. Implementation of a permanent transfer agreement will be evaluated after the completion of this UWMP update. This supply is subject to constraints discussed above with the USBR contract.

4.1.6 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 Lake Shasta diversions. In Shasta County, the only unrestricted water contractor not impacted by the CWP is the McConnell Foundation.

4.1.7 Centerville Community Services District

From 2002 to 2004, the City purchased 240 AF of water annually from the Centerville Community Services District. At this time, the City is not considering renewing this agreement.
4.1.8 Siddiqui Family Partnership

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.

4.1.9 Bella Vista Water District Agreement

The City has a purchase agreement with the Bella Vista Water District (BVWD) to receive up to 250 AF per year at the intertie location that connects their water systems. This agreement was effective December 7, 1999 and is renewed in five-year terms. The agreement expired in 2004 and has not been renewed.

4.1.10 City of Redding Agreement

The City has an agreement to purchase up to 224 AF per year of groundwater from the City of Redding. This agreement was effective August 7, 2007 and is renewed in one-year terms. The City has not purchased groundwater from the City of Redding since 2005.

4.1.11 Wholesale Supplies

The USBR is considered a wholesale supplier by DWR. Table 21 shows the existing City USBR contract supply and planned wholesale supply sources.

<table>
<thead>
<tr>
<th>Wholesaler</th>
<th>Contracted Volume(^{(1)}) AFY</th>
<th>2010(^{(2)})</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Bureau of Reclamation</td>
<td>4,430</td>
<td>2,572</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
</tbody>
</table>

Notes: "Guidebook Table X" refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

1. Contract 4,430 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. In 2010, USBR allowed 100 percent of the allocation, but the City only used 2,572 AF.
3. Demand projections include conservation based on the City’s per capita water use targets for 2015 and 2020.

4.1.12 Water Supply Summary

Table 22 summarizes the current and projected water supply sources for the City through 2035.
Table 22 Water Supplies - Current and Projected (Guidebook Table 16)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Supply Sources</th>
<th>Projected Supply (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
</tr>
<tr>
<td>US Bureau of Reclamation (USBR)(1)</td>
<td>2,572</td>
</tr>
<tr>
<td>Supplier-Produced Groundwater</td>
<td>0</td>
</tr>
<tr>
<td>Supplier-Produced Surface Water</td>
<td>0</td>
</tr>
<tr>
<td>Transfers In</td>
<td></td>
</tr>
<tr>
<td>Anderson-Cottonwood Irrigation District (ACID)(2)</td>
<td>0</td>
</tr>
<tr>
<td>MCM Properties(3)</td>
<td>0</td>
</tr>
<tr>
<td>Shasta County Water Agency (SCWA)(4)</td>
<td>50</td>
</tr>
<tr>
<td>McConnell Foundation(5)</td>
<td>0 varies</td>
</tr>
<tr>
<td>Exchanges In</td>
<td>0</td>
</tr>
<tr>
<td>Recycled Water</td>
<td>284</td>
</tr>
<tr>
<td>Desalinated Water</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,906</strong></td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
1. Contract 4,430 AF. Reduced to 1,291 AF in 2014 due to drought conditions.
2. Transfer agreement 2,000 AF. Transfer not currently approved by USBR due to Cold Water Pool (CWP) issues.
3. Transfer agreement 325 AF. Transfer not currently approved by USBR due to CWP issues.
4. Transfer agreement 50 AF.
5. Annual agreement. The amount varies based on USBR allocation projections and City needs.

4.2 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) which contains the main water-bearing geologic units in the northern Sacramento Valley. 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 gpm). Less dense, probably more highly fractured black shale, the Kennet formation underlies the northeastern corner of the City. Wells of record completed in the Kennet 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.

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 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.

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. Therefore, the UWMP Tables for Historic and Projected Groundwater Pumping are not included in this UWMP.

The countywide water resource master plan proposes possible conjunctive use of groundwater for the City. This would involve diverting ACID water out of Shasta Lake for the City while the City pumped groundwater out of a future well into the ACID canal. The feasibility of this use is not known at this time.

4.3 TRANSFER OPPORTUNITIES

The UWMPA requires the UWMP to address the opportunities for development of short or long-term transfer or exchange opportunities; see excerpt below.
The City does not currently have any new transfer opportunities identified. Two long-term agreements (MCM and ACID) the City has in place are on hold due to CWP issues. A planned future water supply project (Section 4.6), if implemented, would allow the City to receive the water from the existing transfer agreements. The UWMP Guidebook table Transfer and Exchange Opportunities is not included this UWMP as the City is exploring options to fully utilize existing agreements.

4.4 DESALINATED WATER OPPORTUNITIES

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

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.

4.5 RECYCLED WATER OPPORTUNITIES

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; see excerpt below.

4.5.1 Wastewater Collection, Treatment Systems, and Disposal

The City manages wastewater collection and treatment within the city limits. All of the wastewater flows from the City (excluding storm water run-off), are collected and treated at the City's Wastewater Treatment Facility (WWTF), which produces disinfected tertiary recycled water per the recycled water criteria defined by the California Department of Public
Health under California Administrative Code, Division 4, Title 22, California Code of Regulations (CCR). 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 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 eventually 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.

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.

From October 15 - 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. 001 discharges water directly from the end of the WWTF to Churn Creek. 002 discharges water from the reclaimed reservoir to Churn Creek downstream from location 001 discharge. Effluent discharged to Churn Creek is dechlorinated.

Recycled water that cannot be discharged to Churn Creek due to the time of year or to drought conditions (reduced Creek flows) is stored in the 400-AF reservoir. The 2005 Wastewater System Master Plan indicated that the ability 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.

Within the next five years, the City plans to upgrade the WWTF to enable year-round direct discharge of its effluent to Churn Creek, which will limit the amount of reclaimed water available for other uses. 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.

Between 2005 and 2013, the WWTF received an average annual flow of approximately 345 million gallons or just less that 1.0 mgd. As the WWTF was designed to meet Title 22 requirements, all of the flow discharged meets recycled water standards. Table 23 contains current and projected wastewater volumes collected within the City limits. Table 24 contains the volumes of WWTF discharged to Churn Creek. Discharge to the creek is limited to October through April and is further limited by dilution factor. It has been assumed that the
discharge to the creek will remain stable until upgrades to the WWTF are completed. The average percent of creek discharge to WWTF flow from 2005 to 2013 was 68 percent. These tables will be updated in subsequent UWMPs once the City’s General Plan and Wastewater Master Plan have been updated and the WWTF has been upgraded.

**Table 23** Recycled Water – Wastewater Collection and Treatment (Guidebook Table 21)

<table>
<thead>
<tr>
<th>City of Shasta Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Wastewater</td>
</tr>
<tr>
<td>Wastewater Collected and Treated in Service Area (AFY)</td>
</tr>
<tr>
<td>Volume that meets recycled water standard</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
2. Entire volume of the treated effluent meets recycled water standards.

**Table 24** Recycled Water – Non-Recycled Wastewater Disposal (Guidebook Table 22)

<table>
<thead>
<tr>
<th>City of Shasta Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Disposal</td>
</tr>
<tr>
<td>Discharge to Churn Creek (AFY)</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
1. Projected discharge to the creek based on the average percent of total flow discharged from 2005-2013, 68 percent. This will increase after the upgrades to the WWTF are complete.

**4.5.2 Current and Projected Recycled Water Use**

The City provides recycled water to Sierra Pacific Industries (SPI), Knauf Insulation, 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. Recycled water is also used to irrigate the pastureland at the WWTF.

The 2005 UWMP reported that in 2005 approximately 364 AF of recycled water was used in the City for irrigation of log decks, process water for manufacturing, landscape irrigation, and irrigation of pastureland at the WWTF. The 2005 UWMP did not make recycled water use projections for 2010. Therefore, the 2010 actual recycled water use cannot be compared to that projected in 2005. Table 25 contains the recycled water used in 2010 within the City.
Table 25 2010 Recycled Water Use Compared to 2005 UWMP Use Projections (Guidebook Table 24)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>User Type</th>
<th>Volume (AFY)</th>
<th>2010 Actual</th>
<th>2005 Projection for 2010(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Irrigation(2)</td>
<td>203.6</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Landscape Irrigation(3)</td>
<td>13.9</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Commercial Irrigation(4)</td>
<td>33.1</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Golf Course Irrigation</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Wildlife Habitat</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Wetlands</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Industrial Reuse(5)</td>
<td>33.6</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Groundwater Recharge</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Seawater Barrier</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Geothermal Energy</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td>Indirect Potable Reuse</td>
<td>0</td>
<td></td>
<td>Not available</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>284.2</strong></td>
<td></td>
<td>Not available</td>
</tr>
</tbody>
</table>

Notes: "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR
1. The 2005 UWMP did not include projections for recycled water use in 2010.
2. Spray irrigation of City pastureland.
3. Irrigation by the California Department of Transportation.
4. Landscape and turf irrigation by Knauf Fiberglass.
5. Soaking of log decks by Sierra Pacific Industries.

Since 2005, the City has continued to supply recycled water to the existing customers and provide irrigation water for the pastureland surrounding the WWTF. Table 26 estimates the potential future recycled water use. These numbers may be adjusted in the future to reflect changes in City operation after the WWTF upgrade, a change in the dilution factor to Churn Creek, an update to the General Plan and Wastewater Master Plan, new customers, and regulations governing the production and uses of recycled water.

Caltrans has recently 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.
### Table 26
Recycled Water – Potential Future Use (Guidebook Table 23)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>User Type</th>
<th>Description</th>
<th>Feasible?</th>
<th>Volume (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2015(1) 2020 2025 2030 2035</td>
</tr>
<tr>
<td>Agricultural Irrigation(2)</td>
<td>City pasture</td>
<td>Yes</td>
<td>232 0 0 0 0</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>I-5 landscape</td>
<td>Yes</td>
<td>33 33 33 33 33</td>
</tr>
<tr>
<td>Commercial Irrigation(3)</td>
<td>Knauf</td>
<td>Yes</td>
<td>35 35 35 35 35</td>
</tr>
<tr>
<td>Golf Course Irrigation</td>
<td></td>
<td>Yes</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td>Wildlife Habitat(4)</td>
<td></td>
<td>No</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td>Wetlands</td>
<td></td>
<td>No</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td>Industrial Reuse(3)</td>
<td>SPI</td>
<td>Yes</td>
<td>44 44 44 44 44</td>
</tr>
<tr>
<td>Groundwater Recharge</td>
<td></td>
<td>No</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td>Seawater Barrier</td>
<td></td>
<td>No</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td>Geothermal Energy</td>
<td></td>
<td>No</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td>Indirect Potable Reuse</td>
<td></td>
<td>No</td>
<td>0 0 0 0 0 0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>344 112 112 112 112</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR
1. 2015 estimates based on the results of the 2014 City of Shasta Lake WWTF Future Reclaimed System Water Balance Technical Memorandum.
2. Volume reflects the average usage from 2009 to 2013. The City will no longer have recycled water available for the spray fields once the upgrades to the WWTF are complete.
4. The discharge to Churn Creek may be considered beneficial use recycled water use in future UWMP updates.

### 4.5.3 Potential Uses of Recycled Water

The service area for 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 California Code of Regulations Title 22. Depending on the City’s operational plan after the WWTF upgrade, condition of the recycled water distribution system, and feasibility to expand the recycled water distribution system, the City may expand its use of recycled water.

4.5.4 Encouraging 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 compared to $1.27 per 100 cubic feet for potable water. This provides a financial incentive to the existing customers and future customers.

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. Therefore, the UWMP Guidebook Table Methods to Encourage Recycled Water Use is not included in this UWMP. If projects occur, methods to encourage recycled water use can be developed to maximize project benefits. If warranted the UWMP Guidebook table will be included in the subsequent UWMP update.

4.5.5 Recycled Water Use Optimization Plan

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 D.

4.6 FUTURE WATER PROJECTS

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

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 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 will 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 Lake Shasta.

If implemented, this project would allow the City to withdraw the full transfer amounts from the ACID and MCM transfer. Table 27 summarizes the future water supply project. This project will allow the City to utilize existing long-term transfer agreements and ensure a sustainable water supply and reliability for the City. Note that the reductions are based on percent reductions determined for USBR allocations from historical records (refer to Section 4.1.1) and may not reflect the actual reductions implemented.

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Projected Start Date</th>
<th>Projected Completion Date</th>
<th>Potential Project Constraints</th>
<th>Projected Annual Supply (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Shasta Lake Water Supply Enhancement Project</td>
<td>4/1/16</td>
<td>12/31/17</td>
<td>IRWM Funding USBR Allocations</td>
<td>2,325 1,070 1,790 1,558 2,093</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>2,325 1,070 1,790 1,558 2,093</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
Chapter 5

WATER SUPPLY RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING

This chapter describes the reliability of the City’s water supplies, including a discussion of the City’s water shortage contingency plan, as well as potential supply disruptions associated with water quality issues and drought.

5.1 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; see excerpt below.

10631 (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions."

10631 (c) (2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.

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 50 percent depending upon the USBR water supply projections. For this reason, the City has constructed two inter-ties with neighboring entities in case of an emergency. For the last few years, the City has purchased supplemental water from the Shasta County Water Agency (SCWA) and the McConnell Foundation under short-term contracts. A long-term contract with SCWA is being evaluated. The City also has long-term contracts with MCM Properties (MCM) and Anderson Cottonwood Irrigation District (ACID), which have not been utilized due to Cold Water Pool (CWP) issues identified by the USBR.

Unfortunately, short-term contracts are very insecure from the standpoint of reliability and cost fluctuations. Additionally, the ACID and MCM long-term contracts have not been
reliable due to CWP issues. Thus, 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 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.

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. Without a sustainable and reliable water supply, future growth and industrial/commercial growth could be delayed for the City.

Table 28 contains a summary of factors affecting water supply reliability and that may pose an opportunity for inconsistency in supply. Environmental factors represent supply restrictions that may be imposed due to downstream water temperature, quality, and quantity objectives. Climatic factors represent potential restrictions due to drought conditions.

<table>
<thead>
<tr>
<th>Water Supply Sources</th>
<th>Specific Source Name</th>
<th>Limitation</th>
<th>Quantification</th>
<th>Legal</th>
<th>Environmental</th>
<th>Water Quality</th>
<th>Climatic</th>
<th>Additional Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR Contract</td>
<td>CVP</td>
<td>Note 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anderson Cottonwood Irrigation District</td>
<td>CVP</td>
<td>Note 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MCM Properties</td>
<td>CVP</td>
<td>Note 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shasta County Water Agency</td>
<td>CVP</td>
<td>Note 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>McConnell Foundation</td>
<td>CVP</td>
<td>Note 3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
1. From Guidebook Table 16 (Table 22 in this report).
2. Quantity dependent on USBR allocations and USBR approval of transfers.
3. Quantity based on annual agreement amount.
5.2 WATER QUALITY

The UWMPA requires that the UWMP include a discussion of water quality impacts on the reliability of an agency’s water supplies; see excerpt below.

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

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 affect on water management strategies or reliability due to the high quality of the surface water supply. Due to the nature of the potential water quality impacts described above, no future unaddressed impacts have been identified and the potential quantitative impacts cannot be established. Therefore, the UWMP Guidebook: Water Quality Supply Impacts Table has not been included in this UWMP. The City’s drinking water meets all applicable water quality regulations (See Appendix E for a copy of the City's 2013 Water Quality Report).

5.3 WATER SHORTAGE CONTINGENCY PLANNING

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses specified issues; see excerpt below.

10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:

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

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. A copy of the Emergency Response Plan is included in Appendix F.

In 1994, the City prepared and adopted a Water Shortage Contingency Plan detailing the stages of action to be undertaken during a reduction in water supply. This plan has been incorporated into the City’s 2000 Water Conservation Plan and subsequent water planning documents. A copy of the 1994 Water Shortage Contingency Plan and the 2000 Water Conservation Plan are included in Appendix G.
5.3.1 Water Shortage Emergency

The City’s Municipal Code allows the City Council to declare a water shortage emergency and enact water use restrictions on all city customers. The Municipal Code was updated to include the rationing stages and newly identified mandatory conservation measures for each stage. A copy of Ordinance CC 14-236, adopted by City Council on September 16, 2014, is included in Appendix H.

5.3.2 Stages of Action in Response to Water Supply Shortages

In addition to actions, the City is required to develop mandatory prohibitions against specific water use during shortages and consumption reduction methods in the most restrictive stages, including up to a 50 percent reduction in water supply. The City must also identify specific water supply conditions, which are applicable to each stage. The stages of action in response to water supply shortages, including up to a 50 percent reduction in water supply are summarized in Table 29.

During each stage of action, the City shall conduct an extensive water conservation program, which may include information posted on the City’s website, handouts, mailers, newspaper notices, and radio/television advertisement. The City also shall have available indoor and outdoor water conservation retrofit kits for all customers.

<table>
<thead>
<tr>
<th>Stage No.</th>
<th>Type</th>
<th>Water Supply Conditions</th>
<th>Shortage</th>
<th>Demand Reduction Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Voluntary</td>
<td>Reduction in Agency Water Supply: Water Shortage Alert</td>
<td>Up to 10%</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Mandatory</td>
<td>Reduction in Agency Water Supply: Moderate Water Shortage</td>
<td>11-20%</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>Mandatory</td>
<td>Reduction in Agency Water Supply: Emergency Water Shortage</td>
<td>21-30%</td>
<td>30%</td>
</tr>
<tr>
<td>4</td>
<td>Mandatory</td>
<td>Reduction in Agency Water Supply: Severe Water Shortage</td>
<td>31-40%</td>
<td>40%</td>
</tr>
<tr>
<td>5</td>
<td>Mandatory</td>
<td>Reduction in Agency Water Supply or a Catastrophic Interruption in Water Supply: Critical Water Shortage Emergency</td>
<td>41-50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan” by DWR.
5.3.2.1 **Stage 1: Water Shortage Alert**

The City's 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. Some restrictions are encouraged in an effort to reduce water consumption.

**Type of Program:** Voluntary

**Triggering Mechanism:** A cutback in available water supply of up to 10 percent.

**Consumption Limits:** All customers would be requested to reduce consumption by 10 percent.

**Requested Consumer Actions:** Customers would be requested to implement voluntary Stage 1 measures.

<table>
<thead>
<tr>
<th>Stage 1: Water Shortage Alert</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Water shall be used for beneficial uses only; all unnecessary and wasteful uses of water shall be prohibited.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>3. 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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>5. Free-flowing hoses for any use shall be prohibited. Customers shall use automatic shutoff devices on any hose or filling apparatus.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>8. All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, etc., shall develop a Water Conservation Plan indicating a 10 percent reduction in water usage and submit the Plan to the City’s Water Conservation Coordinator for approval within thirty calendar days.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>10. Irrigated landscaped areas shall include efficient irrigation systems (e.g., drip irrigation systems, timed sprinklers, rain sensors, low-flow spray heads, etc.)</td>
</tr>
<tr>
<td>11. All new development shall be required to install low flow devices (i.e., toilets and shower heads) pursuant to California Building Code standards.</td>
</tr>
<tr>
<td>12. Restaurant customers shall receive water only upon request.</td>
</tr>
</tbody>
</table>
5.3.2.2 Stage 2 Moderate Water Shortage

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. Additional restrictions apply in an effort to increase the conservation by 10 percent above Stage 1.

**Type of Program:** Mandatory

**Triggering Mechanism:** A cutback in available water supply of 11 to 20 percent.

**Consumption Limits:** All customers would be required to reduce consumption by 20 percent.

**Required Consumer Actions:** Customers would be required to comply with Stage 1 restrictions (becomes mandatory in Stage 2) and the mandatory Stage 2 restrictions.

### Stage 2: Moderate Water Shortage

1. Water use for ornamental ponds and fountains shall be prohibited.

2. All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, 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 20 percent reduction in water usage; Stage 3: Demonstrate a 30 percent reduction in water usage; Stage 4 Demonstrate a 40 percent reduction in water usage; Stage 5: Demonstrate a 50 percent reduction in water usage.

3. Parks and 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 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 previous 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 (10) feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.

5. All City water customers who do not comply with the reduced consumption amount shall be required to install retrofit kits.

6. 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.
5.3.2.3 **Stage 3 Emergency Water Shortage**

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. Additional restrictions apply in an effort to increase the conservation by 10 percent above Stage 2.

**Type of Program:** Mandatory

**Triggering Mechanism:** A cutback in available water supply of 21 to 30 percent.

**Consumption Limits:** All customers would be required to reduce consumption by 30 percent.

**Required Consumer Actions:** Customers would be required to comply with Stage 1 restrictions (becomes mandatory in Stage 3) and the mandatory Stage 2 and Stage 3 prohibitions.

**Stage 3: Emergency Water Shortage**

1. Parks and 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 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 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 (10) 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 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.
5.3.2.4 Stage 4 Severe Water Shortage

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. Additional restrictions apply in an effort to increase the conservation by 10 percent above Stage 3.

**Type of Program:** Mandatory

**Triggering Mechanism:** A cutback in available water supply of 31 - 40 percent.

**Consumption Limits:** All customers would be required to reduce consumption by 40 percent for the duration of the water emergency.

**Required Consumer Actions:** Customers would be required to comply with all Stage 1 restrictions (become mandatory in Stage 4) and the mandatory Stage 2, Stage 3, and Stage 4 prohibitions.

<table>
<thead>
<tr>
<th>Stage 4: Severe Water Shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>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).</td>
</tr>
<tr>
<td>2. Swimming pools that have been filled prior to Stage 4 shall not be emptied and refilled.</td>
</tr>
<tr>
<td>3. Filling of new swimming pools is prohibited as of the effective date of the Stage 4 declaration.</td>
</tr>
<tr>
<td>4. Flushing of sewers and fire hydrants shall be prohibited except in cases of emergency.</td>
</tr>
<tr>
<td>5. No potable water from the City system shall be used for construction purposes, such as dust control, compaction, or trench jetting.</td>
</tr>
</tbody>
</table>
5.3.2.5  **Stage 5 Critical Water Shortage Emergency**

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. The City is experiencing a major failure of supply, storage, or distribution facility. The City is not able to meet all customer water requirements with Stage 4 measures.

**Type of Program:** Mandatory

**Triggering Mechanism:** A cutback in available water supply of 41-50 percent.

**Consumption Limits:** All customers would be required to reduce consumption by 50 percent for the duration of the water emergency.

**Required Consumer Actions:** Customers would be required to comply with all Stage 1 restrictions (become mandatory in Stage 5) and the mandatory Stage 2, Stage 3, Stage 4, and Stage 5 prohibitions.

<table>
<thead>
<tr>
<th>Stage 5: Critical Water Shortage Emergency</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td>2.  Use of landscape irrigation systems 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.</td>
</tr>
</tbody>
</table>
Table 30 contains mandatory prohibitions and the water shortage stage when they are enacted.

<table>
<thead>
<tr>
<th>Prohibitions</th>
<th>Stage When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water shall be used for beneficial uses only; all unnecessary and wasteful uses of water shall be prohibited.</td>
<td>2</td>
</tr>
<tr>
<td>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.</td>
<td>2</td>
</tr>
<tr>
<td>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.</td>
<td>2</td>
</tr>
<tr>
<td>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.</td>
<td>2</td>
</tr>
<tr>
<td>Free-flowing hoses for any use shall be prohibited. Customers shall use automatic shutoff devices on any hose or filling apparatus.</td>
<td>2</td>
</tr>
<tr>
<td>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.</td>
<td>2</td>
</tr>
<tr>
<td>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.</td>
<td>2</td>
</tr>
<tr>
<td>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.</td>
<td>2</td>
</tr>
<tr>
<td>Irrigated landscaped areas shall include efficient irrigation systems (e.g., drip irrigation systems, timed sprinklers, rain sensors, low-flow spray heads, etc.)</td>
<td>2</td>
</tr>
<tr>
<td>All new development shall be required to install low flow devices (i.e., toilets and shower heads) pursuant to California Building Code standards.</td>
<td>2</td>
</tr>
<tr>
<td>Restaurant customers shall receive water only upon request.</td>
<td>2</td>
</tr>
<tr>
<td>Water use for ornamental ponds and fountains shall be prohibited.</td>
<td>2</td>
</tr>
<tr>
<td>All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, 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 20 percent reduction in water usage; Stage 3: Demonstrate a 30 percent reduction in water usage; Stage 4 Demonstrate a 40 percent reduction in water usage; Stage 5: Demonstrate a 50 percent reduction in water usage.</td>
<td>2</td>
</tr>
</tbody>
</table>
Parks and 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 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 previous year.

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>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:</td>
</tr>
<tr>
<td>2</td>
<td>a. Drip, bubbler, or soaker irrigation hardware or emitters;</td>
</tr>
<tr>
<td>2</td>
<td>b. Use of an irrigation system for the express purposes of repairing or completing routine maintenance.</td>
</tr>
<tr>
<td>2</td>
<td>c. Watering by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle.</td>
</tr>
<tr>
<td>2</td>
<td>d. Watering by use of a hose-end sprinkler with a radius of not more than ten (10) feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.</td>
</tr>
</tbody>
</table>

All City water customers who do not comply with the reduced consumption amount shall be required to install retrofit kits.

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.

Parks and 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 30 percent reduction in water use.

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 15 minutes per station per night. The limitation for times does not apply to:

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>a. Drip, bubbler, or soaker irrigation hardware or emitters;</td>
</tr>
<tr>
<td>3</td>
<td>b. Use of an irrigation system for the express purposes of repairing or completing routine maintenance.</td>
</tr>
<tr>
<td>3</td>
<td>c. Watering by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle.</td>
</tr>
<tr>
<td>3</td>
<td>d. Watering by use of a hose-end sprinkler with a radius of not more than ten (10) feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.</td>
</tr>
</tbody>
</table>

Installation of irrigated landscaping for all new development shall be deferred pursuant to a written Agreement with the City.
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.

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).

Swimming pools that have been filled prior to Stage 4 shall not be emptied and refilled.

Filling of new swimming pools is prohibited as of the effective date of the Stage 4 declaration.

Flushing of sewers and fire hydrants shall be prohibited except in cases of emergency.

No potable water from the City system shall be used for construction purposes, such as dust control, compaction, or trench jetting.

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.

Use of landscape irrigation systems 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.

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

### 5.3.2.6 Consumption Reduction Methods

The UWMPA requires that the UWMP include an urban water shortage contingency analysis that addresses methods to reduce consumption; see except below.

> 10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:

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

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

> 10632 (f) Penalties or charges for excessive use, where applicable.
Table 31 contains consumption reduction methods by water shortage stage with projected reduction.

Table 31 Water Shortage Contingency – Consumption Reduction Methods
(Guidebook Table 37)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Consumption</th>
<th>Stage When</th>
<th>Projected Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public education</td>
<td>All</td>
<td>10%</td>
</tr>
<tr>
<td>Excess water use penalties and water shortage pricing</td>
<td>2-5</td>
<td>11-50%</td>
</tr>
<tr>
<td>Voluntary rationing</td>
<td>1</td>
<td>11%</td>
</tr>
<tr>
<td>Mandatory rationing</td>
<td>2-5</td>
<td>11-50%</td>
</tr>
<tr>
<td>No building permits issued for new residential development</td>
<td>5</td>
<td>41-50%</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

5.3.2.7 Penalties and Charges

The penalties or charges for excessive use during water shortages are summarized in Table 32.
<table>
<thead>
<tr>
<th>Penalties or Charges(^{(1)})</th>
<th>Stage When Penalty Takes Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customers violating the mandatory regulations and restrictions on water use set forth by the City shall be penalized as follows:</td>
<td>2</td>
</tr>
<tr>
<td><strong>First Violation:</strong> The City shall provide notice of the violation and a copy of the applicable mandatory water use restrictions to the current property owner and/or billing address.</td>
<td></td>
</tr>
<tr>
<td><strong>Second Violation:</strong> The City shall issue a written warning and notice that additional violations may result in penalties or termination of service.</td>
<td></td>
</tr>
<tr>
<td><strong>Third Violation:</strong> A third violation within twelve calendar months of the second violation shall result in a penalty not to exceed $100.00.</td>
<td></td>
</tr>
<tr>
<td><strong>Fourth Violation:</strong> A fourth violation within twelve calendar months of the third violation shall result in a penalty not to exceed $200.00.</td>
<td></td>
</tr>
<tr>
<td><strong>Fifth and Subsequent Violations:</strong> A fifth violation and subsequent violations within twelve calendar months of the fourth violation shall result in a penalty not to exceed $500.00.</td>
<td></td>
</tr>
<tr>
<td>Each separate day or portion thereof in which any violation of the mandatory water use restrictions occurs, or continues without a good faith effort by the customer to correct the violation, shall constitute a separate violation.</td>
<td></td>
</tr>
<tr>
<td>The amount of all penalties shall be added to the next water bill thirty days after the date of the written notice of the violation if not paid in full or protested.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Violations may also be redressed by civil action. In addition to being subject to prosecution, any person who violates any of the mandatory water use restrictions may be made the subject of a civil action. Appropriate civil action includes, but is not limited to, injunctive relief and cost recovery.</td>
<td></td>
</tr>
</tbody>
</table>
### Excess Water Use Penalties:

#### Residential
- Consumption of 1,001 – 5,000 cubic feet (CF) per month: $0.30 per 100 CF penalty
- Consumption over 5,001 CF per month: $2.50 per 100 CF penalty

#### Non-Residential
- Consumption over 1,001 CF: $0.50 per 100 CF penalty

**Notes:** “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.

1. The charges shown are from the 1994 Plan. It is likely these fees will be updated in a revised Plan.

#### 5.3.3 Mechanism for Determining Actual Reductions in Water Use

The UWMPA requires that the UWMP include a means to determine the actual water use reduction in the event of a water shortage; see excerpt below.

10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:

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

Reductions in water use for each user can be determined based on meter readings.

#### 5.3.4 Analysis of Revenue Impacts of Reduced Sales during Shortages

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); see excerpt below.

10632. The plan shall provide an urban water shortage contingency analysis, which includes each of the following elements, which are within the authority of the urban water supplier:

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

10632 (g) An analysis of the impacts of each of the proposed measures to overcome those revenue and expenditure impacts, such as the development of reserves and rate adjustments.
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 monitor customer accounts. The additional costs associated with this effort, however, are not expected to significantly impact City revenues and expenditures.

5.3.5 Water Shortage Contingency Resolution or Ordinance

The California Water Code 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 City has adopted a Water Shortage Contingency Plan and has incorporated the restrictions, which would become effective immediately during a declared “Water Shortage Emergency” into the City Municipal Code (Ordinance 08-194), refer to Section 5.3 for specific restrictions. The Municipal Code was updated to include rationing stages and newly identified mandatory water conservation measures for each stage.

5.4 DROUGHT PLANNING

This section considers the City’s water supply reliability during three water scenarios: average year, single-dry year, and multiple-dry year period. These scenarios are defined as follows:

- **Average year**: 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**: 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**: 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 33 were developed based on historical DWR runoff records for the Sacramento Valley and the availability of City records.
The City was incorporated in 1993; therefore accurate water supply records are only available for 1993 through 2014. Although the area experienced a severe drought from 1985 to 1992, and from 2007 through 2009. Table 33 and Table 34 reflect the 2007 through 2009 drought since accurate water supply records were available. The year 2014 was selected for the single-dry year because the City’s water supply allocation was reduced to 1,291 AF.

Table 33  Basis of Water Year Data (Guidebook Table 27)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Year Type</th>
<th>Base Year(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Water Year(^{(1)})</td>
<td>2004</td>
</tr>
<tr>
<td>Single-Dry Water Year</td>
<td>2014</td>
</tr>
<tr>
<td>Multiple-Dry Water Years(^{(2)})</td>
<td>2007-2009</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan” by DWR.
1. Historical DWR records for the sequence 1974-2013 were reviewed and coordinated with the available City water supply records since City incorporation.
2. Historical DWR multiple-dry water years were from 1985 through 1992 and 2007 through 2009. The latter was selected due to the availability of accurate water supply records.

Table 34 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. The quantity reflects the amount diverted by the City under their USBR contract and does not include transfers from SCWA. Table 35 shows the available supply by water source including transfer agreements. Table 35 assumes that the Water Supply Enhancement Project is completed and the supply is available in 2020 (refer to Table 27).

Table 34  Supply Reliability – Historical Conditions (Guidebook Table 28)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Average Water Year(^{(1)}) AFY</th>
<th>Single-Dry Water Year(^{(2)}) AFY</th>
<th>Multiple-Dry Water Years(^{(2)}) AFY</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,802</td>
<td>1,291</td>
<td>2,170 1,867 2,522</td>
</tr>
<tr>
<td>Percent of Average Year:</td>
<td>46 77 67 90</td>
<td></td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan” by DWR.
1. Amount diverted by the City in 2004 under their USBR contract. Full allotment of 4,430 AF was not used.
2. Actual water supply available for each year identified in Table 33.
## Table 35  Supply Reliability – Current Water Sources (Guidebook Table 31)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th>Water Supply Sources</th>
<th>Average Water Supply Year AFY</th>
<th>Multiple-Dry Water Years</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR – Shasta Lake</td>
<td>2,802</td>
<td></td>
<td>2,170</td>
<td>1,867</td>
<td>2,522</td>
</tr>
<tr>
<td>USBR – Sacramento River(1) (ACID and MCM transfers)</td>
<td>0</td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>USBR – Shasta Lake (SCWA transfer)</td>
<td>50</td>
<td></td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>McConnell Foundation(2)</td>
<td>0</td>
<td>Varies</td>
<td>Varies</td>
<td>Varies</td>
<td>Varies</td>
</tr>
</tbody>
</table>

Percent of Average Year: 78 67 90

Notes: "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Water Suppliers in the Preparation of a 2010 Urban Water Management Plan" by DWR.

1. This allocation is not approved due to Cold Water Pool issues. Once the Water Supply Enhancement Project is completed an allocation of 2,325 AF will be available.
2. The agreement amount is based on the City’s request for that water year.

### 5.4.1 Minimum Supply Available for the Next Three Years

The California Water Code requires that the City estimate the minimum water supply available at the end of the 12, 24, and 36 months, assuming the driest three-year historic supply shortage. The historical multiple-dry year curtailments for 2007 through 2009 are shown in Table 34. In 2014, the USBR curtailment reduced the City’s allocation to 1,291 AF for the water year. The curtailment is determined by applying a percent reduction to the average City water produced from water years 2011 to 2013. Water year is defined as March through February. At this time, a minimum water supply of 1,291 AF should be assumed.

### 5.4.2 Supplies and Demands for Average 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, and the Water Supply Enhancement Project is completed will not exceed the supplies (Table 36).
Table 36  Supply and Demand Comparison- Average Year (Guidebook Table 32)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Totals(1)</td>
<td>3,413</td>
<td>5,131</td>
<td>5,224</td>
<td>5,322</td>
<td>5,423</td>
</tr>
<tr>
<td>Demand Totals(2)</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
<tr>
<td>Difference</td>
<td>394</td>
<td>2,487</td>
<td>2,487</td>
<td>2,487</td>
<td>2,487</td>
</tr>
<tr>
<td>Difference as % of Supply</td>
<td>12</td>
<td>48</td>
<td>48</td>
<td>47</td>
<td>46</td>
</tr>
<tr>
<td>Difference as % of Demand</td>
<td>13</td>
<td>94</td>
<td>91</td>
<td>88</td>
<td>85</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
1. Refer to Table 22 in this report. 2020-2035 supplies assume that the Water Supply Enhancement Project is completed.
2. City wide demand totals include conservation based on water use targets. Refer to Table 17 in this report.

5.4.3 Supplies and Demands for a Single-Dry Water Year

During a single-dry year, the USBR allotments can be reduced by 50 percent. Table 37 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 37  Supply and Demand Comparison - Single-Dry Year
(Guidebook Table 33)
2010 Urban Water Management Plan
City of Shasta Lake

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Totals(1)</td>
<td>1,572</td>
<td>2,364</td>
<td>2,407</td>
<td>2,452</td>
<td>2,499</td>
</tr>
<tr>
<td>Demand Totals(2)</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
<tr>
<td>Difference</td>
<td>-1,446</td>
<td>-280</td>
<td>-330</td>
<td>-383</td>
<td>-437</td>
</tr>
<tr>
<td>Difference as % of Supply</td>
<td>-92</td>
<td>-12</td>
<td>-14</td>
<td>-16</td>
<td>-18</td>
</tr>
<tr>
<td>Difference as % of Demand</td>
<td>-48</td>
<td>-11</td>
<td>-12</td>
<td>-14</td>
<td>-15</td>
</tr>
</tbody>
</table>

Notes: “Guidebook Table X” refers to a specific table in the “Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan” by DWR.
1. 2020-2035 supplies assume that the Water Supply Enhancement Project is completed.
2. City wide demand totals include conservation based on water use targets. Refer to Table 17 in this report.

5.4.4 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 (refer to Table 33). Table 38 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>
<thead>
<tr>
<th>Table 38</th>
<th>Supply and Demand Comparison - Multiple-Dry Year (Guidebook Table 34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 Urban Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>City of Shasta Lake</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple-Dry Year First Year Supply</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Totals</td>
<td>2,643</td>
<td>3,973</td>
<td>4,046</td>
<td>4,121</td>
<td>4,200</td>
</tr>
<tr>
<td>Demand Totals</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
<tr>
<td>Difference</td>
<td>-376</td>
<td>1,330</td>
<td>1,309</td>
<td>1,287</td>
<td>1,264</td>
</tr>
<tr>
<td>Difference as % of Supply</td>
<td>-14</td>
<td>33</td>
<td>32</td>
<td>31</td>
<td>30</td>
</tr>
<tr>
<td>Difference as % of Demand</td>
<td>-12</td>
<td>50</td>
<td>48</td>
<td>45</td>
<td>43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple-Dry Year Second Year Supply</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Totals</td>
<td>2,274</td>
<td>3,418</td>
<td>3,481</td>
<td>3,546</td>
<td>3,613</td>
</tr>
<tr>
<td>Demand Totals</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
<tr>
<td>Difference</td>
<td>-745</td>
<td>775</td>
<td>744</td>
<td>711</td>
<td>677</td>
</tr>
<tr>
<td>Difference as % of Supply</td>
<td>-33</td>
<td>23</td>
<td>21</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>Difference as % of Demand</td>
<td>-25</td>
<td>29</td>
<td>27</td>
<td>25</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiple-Dry Year Third Year Supply</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Totals</td>
<td>3,072</td>
<td>4,618</td>
<td>4,702</td>
<td>4,790</td>
<td>4,881</td>
</tr>
<tr>
<td>Demand Totals</td>
<td>3,019</td>
<td>2,644</td>
<td>2,737</td>
<td>2,835</td>
<td>2,936</td>
</tr>
<tr>
<td>Difference</td>
<td>53</td>
<td>1,945</td>
<td>1,955</td>
<td>1,945</td>
<td></td>
</tr>
<tr>
<td>Difference as % of Supply</td>
<td>2</td>
<td>43</td>
<td>42</td>
<td>41</td>
<td>40</td>
</tr>
<tr>
<td>Difference as % of Demand</td>
<td>2</td>
<td>75</td>
<td>72</td>
<td>69</td>
<td>66</td>
</tr>
</tbody>
</table>

Notes: "Guidebook Table X" refers to a specific table in the "Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan" by DWR.
1. 2020-2035 supplies assume that the Water Supply Enhancement Project is completed.
2. City wide demand totals include conservation based on water use targets. Refer to Table 17 in this report.
Chapter 6

DEMAND MANAGEMENT MEASURES

This chapter presents an analysis of the demand management measures (DMMs) contained in the Urban Water Management Planning Act (UWMPA), as well as the City of Shasta Lake (City) existing efforts to further develop their water conservation program; see excerpt below.

10631 (f)(1) and (2) Describe and provide a schedule of implementation for each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.; (B) Residential plumbing retrofit.; (C) System water audits, leak detection, and repair.; (D) Metering with commodity rates for all new connections and retrofit of existing connections.; (E) Large landscape conservation programs and incentives.; (F) High-efficiency washing machine rebate programs.; (G) Public information programs.; (H) School education programs.; (I) Conservation programs for commercial, industrial, and institutional accounts.; (J) Wholesale agency programs.; (K) Conservation pricing.; (L) Water conservation coordinator.; (M) Water waste prohibitions.; and (N) Residential ultra-low-flush toilet replacement programs.

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

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

10631 (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; and (4) Include a description of the water supplier’s legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

6.1 INTRODUCTION

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). Table 39 shows the relationship of the CUWCC’s BMPs and the UWMPA DMMs.

<table>
<thead>
<tr>
<th>UWMPA - DMM</th>
<th>CUWCC – Category and BMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Water Survey Programs for Single Family and Multi-Family Residential Customers</td>
<td>Programmatic: Residential BMP 3.1 Residential Assistance Program BMP 3.2 Landscape Water Survey</td>
</tr>
<tr>
<td>B Residential Plumbing Retrofit</td>
<td>Programmatic: Residential BMP 3.1 Residential Assistance Program</td>
</tr>
<tr>
<td>C System Water Audits, Leak Detection and Repair</td>
<td>Foundational: Utility Operations – Water Loss Control BMP 1.2 Water Loss Control</td>
</tr>
<tr>
<td>D Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections</td>
<td>Foundational: Utility Operations – Metering BMP 1.3 Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections</td>
</tr>
<tr>
<td>E Large Landscape Conservation Programs and Incentives</td>
<td>Programmatic: Landscape BMP 5 Landscape</td>
</tr>
<tr>
<td>F High Efficiency - Washing Machine Rebate Program</td>
<td>Programmatic: Residential BMP 3.3 High Efficiency - Washing Machine Financial Incentive Program</td>
</tr>
<tr>
<td>G Public Information Programs</td>
<td>Foundational: Education – Public Information Programs BMP 2.1 Public Information Programs</td>
</tr>
<tr>
<td>H School Education Programs</td>
<td>Foundational: Education – School Education Programs BMP 2.2 School Education Programs</td>
</tr>
<tr>
<td>I Conservation Programs for Commercial, Industrial, and Institutional Accounts</td>
<td>Programmatic: Commercial, Industrial, and Institutional BMP 4 Commercial, Industrial, and Institutional</td>
</tr>
<tr>
<td>J Wholesale Agency Programs</td>
<td>Foundational: Utility Operations – Operations BMP 1.1.3 Wholesale Agency Assistance Programs</td>
</tr>
<tr>
<td>K Conservation Pricing</td>
<td>Foundational: Utility Operations – Pricing BMP 1.4 Retail Conservation Pricing</td>
</tr>
<tr>
<td>L Water Conservation Coordinator</td>
<td>Foundational: Utility Operations – Operations BMP 1.1.1 Conservation Coordinator</td>
</tr>
<tr>
<td>N Residential Ultra-Low Flush Toilet Replacement Program</td>
<td>Programmatic: Residential BMP 3.4 WaterSense Specification (WSS) Toilets</td>
</tr>
</tbody>
</table>
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 2013 and AB 1420 Self-Certification Statements are contained in Appendix I.

The City is committed to water conservation and has implemented several policies and ongoing 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.

6.2 DMM 1: WATER SURVEY PROGRAMS FOR SINGLE-FAMILY AND MULTI-FAMILY RESIDENTIAL CUSTOMERS

This program consists of offering water audits to single-family (SFR) and multi-family (MFR) residential customers. Audits include reviewing water usage history with the customer, instructing the customer in meter reading, identifying leaks inside and outside the home, and recommending improvements. Residents are generally provided with recommendations for improvements, plumbing retrofit kits, and water conservation literature. In addition to the items typically included in water audits, the City will develop an irrigation schedule for the customer and provide flappers, washers, showerheads, and dye tablets to customer as needed. The availability of these services and materials is advertised on the City website and notices are placed in the utility bills.

The City annually collects information on the number of SFR and MFR accounts in the service area, the number of SFR and MFR accounts offered 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 best way to evaluate the effectiveness of implemented water surveys is periodic review of water use for customers that have received surveys. The water usage for customers that have completed the audit process will 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.

6.3 DMM 2: RESIDENTIAL PLUMBING RETROFIT

This DMM involves enforcement of plumbing fixture efficiency standards and encourages programs to retrofit existing inefficient fixtures with newer reduced flow fixtures. This retrofit program focuses on plumbing installed prior to 1992, in part due to the passage of the Federal Energy Policy Act of 1992, which restricted all newly manufactured faucets and showerheads to a flow of 2.5 gallons per minutes (DWR, August 1994).
The CUWCC estimates that a low-flow showerhead retrofit will save approximately 2.9 gallons per capita per day (gpcd) on post-1980 constructed homes and 7.2 gpcd on pre-1980 constructed homes. The average savings for a toilet retrofit is 1.3 gpcd on pre-1980 constructed homes only.

The City 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 Counter 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 2014, the City distributed 100 indoor conservation kits and 100 outdoor conservation kits and recently ordered an additional 100 of each kit.

The effectiveness of this DMM is based upon the percentage of customers that install low-flow fixtures. The goal is to collect data on the number of non-retrofitted pre-1992 SFR and MFR in the service area and the number of retrofit kits distributed and installed. To improve the effectiveness of this measure the City should notify/distribute retrofit kits to SFR and MFR customers in pre-1992 residences until 75 percent of SFR and MFR are retrofitted.

6.4 DMM 3: SYSTEM WATER AUDITS, LEAK DETECTION, AND REPAIR

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.

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. The replacement scope, schedule, and financing of aging distribution components will be evaluated in the Water Master Plan scheduled to be updated in 2015.

The best way to evaluate the effectiveness of this program is to compare water production data at the water treatment plant 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.

6.5 DMM 4: METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS

Assembly Bill No. 514 (AB 514) became law in 2003 and promulgated that all Central Valley Project (CVP) municipal contractors are required to install water meters on all residential and commercial services constructed prior to 1992. This bill was enacted in order to prevent the loss of water supplies by CVP municipal contractors, which fail to comply with federal water metering requirements. AB 514 applies to all municipal water suppliers that receive CVP water. In order to comply with AB 514, the City is required to:

- Install water meters on all service connections to residential and commercial buildings constructed prior to January 1992, no later than January 1, 2013.
- Begin charging customers for water based on actual volume used, commencing no later than March 1, 2013.

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.

All of the City customers are metered and are billed volumetrically. The best way to evaluate the effectiveness of metering is periodic review of customer water use.

6.6 DMM 5: LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES

Water demand by large landscape water users can be managed by providing water audits and incentives for water conservation. The first consideration of this measure begins with identifying large irrigators and their water use, followed by development of a program for regular auditing (at least one every five years), with provisions that include water conservation training and information, with financial incentives.

Currently the City has several customers with dedicated irrigation meters. A water use budget has not been developed for these customers. The City plans to establish a separate billing code for tracking purposes for all separate irrigation meters to ensure appropriate monitoring in the future. This will include auditing and preparing water budgets for these customers based on landscaped area.
The City could conduct a feasibility study to assess the benefits and costs of installing dedicated landscape meters for all Commercial, Institutional, and Industrial (CII) accounts and develop an implementation program if appropriate.


6.7 DMM 6: HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS

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.

6.8 DMM 7: PUBLIC INFORMATION PROGRAMS

Public information programs for water demand management includes coordination with other agencies and provision of programs promoting water conservation, speakers for the media or community groups, public service announcements, water conservation bill inserts, and daily water use comparisons on customer’s bills.

The City has an ongoing public information program. The budget for the program in 2012 and 2013 was $6,000. The budget for 2014 and 2015 is $8,000 each year. The activities include:

1. Providing flyers/brochures to customers
2. Including bill inserts/messaging promoting water conservation
3. Providing water conservation information/tips on the City website and at City Hall
4. Conducting a “Water Awareness Week”
5. Providing tours of the Water and Wastewater Treatment Plants

In addition to the City's efforts, the US Bureau of Reclamation (USBR) performs public outreach on water conservation.
The effectiveness of this program is determined by the amount of information available to the community. The City will track the number of brochures distributed, special events attended, and other activities pursued to promote water conservation. Records of customer responses and any commentary regarding the information provided will be maintained and reviewed by the City.

6.9 DMM 8: SCHOOL EDUCATION PROGRAMS

Components of this DMM include provision of education materials, instructional assistance, and classroom presentations. The City does not have an active school education program but plans to implement a program over the next five years if budgetary and workload constraints allow. The City is actively pursuing grant funding to purchase educational materials. The City has, when requested, provided speakers and educational materials to the local schools regarding water conservation.

Similar to a public information program, a school education program can also be one of the best tools to conserve water. The AWWA and the Water Education Foundation (WEF) provide educational material for youth to explain the water cycle and pollution, and to promote water conservation, including videos, bookmarks, games, and water experiments. The City could improve its school education program by notifying schools of the materials available from AWWA and WEF. The Water Conservation Coordinator, discussed in DMM 12, could enhance the program by meeting with school principals and educators to promote classroom presentations. The effectiveness of this program is determined by the number of students and schools that participate.

6.10 DMM 9: CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS

Implementation of water conservation for CII customers includes identifying the largest water users among CII customers; offering audits and incentives sufficient to conserve water; and providing follow-up audits as needed.

At this time, all CII customers are metered and charged for water usage in accordance with their metered use. The City provides water audits and water conservation information to their metered customers upon request.

The best way to determine the effectiveness of this DMM is to monitor the actual water use. The City should monitor the water use of the CII customers, and assess demand characteristics and water use patterns. Historic data can be compared to current average annual water use for each account type.

The City could consider characterizing all CII accounts to verify standard industrial classification (SIC) codes, to aid in efficiently targeting suitable water conservation programs to customers.
6.11 DMM 10: WHOLESALE AGENCY PROGRAMS

This DMM applies to wholesale agencies only and therefore is not applicable to the City.

6.12 DMM 11: 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. The City has an increasing-tier water and sewer rate schedule.

6.13 DMM 12: WATER CONSERVATION COORDINATOR

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 City has a designated water conservation coordinator (Tony Thomasy) that supervises BMP implementation, evaluates effectiveness and communicates program goals to the community. The effectiveness of this DMM is determined by the work performed by the Water Conservation Coordinator.

6.14 DMM 13: WATER WASTE PROHIBITIONS

This DMM involves adoption of an ordinance prohibiting water waste. City Council Ordinance CC 14-236 (Appendix H) provides a mechanism which the City can use to enforce water conservation measures and declare a water shortage emergency. The Ordinance establishes a five-stage rationing plan based on the City’s available water supply.

The City adopted a Water Conservation Plan (2000) that incorporated the City’s 1994 Water Shortage Contingency Plan. The Contingency Plan includes a four-stage drought management plan that includes voluntary actions and mandatory prohibitions depending on the USBR allocation reduction. A copy of the 2000 Water Conservation Plan and the 1994 Water Shortage Contingency Plan are included in Appendix G. The City’s water shortage contingency plan and municipal code will be updated in the near future (refer to Section 5.3).

The effectiveness of this DMM can be determined by a decrease in violators. The number of citations and violations should be reported annually. If an area is determined to have excessive violations, the City should implement a specific public outreach program informing the public.
6.15 DMM 14: RESIDENTIAL ULTRA-LOW FLUSH TOILET REPLACEMENT PROGRAMS

This DMM involves implementation of programs for replacing existing high-water-using toilets with ultra-low flush (1.28 gallons or less) toilets in SFR and MFR. The City does not currently have a replacement program or a retrofit on resale ordinance.

The City’s Building Code has adopted the California Plumbing Code, which requires that all new residential construction and major remodels or renovations of existing homes install low flow fixtures, including low flow toilets. The City will investigate the possibility of adopting a retrofit at time of resale ordinance.
The potential water supply and demand effects related to climate change have not been included in this Urban Water Management Plan.
A completed Urban Water Management Plan checklist is attached.
<table>
<thead>
<tr>
<th>No.</th>
<th>UWMP requirement</th>
<th>Calif. Water Code reference</th>
<th>Additional clarification</th>
<th>UWMP location</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>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.</td>
<td>10620(d)(2)</td>
<td>Chapter 1 Section 1.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Notify, at least 60 days prior to the public hearing on the plan required by Section 10642, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Any city or county receiving the notice may be consulted and provide comments.</td>
<td>10621(b)</td>
<td>Chapter 1 Section 1.3 Appendix A</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Provide supporting documentation that the UWMP or any amendments to, or changes in, have been adopted as described in Section 10640 et seq.</td>
<td>10621(c)</td>
<td>Appendix B</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Provide supporting documentation that the urban water management plan has been or will be provided to any city or county within which it provides water, no later than 60 days after the submission of this urban water management plan.</td>
<td>10635(b)</td>
<td>Chapter 1 Section 1.3</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>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.</td>
<td>10642</td>
<td>Chapter 1 Section 1.3 Appendix A</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Provide supporting documentation that the urban water supplier made the plan available for public inspection and held a public hearing about the plan. For public agencies, the hearing notice is to be provided pursuant to Section 6066 of the Government Code. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. Privately-owned water suppliers shall provide an equivalent notice within its service area.</td>
<td>10642</td>
<td>Appendix A</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>Provide supporting documentation that the plan has been adopted as prepared or modified.</td>
<td>10642</td>
<td>Appendix B</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Provide supporting documentation as to how the water supplier plans to implement its plan.</td>
<td>10643</td>
<td>Chapter 1 Chapter 3 Chapter 6</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>UWMP requirement *</td>
<td>Calif. Water Code reference</td>
<td>Additional clarification</td>
<td>UWMP location</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>--------------------------</td>
<td>---------------</td>
</tr>
</tbody>
</table>
| 59  | Provide supporting documentation that, in addition to submittal to DWR, the urban water supplier has submitted this UWMP to the California State Library and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. This also includes amendments or changes. | 10644(a) | Chapter 1  
Section 1.3 | |
| 60  | Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the urban water supplier has or will make the plan available for public review during normal business hours | 10645 | Chapter 1  
Section 1.3 | |

**SYSTEM DESCRIPTION**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Calif. Water Code reference</th>
<th>Additional clarification</th>
<th>UWMP location</th>
</tr>
</thead>
</table>
| 8   | Describe the water supplier service area. | 10631(a) | Chapter 2  
Section 2.1  
Figures 1 | |
| 9   | Describe the climate and other demographic factors of the service area of the supplier | 10631(a) | Chapter 2  
Section 2.1 and 2.2 | |
| 10  | Indicate the current population of the service area | 10631(a) | Chapter 2  
Section 2.2  
Figure 2  
Table 3 | |
| 11  | Provide population projections for 2015, 2020, 2025, and 2030, based on data from State, regional, or local service area population projections. | 10631(a) | Chapter 2  
Section 2.2  
Figure 2  
Table 3 | |
| 12  | Describe other demographic factors affecting the supplier’s water management planning. | 10631(a) | Chapter 2  
Section 2.2 | |

**SYSTEM DEMANDS**

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Calif. Water Code reference</th>
<th>Additional clarification</th>
<th>UWMP location</th>
</tr>
</thead>
</table>
| 1   | Provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data. | 10608.20(e) | Chapter 3  
Section 3.1 | |
| 2   | **Wholesalers:** Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. **Retailers:** Conduct at least one public hearing that includes general discussion of the urban retail water supplier’s implementation plan for complying with the Water Conservation Bill of 2009. | 10608.36  
10608.26(a) | Not Applicable | |
<p>| 3   | Report progress in meeting urban water use targets using the standardized form. | 10608.40 | Not Applicable Until 2015 | |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>UWMP requirement</th>
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<th>Additional clarification</th>
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</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>Quantify past, current, and projected water use, identifying the uses among water use sectors, for the following: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, conjunctive use, and (I) agriculture.</td>
<td>10631(e)(1)</td>
<td>Consider ‘past’ to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030.</td>
<td>Chapter 3 Section 3.2 Tables 8-14</td>
</tr>
<tr>
<td>33</td>
<td>Provide documentation that either the retail agency provided the wholesale agency with water use projections for at least 20 years, if the UWMP agency is a retail agency, OR, if a wholesale agency, it provided its urban retail customers with future planned and existing water source available to it from the wholesale agency during the required water-year types.</td>
<td>10631(k)</td>
<td></td>
<td>Table 19 [To be included in Appendix A]</td>
</tr>
<tr>
<td>34</td>
<td>Include projected water use for single-family and multifamily residential housing needed for lower income households, as identified in the housing element of any city, county, or city and county in the service area of the supplier.</td>
<td>10631.1(a)</td>
<td></td>
<td>Chapter 3 Section 3.2</td>
</tr>
</tbody>
</table>

**SYSTEM SUPPLIES**

<table>
<thead>
<tr>
<th>No.</th>
<th>UWMP requirement</th>
<th>Calif. Water Code reference</th>
<th>Additional clarification</th>
<th>UWMP location</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, and 2030.</td>
<td>10631(b)</td>
<td></td>
<td>Chapter 4 Section 4.1</td>
</tr>
<tr>
<td>14</td>
<td>Indicate whether groundwater is an existing or planned source of water available to the supplier. If yes, then complete 15 through 21 of the UWMP Checklist. If no, then indicate “not applicable” in lines 15 through 21 under the UWMP location column.</td>
<td>10631(b)</td>
<td></td>
<td>Chapter 4 Section 4.2</td>
</tr>
<tr>
<td>15</td>
<td>Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.</td>
<td>10631(b)(1)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>16</td>
<td>Describe the groundwater basin.</td>
<td>10631(b)(2)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>17</td>
<td>Indicate whether the groundwater basin is adjudicated? Include a copy of the court order or decree.</td>
<td>10631(b)(2)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>18</td>
<td>Describe the amount of groundwater the urban water supplier has the legal right to pump under the order or decree. If the basin is not adjudicated, indicate “not applicable” in the UWMP location column.</td>
<td>10631(b)(2)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>No.</td>
<td>UWMP requirement *</td>
<td>Calif. Water Code reference</td>
<td>Additional clarification</td>
<td>UWMP location</td>
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<tr>
<td>19</td>
<td>For groundwater basins that are not adjudicated, provide information as to whether DWR has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition. If the basin is adjudicated, indicate “not applicable” in the UWMP location column.</td>
<td>10631(b)(2)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>20</td>
<td>Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years</td>
<td>10631(b)(3)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>21</td>
<td>Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.</td>
<td>10631(b)(4)</td>
<td></td>
<td>Not Applicable</td>
</tr>
<tr>
<td>24</td>
<td>Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.</td>
<td>10631(d)</td>
<td></td>
<td>Chapter 4 Section 4.3</td>
</tr>
<tr>
<td>30</td>
<td>Include a detailed description of all water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years, excluding demand management programs addressed in (f)(1). Include specific projects, describe water supply impacts, and provide a timeline for each project.</td>
<td>10631(h)</td>
<td></td>
<td>Chapter 4 Section 4.6</td>
</tr>
<tr>
<td>31</td>
<td>Describe desalinated water project opportunities for long-term supply, including, but not limited to, ocean water, brackish water, and groundwater.</td>
<td>10631(i)</td>
<td></td>
<td>Chapter 4 Section 4.4</td>
</tr>
<tr>
<td>44</td>
<td>Provide information on recycled water and its potential for use as a water source in the service area of the urban water supplier. Coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.</td>
<td>10633</td>
<td></td>
<td>Chapter 4 Section 4.5</td>
</tr>
<tr>
<td>45</td>
<td>Describe the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.</td>
<td>10633(a)</td>
<td></td>
<td>Chapter 4 Section 4.5</td>
</tr>
<tr>
<td>46</td>
<td>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.</td>
<td>10633(b)</td>
<td></td>
<td>Chapter 4 Section 4.5</td>
</tr>
<tr>
<td>47</td>
<td>Describe the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.</td>
<td>10633(c)</td>
<td></td>
<td>Chapter 4 Section 4.5</td>
</tr>
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<td>No.</td>
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<tr>
<td>48</td>
<td>Describe and quantify the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.</td>
<td>10633(d)</td>
<td>Chapter 4</td>
<td>Section 4.5</td>
</tr>
<tr>
<td>49</td>
<td>The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.</td>
<td>10633(e)</td>
<td>Chapter 4</td>
<td>Section 4.5</td>
</tr>
<tr>
<td>50</td>
<td>Describe the actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.</td>
<td>10633(f)</td>
<td>Chapter 4</td>
<td>Section 4.5</td>
</tr>
<tr>
<td>51</td>
<td>Provide a plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.</td>
<td>10633(g)</td>
<td>Chapter 4</td>
<td>Section 4.5</td>
</tr>
</tbody>
</table>

**WATER SHORTAGE RELIABILITY AND WATER SHORTAGE CONTINGENCY PLANNING**

<table>
<thead>
<tr>
<th>No.</th>
<th>UWMP requirement</th>
<th>Calif. Water Code reference</th>
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</thead>
<tbody>
<tr>
<td>5</td>
<td>Describe water management tools and options to maximize resources and minimize the need to import water from other regions.</td>
<td>10620(f)</td>
<td>Chapter 5</td>
<td>Sections 5.3 &amp; 5.4, Chapter 6</td>
</tr>
<tr>
<td>22</td>
<td>Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage and provide data for (A) an average water year, (B) a single dry water year, and (C) multiple dry water years.</td>
<td>10631(c)(1)</td>
<td>Chapter 5</td>
<td>Section 5.1</td>
</tr>
<tr>
<td>23</td>
<td>For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.</td>
<td>10631(c)(2)</td>
<td>Chapter 5</td>
<td>Section 5.1</td>
</tr>
<tr>
<td>35</td>
<td>Provide an urban water shortage contingency analysis that specifies stages of action, including up to a 50-percent water supply reduction, and an outline of specific water supply conditions at each stage.</td>
<td>10632(a)</td>
<td>Chapter 5</td>
<td>Section 5.3</td>
</tr>
<tr>
<td>36</td>
<td>Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.</td>
<td>10632(b)</td>
<td>Chapter 5</td>
<td>Section 5.4</td>
</tr>
<tr>
<td>No.</td>
<td>UWMP requirement</td>
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<tr>
<td>37</td>
<td>Identify actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.</td>
<td>10632(c)</td>
<td>Chapter 5 Section 5.3 Appendix F</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Identify additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.</td>
<td>10632(d)</td>
<td>Chapter 5 Section 5.3 Appendix H</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Specify consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.</td>
<td>10632(e)</td>
<td>Chapter 5 Section 5.3 Appendix H</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Indicated penalties or charges for excessive use, where applicable.</td>
<td>10632(f)</td>
<td>Chapter 5 Section 5.3</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Provide an analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.</td>
<td>10632(g)</td>
<td>Chapter 5 Section 5.3</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Provide a draft water shortage contingency resolution or ordinance.</td>
<td>10632(h)</td>
<td>Chapter 5 Section 5.3 Appendix H</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Indicate a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.</td>
<td>10632(i)</td>
<td>Chapter 5 Section 5.3</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Provide information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments, and the manner in which water quality affects water management strategies and supply reliability</td>
<td>10634</td>
<td>Chapter 5 Section 5.2</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>UWMP requirement</td>
<td>Calif. Water Code reference</td>
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</tr>
<tr>
<td>53</td>
<td>Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. Base the assessment on the information compiled under Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.</td>
<td>10635(a)</td>
<td>Chapter 5 Section 5.4</td>
<td></td>
</tr>
</tbody>
</table>

**DEMAND MANAGEMENT MEASURES**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Calif. Water Code reference</th>
<th>Additional clarification</th>
<th>UWMP location</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Describe how each water demand management measure is being implemented or scheduled for implementation. Use the list provided.</td>
<td>10631(f)(1)</td>
<td>Chapter 6</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Describe the methods the supplier uses to evaluate the effectiveness of DMMs implemented or described in the UWMP.</td>
<td>10631(f)(3)</td>
<td>Chapter 6</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Provide an estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the ability to further reduce demand.</td>
<td>10631(f)(4)</td>
<td>Chapter 6</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Evaluate each water demand management measure that is not currently being implemented or scheduled for implementation. The evaluation should include economic and non-economic factors, cost-benefit analysis, available funding, and the water suppliers' legal authority to implement the work.</td>
<td>10631(g)</td>
<td>Chapter 6</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Include the annual reports submitted to meet the Section 6.2 requirements, if a member of the CUWCC and signer of the December 10, 2008 MOU.</td>
<td>10631(j)</td>
<td>Appendix I</td>
<td></td>
</tr>
</tbody>
</table>
OUTREACH DOCUMENTATION FOR PLAN PREPARATION
June 10, 2014

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

RE: Notice of Preparation of the City of Shasta Lake Urban Water Management Plan Update

Dear Eric:

As you are aware, California Water Code Division 6, Part 2.6, Section 10621(b) (Urban Water Management Planning), requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP). The City of Shasta Lake is in the process of updating its UWMP, which will document the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

Pursuant to Water Code Section 10621, the City is providing you with a 60-day notice prior to the public hearing on the UWMP update. We anticipate the draft UWMP will be available in July 2014, at which time your agency will receive additional notice of its availability.

If your agency would like to submit written comments or provide input to the City regarding our UWMP update, please submit comments to my attention at the address above or cthompson@cityofshastalake.org.

Please feel free to contact me at 275.7460 if you have any questions.

Sincerely,

Carla L. Thompson, AICP  
Development Services Director
June 10, 2014

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

RE: Notice of Preparation of the City of Shasta Lake Urban Water Management Plan Update

Dear David:

As you are aware, California Water Code Division 6, Part 2.6, Section 10621(b) (Urban Water Management Planning), requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP). The City of Shasta Lake is in the process of updating its UWMP, which will document the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

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If your agency would like to submit written comments or provide input to the City regarding our UWMP update, please submit comments to my attention at the address above or cthompson@cityofshastalake.org.

Please feel free to contact me at 275.7460 if you have any questions.

Sincerely,

Carla L. Thompson, AICP
Development Services Director
June 10, 2014

Brian Person  
U.S. Bureau of Reclamation  
16349 Shasta Dam Blvd.  
Shasta Lake, CA 96019-8400

RE: Notice of Preparation of the City of Shasta Lake Urban Water Management Plan Update

Dear Brian:

As you are aware, California Water Code Division 6, Part 2.6, Section 10621(b) (Urban Water Management Planning), requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP). The City of Shasta Lake is in the process of updating its UWMP, which will document the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

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If your agency would like to submit written comments or provide input to the City regarding our UWMP update, please submit comments to my attention at the address above or cthompson@cityofshastalake.org.

Please feel free to contact me at 275.7460 if you have any questions.

Sincerely,

Carla L. Thompson, AICP  
Development Services Director
June 10, 2014

Brian Crane
City of Redding
777 Cypress Ave.
Redding, CA 96001

RE: Notice of Preparation of the City of Shasta Lake Urban Water Management Plan Update

Dear Brian:

As you are aware, California Water Code Division 6, Part 2.6, Section 10621(b) (Urban Water Management Planning), requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP). The City of Shasta Lake is in the process of updating its UWMP, which will document the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

Pursuant to Water Code Section 10621, the City is providing you with a 60-day notice prior to the public hearing on the UWMP update. We anticipate the draft UWMP will be available in July 2014, at which time your agency will receive additional notice of its availability.

If your agency would like to submit written comments or provide input to the City regarding our UWMP update, please submit comments to my attention at the address above or cthompson@cityofshastalake.org.

Please feel free to contact me at 275.7460 if you have any questions.

Sincerely,

Carla L. Thompson, AICP
Development Services Director
June 10, 2014

Stan Wangberg  
Anderson-Cottonwood Irrigation District  
2610 Silver Street  
Anderson, CA  96007

RE: Notice of Preparation of the City of Shasta Lake Urban Water Management Plan Update

Dear Stan:

As you are aware, California Water Code Division 6, Part 2.6, Section 10621(b) (Urban Water Management Planning), requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP). The City of Shasta Lake is in the process of updating its UWMP, which will document the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

Pursuant to Water Code Section 10621, the City is providing you with a 60-day notice prior to the public hearing on the UWMP update. We anticipate the draft UWMP will be available in July 2014, at which time your agency will receive additional notice of its availability.

If your agency would like to submit written comments or provide input to the City regarding our UWMP update, please submit comments to my attention at the address above or cthompson@cityofshastalake.org.

Please feel free to contact me at 275.7460 if you have any questions.

Sincerely,

Carla L. Thompson, AICP  
Development Services Director
June 10, 2014

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

RE: Notice of Preparation of the City of Shasta Lake Urban Water Management Plan Update

Dear Pat:

As you are aware, California Water Code Division 6, Part 2.6, Section 10621(b) (Urban Water Management Planning), requires each urban water supplier to prepare and adopt an Urban Water Management Plan (UWMP). The City of Shasta Lake is in the process of updating its UWMP, which will document the City’s plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

Pursuant to Water Code Section 10621, the City is providing you with a 60-day notice prior to the public hearing on the UWMP update. We anticipate the draft UWMP will be available in July 2014, at which time your agency will receive additional notice of its availability.

If your agency would like to submit written comments or provide input to the City regarding our UWMP update, please submit comments to my attention at the address above or cthompson@cityofshastalake.org.

Please feel free to contact me at 275.7460 if you have any questions.

Sincerely,

Carla L. Thompson, AICP
Development Services Director
In the Superior Court of the State of California
in and for the County of Shasta

CERTIFICATE OF PUBLICATION

RECORD SEARCHLIGHT

SHASTA LAKE CITY
PO BOX 777
SHASTA LAKE CA 96019

REFERENCE: 00600080 CARLA THOMPSON
6801103 NOTICE OF PUBLIC HEARING

State of California
County of Shasta

I hereby certify that the Record Searchlight is a newspaper of general circulation within the provisions of the Government Code of the State of California, printed and published in the City of Redding, County of Shasta, State of California; that I am the principal clerk of the printer of said newspaper; that the notice of which the annexed clipping is a true printed copy was published in said newspaper on the following dates, to wit:

PUBLISHED ON: 07/29 08/05

FILED ON: 07/29/14

I certify under penalty of perjury that the foregoing is true and correct, at Redding, California on the above date.

RECORD SEARCHLIGHT
1101 Twin View Blvd, Redding, CA 96003

NOTICE OF PUBLIC HEARING BY THE CITY COUNCIL OF THE CITY OF SHASTA LAKE

NOTICE IS HEREBY GIVEN that the City Council of the City of Shasta Lake, State of California will conduct a public hearing on Tuesday, August 5, 2014, at the service center at 1:00 P.M., and as soon thereafter as possible, at the Shasta Lake City Council Chambers, 1666 Stanton Drive, Redding, California, regarding the following:

City of Shasta Lake 2010 Urban Water Management Plan (UWMP):

California Water Code Sections 10610 through 10656 requires urban water suppliers within the state to prepare and adopt UWMPs for submission to the California Department of Water Resources (DWR). The UWMPs must satisfy the requirements of the Urban Water Management Planning Act of 1985, including amendments that have been made to the Act and other applicable regulations. The purpose of the UWMP is to maintain efficient use of urban water supplies, conserve 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.

AVAILABILITY OF PROJECT-RELATED DOCUMENTS:

Electronic copies of the Draft UWMP are available on the City’s website at www.cityofshastalaKE.org

PUBLIC COMMENT PERIOD: From the date of this Notice onward

PUBLIC COMMENTS: Oral and written testimony will be accepted at the public hearing. Written comments also may be submitted to the City prior to the public hearing.

Submit written comments to:

Carla L. Thompson, AICP
Development Services Director
PO Box 777 (Mail) 1666 Stanton Drive (in person)
Shasta Lake, CA 96019
E-mail: cthompson@cityofshastalaKE.org
Telephone: 530.275.7460

By

Carla L. Thompson, AICP
Development Services Director

July 29, August 5, 2014
NOTICE OF PUBLIC HEARING BY THE
CITY COUNCIL OF THE CITY OF SHASTA LAKE

NOTICE IS HEREBY GIVEN that the City Council of the City of Shasta Lake, State of California will conduct a public hearing on **Tuesday, August 19, 2014, with the session commencing at 6:00 P.M.** or as soon thereafter as possible, at the Shasta Lake City Council Chambers, 4488 Red Bluff Street, Shasta Lake, California, regarding the following:

City of Shasta Lake 2010 Urban Water Management Plan (UWMP)

California Water Code Sections 10610 through 10656 requires urban water suppliers within the state to prepare and adopt UWMPs for submittal to the California Department of Water Resources (DWR). The UWMPs must satisfy the requirements of the Urban Water Management Planning Act of 1983, including amendments that have been made to the Act and other applicable regulations. 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.

AVAILABILITY OF PROJECT-RELATED DOCUMENTS: The Draft 2010 Urban Water Management Plan and related documents are on file and available for review at:

CITY OF SHASTA LAKE PLANNING DIVISION
1650 Stanton Drive
Shasta Lake, CA  96019
Monday-Friday, 7:00 AM – 4:00 PM
(closed Noon-1:00 PM)

SHASTA LAKE GATEWAY LIBRARY
1646 Stanton Drive
Shasta Lake, CA  96019
Monday-Friday 1:00 PM – 5:00 PM
Saturday 11:00 AM – 3:00 PM

ELECTRONIC COPIES of the Draft UWMP are available on the City’s website at [www.cityofshastalake.org](http://www.cityofshastalake.org)

PUBLIC COMMENT PERIOD: Through the end of the Public Hearing on August 19, 2014

PUBLIC COMMENTS: Oral and written testimony will be accepted at the public hearing. Written comments also may be submitted to the City prior to the public hearing.

Submit written comments to:

Carla L. Thompson, AICP
Development Services Director,
P.O. Box 777 (Mail); 1650 Stanton Drive (In person)
Shasta Lake, CA  96019
E-mail: cthompson@cityofshastalake.org

Telephone: 530.275.7460

Carla L. Thompson, AICP
Development Services Director
RESOLUTION CC 14-61

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SHASTA LAKE ADOPTING THE 2010 URBAN WATER MANAGEMENT PLAN FOR THE CITY OF SHASTA LAKE.

WHEREAS, the California Urban Water Management Planning Act (UWMPA), California Water Code Sections 10610 – 10656, requires urban water suppliers to prepare and adopt an Urban Water Management Plan (UWMP) every five years; and

WHEREAS, the City of Shasta Lake is an urban water supplier under the definition of California Water Code Section 10617; and

WHEREAS, the City has prepared a 2010 Urban Water Management Plan and completed all required coordination and legal notices, including publication in the Record Searchlight on July 29 and August 5, 2014, pursuant to Government Code Section 6066, posting on the City’s website, and posting at six public locations throughout the City; and

WHEREAS, on August 19, 2014, the City Council conducted a duly noticed public hearing to obtain public testimony.

NOW THEREFORE, BE IT RESOLVED, that the City Council of the City of Shasta Lake hereby:

1. Determines that adoption of the 2010 Urban Water Management Plan is exempt from the California Environmental Quality Act (CEQA) pursuant to California Water Code Section 10652.

2. Adopts the 2010 Urban Water Management Plan;

3. Directs staff to file the 2010 Urban Water Management Plan with the California Department of Water Resources and the California State Library within thirty (30) days;

4. Directs staff to make the 2010 Urban Water Management Plan available for public review within thirty (30) days after filing a copy with the California Department of Water Resources;

5. Directs staff to provide the 2010 Urban Water Management Plan to any city or county within which the District provides water supplies within sixty (60) days after filing a copy with the California Department of Water Resources;

PASSED, APPROVED, AND ADOPTED this 19th day of August 2014 by the following vote:

AYES: CHAPMAN-SIFERS, FARR, KERN, WATKINS, MORGAN
NOES: NONE
ABSENT: NONE

PAMELYN ANNE MORGAN, Mayor

ATTEST:

TONI M. COATES, CMC, City Clerk
United States Department of the Interior

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

IN REPLY REFER TO:
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 Bulterm, 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)
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  

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Exhibit A – Map of Contractor’s Service Area

Exhibit B – Rates and Charges
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. Ir-1515, originally entered with the United
States on August 12, 1948, by the Shasta Dam Public Utility District, and amendatory Contract
No. Ir-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
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

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

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

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

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 No. 4-07-20-W1134-LTR1

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

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.

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.
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:
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."

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."

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 No. 4-07-20-W1134-LTR1

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 transforee’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
566 water storage, or fish and wildlife resources; not lead to land conversion; and be delivered to
567 established cropland, wildlife refuges, groundwater basins or M&I use; (ii) occur within a single
568 Year; (iii) occur between a willing seller and a willing buyer; (iv) convey water through existing
569 facilities with no new construction or modifications to facilities and be between existing Project
570 Contractors and/or the Contractor and the United States, Department of the Interior; and (v)
571 comply with all applicable Federal, State, and local or tribal laws and requirements imposed for
572 protection of the environment and Indian Trust Assets, as defined under Federal law.
573
574 (d) For the purpose of determining whether Section 3405(a)(1)(M) of the
575 CVPIA applies to the Contractor as a transferor or transferee of Project Water, the Contracting
576 Officer acknowledges that the Contractor is within a county, watershed, or other area of origin,
577 as those terms are utilized under California law, of water that constitutes the natural flow of the
578 Sacramento River and its tributaries above the confluence of the American and Sacramento
579 Rivers.

APPLIC A TION OF PAYM E NTS AND ADJUSTM E NTS

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

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.
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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.
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.

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.

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.

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

(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.


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.
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

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)
EXHIBIT B

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

<table>
<thead>
<tr>
<th>COST OF SERVICE RATES:</th>
<th>M&amp;I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Rate</td>
<td>($ 2.33)</td>
</tr>
</tbody>
</table>

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 States 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.
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:
Brad L. Fuller, City Attorney

**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
SHASTA COUNTY WATER AGENCY  
Redding, California  

CONTRACT FOR PROJECT WATER  

This contract, made the 30th 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, Chairman
Board of Directors

CITY OF SHASTA LAKE

City Council

ATTEST:
CAROLYN TAYLOR
Clerk of the Board

By Deputy

APPROVED AS TO FORM
KAREN KEATING JAHNR
County Counsel

By Deputy
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
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-transfereee 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 superseded 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. Wagner

Its: Board President
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 superseded 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: [Signature]  
City Manager  
Date 1/31/06

MCM PROPERTIES INC.

By: [Signature]  
MCM Properties, Inc. by [Signature]  
Date 1/25/06

[Handwritten signatures]
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 10th 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: [Signature]

JOHN A. MANCASOLA,
Executive Vice-President

Date: 3.31.14

CONTRACTOR

By: [Signature]

JOHN DUCKETT,
City Manager

Date: 3.5.2014
EXHIBIT “A”

WATER SCHEDULE
THE MCCONNELL FOUNDATION/CITY OF SHASTA LAKE

WATER YEAR 2014-2015

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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.
8. **Notice.** Any Notice required to be given by the terms of 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 ___ day of ___, 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 17th 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 SHAISTA LAKE

By: Rod Lindsay, Mayor
City of Shasta Lake Wastewater Treatment Facility  
Future Reclaimed System Water Balance  
Technical Memorandum

Date: May 7th, 2014

Prepared by: Scott Buecker, P.E.

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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>
<thead>
<tr>
<th>Parameter and Units</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basin Length (ft)</td>
<td>72</td>
<td>78.5' total - 6.5' of baffle walls</td>
</tr>
<tr>
<td>Basin Width (ft)</td>
<td>95.67</td>
<td>(includes influent channel)</td>
</tr>
<tr>
<td>Minimum Operating Depth (ft)</td>
<td>3</td>
<td>745.00 minimum WSE - 742.00 finished floor elevation</td>
</tr>
<tr>
<td>Maximum Operating Depth (ft)</td>
<td>10</td>
<td>Maximum WSE of 752.00 - 742.00</td>
</tr>
<tr>
<td>Maximum Volume (gal)</td>
<td>515,240</td>
<td></td>
</tr>
<tr>
<td>Volume at Pump Shutoff (gal)</td>
<td>154,572</td>
<td>Assumed minimum WSE</td>
</tr>
<tr>
<td>Active Volume (gal)</td>
<td>360,668</td>
<td></td>
</tr>
</tbody>
</table>

**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
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.

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 caveat 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

<table>
<thead>
<tr>
<th>Reclamation Parameter</th>
<th>Knauf Fiberglass</th>
<th>Caltrans¹</th>
<th>Sierra Pacific Industries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Average (MG)</td>
<td>11.5</td>
<td>10.8</td>
<td>14.5</td>
<td>31.4</td>
</tr>
<tr>
<td>Maximum Month (MG)</td>
<td>3.1</td>
<td>3.4</td>
<td>6.0</td>
<td>12.5</td>
</tr>
<tr>
<td>Average Day Maximum Month (GPD)</td>
<td>103,333</td>
<td>113,333</td>
<td>200,000</td>
<td>416,667</td>
</tr>
<tr>
<td>Estimated Duration (hr)</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>N/A</td>
</tr>
<tr>
<td>Estimated Window</td>
<td>Overnight (8 pm to 6 am)</td>
<td>Overnight (8 pm to 6 am)</td>
<td>Operation Hours (6 a.m. to 5 p.m.)</td>
<td>N/A</td>
</tr>
</tbody>
</table>

¹Caltrans 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

<table>
<thead>
<tr>
<th>Utility Water Usage Point</th>
<th>Usage Rate (gpm)</th>
<th>Frequency of Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bar Screen Spray Water</td>
<td>10</td>
<td>Continuous</td>
</tr>
<tr>
<td>Washer/Compactor</td>
<td>10</td>
<td>Continuous</td>
</tr>
<tr>
<td>Aeration Basin Influent and Effluent Spray</td>
<td>20</td>
<td>Continuous</td>
</tr>
<tr>
<td>Secondary Clarifiers Scum Spray</td>
<td>15</td>
<td>Continuous</td>
</tr>
<tr>
<td>Secondary Scum Wetwell Spray</td>
<td>5</td>
<td>Continuous</td>
</tr>
<tr>
<td>Pump Seal Water</td>
<td>5</td>
<td>Continuous</td>
</tr>
<tr>
<td>Polymer Makeup Water (for Sludge Drying Beds)</td>
<td>10</td>
<td>Intermittent</td>
</tr>
<tr>
<td>Facility Washdown Water</td>
<td>15</td>
<td>Intermittent</td>
</tr>
<tr>
<td><strong>Total Continuous Usage:</strong></td>
<td><strong>60 gpm</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Peak Usage:</strong></td>
<td><strong>90 gpm</strong></td>
<td></td>
</tr>
</tbody>
</table>

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 recirculated 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/ft²), in order to be conservative for the reclaimed water demand analysis.
Table 4. Deep Bed Filtration Design Criteria

<table>
<thead>
<tr>
<th>Design Criteria</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Flow</td>
<td>mgd</td>
<td>1.8</td>
</tr>
<tr>
<td>Peak Flow</td>
<td>mgd</td>
<td>3.5</td>
</tr>
<tr>
<td>Number of Filter Cells</td>
<td>#</td>
<td>4</td>
</tr>
<tr>
<td>Total Active Filter Surface Area</td>
<td>ft²</td>
<td>660</td>
</tr>
<tr>
<td>Individual Filter Cell Surface Area</td>
<td>ft²</td>
<td>165</td>
</tr>
<tr>
<td>Individual Filter Dimensions (L)</td>
<td>ft</td>
<td>12</td>
</tr>
<tr>
<td>Individual Filter Dimensions (W)</td>
<td>ft</td>
<td>13.75</td>
</tr>
<tr>
<td>Avg Filter Loading Rate (all in service)</td>
<td>gpm/ft²</td>
<td>1.9</td>
</tr>
<tr>
<td>Avg Filter Loading Rate (one unit in BW)</td>
<td>gpm/ft²</td>
<td>2.5</td>
</tr>
<tr>
<td>Peak Filter Loading Rate (all in service)</td>
<td>gpm/ft²</td>
<td>3.7</td>
</tr>
<tr>
<td>Peak Filter Loading Rate (one unit in BW)</td>
<td>gpm/ft²</td>
<td>4.9</td>
</tr>
<tr>
<td>Minimum Filter Media Depth</td>
<td>ft</td>
<td>2.8</td>
</tr>
<tr>
<td>Maximum Filter Media Depth</td>
<td>ft</td>
<td>8</td>
</tr>
<tr>
<td>Empty Bed Contact Time at Peak</td>
<td>mins</td>
<td>16</td>
</tr>
<tr>
<td>Total Sidewall Depth</td>
<td>ft</td>
<td>22</td>
</tr>
<tr>
<td>Maximum Backwash Rate</td>
<td>gpm/ft²</td>
<td>20</td>
</tr>
<tr>
<td>Maximum Potential Backwash Rate</td>
<td>gpm</td>
<td>3,300</td>
</tr>
<tr>
<td>Backwash Duration (per Cell)</td>
<td>min</td>
<td>15</td>
</tr>
<tr>
<td>Backwash Volume Required per Cell</td>
<td>gallons</td>
<td>49,000</td>
</tr>
<tr>
<td>Maximum Daily Backwash Demand</td>
<td>gpd</td>
<td>198,000</td>
</tr>
</tbody>
</table>

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 Future “Worst-Case” Reclaimed Water Balance

<table>
<thead>
<tr>
<th>Hour</th>
<th>Wastewater Flow Factor</th>
<th>Wastewater Flowrate (gpm)</th>
<th>Reclamation Flowrate (gpm)</th>
<th>WWTF Utility Water Usage (gpm)</th>
<th>Filter Backwash Rate (gpm)</th>
<th>Total Demand (gpm)</th>
<th>Differential Flowrate (gpm)</th>
<th>Differential Volume (gal)</th>
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<td>189</td>
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<td>426</td>
<td>(65)</td>
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FIGURE 1. FUTURE CITY OF SHASTA LAKE RECLAMATION WATER BALANCE

**NOTES:**
1. Assumes all four filters backwashed in a single day
2. Individual filter cell backwash rate
3. Assumes one filter in backwash plus SPI demand
4. Assumes overnight overlap between all three reclaimed users
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
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
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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.
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*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.

<table>
<thead>
<tr>
<th>Project Milestone</th>
<th>Approximate Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td>4 months</td>
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<tr>
<td>Bid Advertisement</td>
<td>1 month</td>
</tr>
<tr>
<td>Award &amp; Contract Award</td>
<td>1 ½ months</td>
</tr>
<tr>
<td>Construction</td>
<td>9-12 months</td>
</tr>
<tr>
<td>Project closeout</td>
<td>1 month</td>
</tr>
</tbody>
</table>
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 accordace 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:

- 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.
City of Shasta Lake
2013 Water Quality Consumer Confidence Report
Public Water System Number 4510006

The City of Shasta Lake Utility is proud to report that it provided significantly higher quality water than required by the very stringent Federal and State Water Quality Standard during 2013. Water for the City of Shasta Lake originates from one surface water source known as Shasta Lake. For additional information or input concerning your drinking water, contact Tony Thomasy at (530) 275-7450 or email tthomasy@cityofshastalake.org

Este informe contiene informacion muy importante sobre su agua potable. Traduzcalo o hable con alguien que lo entienda bien.

Definitions of Some of the 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 technologically, and economically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Primary Drinking Water Standards (PDWS): MCLs for contaminants that affect health along with their monitoring and reporting requirements, and surface water treatment requirements.

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 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 Federal Environmental Protection Agency (USEPA).

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.

Regulatory Action Level (AL): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

ppb: parts per billion or micrograms per liter (ug/l), ppm: parts per million or milligrams per liter (mg/l), nd: non detectable at testing limit.

TDS: Total Dissolved Solids.

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. A source water assessment was conducted for the City of Shasta Lake's Raw 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 aquatic 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.

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, which 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 byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

General Information on Drinking Water

In order to ensure that tap water is safe to drink, the U.S. Environmental Protection Agency (USEPA) and the State Department of Public Health (Department) prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Department regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

All 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 at 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 individuals, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The USEPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.
WATER QUALITY CONTROL

Before the water reaches your tap, samples from the water distribution system and the water treatment plants are collected and tested in State-certified laboratories. The City of Shasta Lake Water Utility has a regular program of water analysis and system inspection which assures safe water for you and your family. Treatment process consists of chemical coagulation, flocculation, filtration and disinfection. Two State-certified water plant operators assure that water treatment operations provide excellent quality water three hundred sixty-five days a year.

MICROBIOLOGICAL WATER QUALITY

Testing for bacteriological contaminants in the distribution system is required by State regulations. This testing is done regularly to verify that the water system is free from coliform bacteria. The minimum number of tests required per month is twelve. In our distribution system, we obtain three water samples per week and test for coliform bacteria. The highest number of samples found to contain coliform bacteria during any one month was zero.

LEAD AND COPPER TESTING RESULTS

Lead & copper testing of water from individual taps in the distribution system is required by State regulations. The table below summarizes the most recent sampling for lead and copper. 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. 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/safewater/lead.

<table>
<thead>
<tr>
<th>Lead and Copper</th>
<th>Year Tested</th>
<th>Number of samples collected</th>
<th>Number of samples required</th>
<th>90th Percentile Result</th>
<th>Action Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead (ppb)</td>
<td>2013</td>
<td>30</td>
<td>30</td>
<td>ND</td>
<td>15</td>
</tr>
<tr>
<td>Copper (ppb)</td>
<td>2013</td>
<td>30</td>
<td>30</td>
<td>92</td>
<td>1300</td>
</tr>
</tbody>
</table>

CHEMICAL SAMPLING RESULTS SHOWING DETECTED CONTAMINANTS

The following tables list all detected chemicals in our water during the most recent sampling. Please note that not all sampling is required annually so in some cases our results are more than one year old. These values are expressed in ppm unless otherwise stated.

<table>
<thead>
<tr>
<th>Contaminants with Primary MCLs</th>
<th>Constituent</th>
<th>Year Tested</th>
<th>Level (or Average Detected)</th>
<th>Range of Detections</th>
<th>MCL</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Aluminum (ppb)</td>
<td>2012</td>
<td>73</td>
<td>1000</td>
<td>600</td>
<td>Erosion of natural deposits; residue from some surface water treatment processes</td>
</tr>
<tr>
<td></td>
<td>Chlorine</td>
<td>2013</td>
<td>2.0</td>
<td>.1 to 2.5</td>
<td>4.0</td>
<td>Disinfection required by regulation to be added to drinking water</td>
</tr>
<tr>
<td></td>
<td>Fluoride</td>
<td>2012</td>
<td>0.1</td>
<td>0.1 to 0.3</td>
<td>1</td>
<td>Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories</td>
</tr>
<tr>
<td></td>
<td>Total of Five Trihalomethanes (ppb) (Distribution system)</td>
<td>Quarterly 2013</td>
<td>22.2</td>
<td>19.8 to 27.5</td>
<td>80</td>
<td>By-product of drinking water disinfection</td>
</tr>
<tr>
<td></td>
<td>Total of Five Haloacetic Acids-HAA5 (ppb) (Distribution system)</td>
<td>Quarterly 2013</td>
<td>16.5</td>
<td>14.4 to 19.8</td>
<td>60</td>
<td>By-product of drinking water disinfection</td>
</tr>
</tbody>
</table>
Contaminants with Secondary MCLs

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Year Tested</th>
<th>Level Detected</th>
<th>Range of Detections</th>
<th>MCL</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chloride (ppm)</td>
<td>2012</td>
<td>2.1</td>
<td>N/A</td>
<td>500</td>
<td>Runoff/leaching from natural deposits; seawater influence</td>
</tr>
<tr>
<td>TDS (ppm)</td>
<td>2012</td>
<td>81</td>
<td>N/A</td>
<td>1000</td>
<td>Runoff/leaching from natural deposits</td>
</tr>
<tr>
<td>Turbidity (ntu)</td>
<td>2012</td>
<td>1.8</td>
<td>N/A</td>
<td>5</td>
<td>Soil runoff</td>
</tr>
<tr>
<td>Sulfate (ppm)</td>
<td>2012</td>
<td>3.5</td>
<td>N/A</td>
<td>500</td>
<td>Runoff/leaching from natural deposits; industrial wastes</td>
</tr>
<tr>
<td>Specific Conductance</td>
<td>2012</td>
<td>120</td>
<td>N/A</td>
<td>1600</td>
<td>Substances that form ions when in water; Seawater influence</td>
</tr>
</tbody>
</table>

**SAMPLING RESULTS FOR SODIUM, HARDNESS, AND GENERAL CHEMISTRY**

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Year Tested</th>
<th>Level Detected</th>
<th>MCL</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium (ppm)</td>
<td>2012</td>
<td>6.92</td>
<td>N/A</td>
<td>Generally found in ground and surface water</td>
</tr>
<tr>
<td>Hardness (ppm)</td>
<td>2012</td>
<td>50</td>
<td>N/A</td>
<td>Generally found in ground and surface water</td>
</tr>
<tr>
<td>Calcium (ppm)</td>
<td>2012</td>
<td>10.3</td>
<td>N/A</td>
<td>Naturally occurring dissolved mineral</td>
</tr>
<tr>
<td>Magnesium (ppm)</td>
<td>2012</td>
<td>4.94</td>
<td>N/A</td>
<td>Naturally occurring dissolved mineral</td>
</tr>
<tr>
<td>pH (std. units)</td>
<td>2012</td>
<td>7.9</td>
<td>N/A</td>
<td>pH of 6.5 to 8.5 is normal for drinking water</td>
</tr>
<tr>
<td>Alkalinity (ppm as CaCO3)</td>
<td>2012</td>
<td>57</td>
<td>N/A</td>
<td>Measures the buffering capacity of water</td>
</tr>
</tbody>
</table>

**SURFACE WATER TREATMENT COMPLIANCE INFORMATION**

Our filtration system must meet a performance standard of less than or equal to _0.2_ NTU in _95_ % of the measurements taken each month. The highest single turbidity measurement for the entire year was _1_ NTU. The lowest monthly percentage of turbidity samples meeting the performance standard was _99_ %. Turbidity is a measurement of the cloudiness of water and one NTU is equivalent to one unit of turbidity.

**VIOLATION INFORMATION:** NONE (no violation occurred).

**OTHER MEASURES TAKEN TO ENSURE SAFE DRINKING WATER**

A water main flushing program and cross connection control program are other measures taken to help assure safe drinking water. Water customers who receive this report are asked to share information with any tenant or water user on their premises. We think it is important for you, our customer, to have current and factual information about your water supply. The City of Shasta Lake Water Utility staff is available to answer your questions and provide further information to those who want it. You are welcome to call us at 275-7450 or 275-7400 or by email tthomasy@cityofshastalake.org.

Information that deals with decisions about our water system is announced during the City of Shasta Lake Council meetings. The City Council meets on the first and third Tuesday of every month at 7:00 P.M. at the Council Chambers, 4488 Red Bluff St., Shasta Lake, 96019. 530-275-7400.
City of Shasta Lake
Water System Emergency Response Plan

Prepared by:
The City of Shasta Lake Water Utility

Updated October 17, 2014
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP</td>
<td>action plan</td>
</tr>
<tr>
<td>ASDWA</td>
<td>Association of State Drinking Water Administrators</td>
</tr>
<tr>
<td>ATSDR</td>
<td>Agency for Toxic Substances and Disease Registry</td>
</tr>
<tr>
<td>AWWA</td>
<td>American Water Works Association</td>
</tr>
<tr>
<td>BC</td>
<td>Branch Chief</td>
</tr>
<tr>
<td>BSL</td>
<td>biosafety lab</td>
</tr>
<tr>
<td>BWO</td>
<td>Boil Water Order</td>
</tr>
<tr>
<td>CAMAL Net</td>
<td>California Mutual Aid Laboratory Network</td>
</tr>
<tr>
<td>CDC</td>
<td>Center for Disease Control</td>
</tr>
<tr>
<td>CDHS</td>
<td>California Department of Health Services</td>
</tr>
<tr>
<td>CDPH</td>
<td>California Department of Public Health</td>
</tr>
<tr>
<td>CST</td>
<td>Civilian Support Team</td>
</tr>
<tr>
<td>CWS</td>
<td>Community Water System</td>
</tr>
<tr>
<td>DDW</td>
<td>Division of Drinking Water (State Water Board)</td>
</tr>
<tr>
<td>DE</td>
<td>District Engineer</td>
</tr>
<tr>
<td>DHS</td>
<td>Department of Homeland Security</td>
</tr>
<tr>
<td>DWP</td>
<td>Drinking Water Program</td>
</tr>
<tr>
<td>EOC</td>
<td>Emergency Operations Center</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>ERP</td>
<td>Emergency Response Plan</td>
</tr>
<tr>
<td>EWQSK</td>
<td>Emergency Water Quality Sampling Kit</td>
</tr>
<tr>
<td>FBI</td>
<td>Federal Bureau of Investigation</td>
</tr>
<tr>
<td>FEMA</td>
<td>Federal Emergency Management Agency</td>
</tr>
<tr>
<td>GM</td>
<td>General Manager</td>
</tr>
<tr>
<td>GPCD</td>
<td>Gallons per Capita Day</td>
</tr>
<tr>
<td>GPM</td>
<td>gallons per minute</td>
</tr>
<tr>
<td>HAZMAT</td>
<td>hazardous materials</td>
</tr>
<tr>
<td>Acronym</td>
<td>Abbreviation</td>
</tr>
<tr>
<td>---------</td>
<td>--------------</td>
</tr>
<tr>
<td>HHS</td>
<td>Health and Human Services</td>
</tr>
<tr>
<td>ICS</td>
<td>Incident Command System</td>
</tr>
<tr>
<td>LD</td>
<td>Laboratory Director</td>
</tr>
<tr>
<td>LEPC</td>
<td>Local Emergency Planning Committees</td>
</tr>
<tr>
<td>LRN</td>
<td>Laboratory Response Network</td>
</tr>
<tr>
<td>MDL</td>
<td>Microbial Disease Laboratory</td>
</tr>
<tr>
<td>MSDS</td>
<td>Material Safety Data Sheet</td>
</tr>
<tr>
<td>MWDSC</td>
<td>Metropolitan Water District of Southern California</td>
</tr>
<tr>
<td>NRWA</td>
<td>National Rural Water Association</td>
</tr>
<tr>
<td>OES</td>
<td>Office of Emergency Services</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
</tr>
<tr>
<td>PIO</td>
<td>Public Information Officer</td>
</tr>
<tr>
<td>PWS</td>
<td>Public Water System</td>
</tr>
<tr>
<td>RE</td>
<td>Regional Engineer</td>
</tr>
<tr>
<td>RMP</td>
<td>Risk Management Plan</td>
</tr>
<tr>
<td>SCADA</td>
<td>Supervisory Control and Data Acquisition</td>
</tr>
<tr>
<td>SD</td>
<td>Security Director</td>
</tr>
<tr>
<td>SEMS</td>
<td>Standardized Emergency Management System</td>
</tr>
<tr>
<td>SRLB</td>
<td>Sanitation and Radiation Laboratories Branch</td>
</tr>
<tr>
<td>SWB</td>
<td>State Water Board</td>
</tr>
<tr>
<td>UWA</td>
<td>Unsafe Water Alert</td>
</tr>
<tr>
<td>UWMP</td>
<td>Urban Water Management Plan</td>
</tr>
<tr>
<td>VA</td>
<td>vulnerability assessment</td>
</tr>
<tr>
<td>WMD</td>
<td>Weapons of Mass Destruction</td>
</tr>
<tr>
<td>WTP</td>
<td>water treatment plant</td>
</tr>
<tr>
<td>WUERM</td>
<td>Water Utility Emergency Response Manager</td>
</tr>
<tr>
<td>WUOCM</td>
<td>Water Utility Emergency Operations Center Manager</td>
</tr>
</tbody>
</table>
1.0 Introduction

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

1.1 Purpose

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

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

1.2 Goals

The goals of this ERP are to:

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

1.3 Requirement

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

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

Effective July 1, 2014 administration of the Drinking Water Program (DWP) transferred from the California Department of Public Health (CDPH) to the State Water Board (SWB),
and a new Division of Drinking Water (DDW) within the SWB was created. With the transfer, the local Emergency Response Structure was moved to the SWB, and the DDW now maintains authority to issue emergency notifications.

The SWB and the CDPH are in the process of developing protocols governing how emergency notifications are relayed from the Office of Emergency Services (OES) to the rotating DWP Duty Officer to ensure the Program continues to coordinate with the CDPH Emergency Preparedness Office in cases of emergency that require a response from both offices. The DDW will become part of the Emergency Response Management Committee (ERMC) at Cal EPA.

Whenever the ERP is changed or updated, a revised copy, or the specific revised documents, will be sent to the State Water Resources Control Board (SWRCB), DDW District Office.

Guidance from the following documents is incorporated in this ERP:


- “Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents” (USEPA-817-D-03-001 to 007, Interim Final – August 2004).


- City of Shasta Lake Municipal Code, Chapter 2.36, Emergency Services ( Ordinance 03-150, June 2013)

1.4 Access Control

Because of the sensitive nature of the information contained in this ERP, an access control protocol has been established under the direction of the City of Shasta Lake Security Director (SD), pg. C-1. Distribution of the ERP is limited to those individuals directly involved in the City of Shasta Lake’s emergency planning and response activities. The ERP copies are numbered prior to distribution, and recipients are required to sign and date a statement that includes their ERP number and their agreement not to reproduce the ERP without permission from the City of Shasta Lake SD. A secure copy of the ERP is stored on
the City’s server and maintained in an off-premises location, known to the City of Shasta Lake’s SD, in the event that the utility’s copies cannot be accessed.

1.5 Plan Overview

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

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

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

Section 3.0: Water System Information: Provides specific information about City of Shasta Lake’s water system, identifies emergency resources, and identifies alternate and backup water sources.

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

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

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

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

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

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

Section 10.0: References and Links

Appendices: A. Action Plans
               B. System and Facility Information
               C. Emergency Phone Lists
1.0 INTRODUCTION

D. Public Notices and Press Releases
E. CA Statewide Emergency Notification Plan
F. Incident Reports and Forms
G. ERP Certification Form
# 2.0 Emergency Planning Process Information

This section presents the City of Shasta Lake (COSL) planning partnerships and discusses the relationship between this ERP and other COSL related plans.

## 2.1 General Information

### 2.1.1 Planning Partnerships

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

<table>
<thead>
<tr>
<th>Agency</th>
<th>Capability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shasta County Sheriff—Office of Emergency Services—Dave Dean 530.245.6148</td>
<td>Help Coordinate emergency response</td>
</tr>
<tr>
<td>Shasta Lake Fire Protection District</td>
<td>1) Fire Department Capabilities 2) Emergency Medical Technician 3) Paramedic Unit 4) HAZMAT capabilities</td>
</tr>
<tr>
<td>Shasta County Sheriff Department</td>
<td>1) Traffic control 2) Crowd control 3) Evacuations 4) Communications</td>
</tr>
<tr>
<td>DDW – Drinking Water Program (State Drinking Water Primacy Agency)</td>
<td>Inspections, Provide technical assistance, Water quality sampling and analysis</td>
</tr>
<tr>
<td>COSL Public Works</td>
<td>Unit 4 with fuel tank and pump</td>
</tr>
<tr>
<td>Shasta Lake Fire Department</td>
<td>HAZMAT</td>
</tr>
<tr>
<td>Basic Lab</td>
<td>Analysis of water</td>
</tr>
<tr>
<td>City of Redding, Bella Vista Water District</td>
<td>Provide treated water to COSL</td>
</tr>
<tr>
<td>Regional Water Quality Control Board</td>
<td>Monitor waterways of the US</td>
</tr>
<tr>
<td>Local Emergency Relief Organization(s)</td>
<td>Red Cross, Salvation Army—provide disaster relief</td>
</tr>
</tbody>
</table>

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

### 2.1.2 Mutual Aid Agreements

In addition to the partnerships outlined above, The City of Shasta Lake has established mutual aid agreements with the following organizations:
2.0 EMERGENCY PLANNING PROCESS INFORMATION

### Organization

<table>
<thead>
<tr>
<th>Organization</th>
<th>Nature of Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Redding, Bella Vista Water District</td>
<td>Example: Agrees to supply water as described in Interconnection Agreements</td>
</tr>
<tr>
<td>Computer Emergency Response Team is John Jones, Finance and General Services Manager and Tom Chism, Wastewater Plant Superintendent</td>
<td>Example: Agrees to assist during an actual attack on the Supervisory Control and Data Acquisition (SCADA) or Information Technology (IT) system if possible as well as to assist in the recovery of data and gathering evidence for prosecution.</td>
</tr>
</tbody>
</table>

#### 2.1.3 Relationship between ERP and other Plans

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

<table>
<thead>
<tr>
<th>Document</th>
<th>Relationship to ERP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Management Plan (RMP)</td>
<td>This document may contain responses to hazardous chemical releases, such as chlorine.</td>
</tr>
<tr>
<td>Identify applicable Material Safety Data Sheets (MSDS)</td>
<td>These are standard data sheets that may contain information regarding responses to specific chemical releases as well as a host of other useful information.</td>
</tr>
<tr>
<td>City of Shasta Lake Water Sampling Plan</td>
<td>This document may provide useful information to support the contamination event stages evaluation as well as to provide information for the baseline analysis or provide conditions that are considered normal for our utility.</td>
</tr>
<tr>
<td>Identify the Water Sample Chain of Custody Procedures here</td>
<td>This document(s) may ensure that water samples are protected and properly handled so as to preclude contamination from the sampling process.</td>
</tr>
<tr>
<td>Storm Water Pollution Prevention Plan</td>
<td>Shows how storm water drains from the Water Plant</td>
</tr>
<tr>
<td>Disinfection Failure Plan</td>
<td>Action plan for disinfection failure</td>
</tr>
<tr>
<td>Operations Plan</td>
<td>Detailed account of how the water system operates</td>
</tr>
</tbody>
</table>

#### 2.2 Disaster Events or Scenarios

Specific APs have been developed to address each of the high-risk threat scenarios identified in The City of Shasta Lake’s vulnerability assessment. APs are tailored ERP actions that address specific major events. For security reasons, the procedures outlined in these documents are intentionally general in nature, omitting confidential details and effected assets. The specific APs are attached in the appendices following this main ERP document.
2.2.1 Natural Disasters
The City of Shasta Lake has considered the threats posed by natural events and weather-related phenomena. Specific AP(s) have been developed to guide a timely and prudent response should such threats be realized. These detailed APs are found in the attached appendices. Considered natural disasters include:

<table>
<thead>
<tr>
<th>Natural Disaster</th>
<th>Primary AP No.</th>
<th>Secondary AP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Outage</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Floods</td>
<td>8A</td>
<td></td>
</tr>
<tr>
<td>Winter Storm</td>
<td>8B</td>
<td></td>
</tr>
<tr>
<td>Hurricane / Tropical Storm</td>
<td>8C</td>
<td></td>
</tr>
<tr>
<td>Earthquakes</td>
<td>8D</td>
<td></td>
</tr>
<tr>
<td>Drought / Water Supply Interruption</td>
<td>9</td>
<td></td>
</tr>
</tbody>
</table>

2.2.2 Events Caused by Human Intervention (Man-made Threats)
The City of Shasta Lake has developed specific AP documents, found in the appendices, to respond to the following threats that were identified in the vulnerability analysis:

<table>
<thead>
<tr>
<th>Event / Threat</th>
<th>Primary AP No.</th>
<th>Secondary AP No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threat of Contamination to Water System</td>
<td>1A</td>
<td>1B</td>
</tr>
<tr>
<td>Confirmed Contamination to Water System</td>
<td>1C</td>
<td>1B</td>
</tr>
<tr>
<td>Structural Damage from Explosive Device</td>
<td>2</td>
<td>1A</td>
</tr>
<tr>
<td>Employee Assaulted with Weapon (Armed Intruder)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>IT System Intrusion</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Chemical Release</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Water Supply Interruption</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Bomb Threat</td>
<td>10A</td>
<td>10B, 10C</td>
</tr>
</tbody>
</table>
3.0 Water System Information

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

3.1 System Specific Information

This section contains The City of Shasta Lake Public Water System (PWS) identification and emergency contacts, as well as basic information to describe the water system.

<table>
<thead>
<tr>
<th>System Identification Number</th>
<th>4510006</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Name and Address</td>
<td>The City of Shasta Lake Public Water System 1650 Stanton Dr. Shasta Lake, Ca. 96019</td>
</tr>
<tr>
<td>Directions to System Office</td>
<td>Located at the Northwest corner of Meade St. and Stanton Dr.</td>
</tr>
<tr>
<td>Number of Service Connections/Population Served</td>
<td>3,675 service connections 10,200 population (^1)</td>
</tr>
<tr>
<td>Type of Source</td>
<td>Shasta Lake Surface Water Treatment Plant</td>
</tr>
<tr>
<td>Interconnections and Purchased Water Agreements</td>
<td>2 Interconnections (See Section 3.4.2) Bella Vista inter-tie is for emergency use- manually operated Redding inter-tie is automatic if the pressure goes down in the COSL water system.</td>
</tr>
<tr>
<td>Type of Treatment Provided</td>
<td>Disinfecting treatment is provided using CL2 . Coagulation for gravity filters is a polyaluminum chloride SWT 9310A</td>
</tr>
<tr>
<td>Number of Storage Tanks</td>
<td>1 Raw Water Tank 9 Treated Water Tanks</td>
</tr>
<tr>
<td>Average Water Demand</td>
<td>1,900 gallons per minute (gpm)</td>
</tr>
<tr>
<td>Maximum and Peak Water Demand</td>
<td>6,750 gpm maximum 5,500 gpm peak</td>
</tr>
<tr>
<td>Emergency Contact Person(s)</td>
<td>Tony Thomasy Water Treatment Plant Superintendent 530.275.7450 Office 530.227.0022 Cell 530.223.5323 Home Phone</td>
</tr>
<tr>
<td></td>
<td>Jeff Tedder Public Works Director 530.275.7423 Office 530.339.0904 Cell 530.275.1952 Home Phone</td>
</tr>
</tbody>
</table>

\(^1\) If population is unknown, estimate using a factor of 3.3 persons per service connection.
3.2 General System Map/Service Area Map

The following maps and drawings for the City of Shasta Lake’s system are provided below (or in Appendix B) for reference.

- **3.2.1.1 Distribution System Map**
- **3.2.1.2 Pressure Boundary Map**
- **3.2.1.3 Process Flow Diagrams**

Certain site plans and engineering drawings have been included in this document for reference, as follows:

- **3.2.1.4 Operating Plan and System Descriptions including Backup Systems**

Certain operating procedures and system descriptions have been included in this document for reference, as follows:

- **3.2.1.5 SCADA System / Process Control Systems Operations**

Not Applicable

3.3 Critical System Components

Included below is an outline of system components deemed critical to operation of The City of Shasta Lake’s information on the location of the asset is included, as well as descriptive information such as entry restrictions or special equipment or tool needs.

<table>
<thead>
<tr>
<th>Asset</th>
<th>Location</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw Intake Pumps</td>
<td>Intake structure below Dam on East side.</td>
<td>Access restricted by Bureau Security and Chenega Security</td>
</tr>
<tr>
<td>Filters, Clearwell &amp; Basin</td>
<td>At The Water Treatment Plant</td>
<td>Entry restricted by locked gate and security alarm</td>
</tr>
<tr>
<td>Raw and Finished Water Tanks</td>
<td>At The Water Treatment Plant</td>
<td>Entry restricted by locked gate, security alarm and locked hatches</td>
</tr>
</tbody>
</table>

3.4 Identification of Alternate Water Sources

3.4.1 Alternate Raw Water Sources

The City of Shasta Lake has no alternate and independent raw water sources:
3.4.2 Interconnects and Agreements with Other Utilities
There are two (2) other water utilities within the regional area, City of Redding and Bella Vista Water District. These water utilities have their own water supply and treatment systems. To enable The City of Shasta Lake to have uninterruptable water service capability, bypass turnout valve connections from The City of Shasta Lake’s water distribution system to The City of Redding and Bella Vista Water District are in place and are currently maintained by The City of Shasta Lake. The valves also enable The City of Shasta Lake to serve as an alternate water source for The City of Redding and Bella Vista Water District if needed.

3.4.3 Water Sources for Short-term Outages
Possible alternate water supply options for short-term outages include:

**Short-term water supply options**
1. Sentry Market
3. Alternate water distribution plans
   - Purchase bottled water from the above vendors.

**Emergency water supply equipment available from**
- Food processing companies
- Pepsi-Cola bottling plant
- Coca-Cola bottling plant

3.5 Emergency Water Supply Calculations

3.5.1 Amount of Water Needed for Various Durations

Typical residential water usage in the United States is on the order of 300 to 500 gallons per residence per day, or 100 to 150 gallons per capita per day (GPCD). According to the City’s 2010 Urban Water Management Plan (UWMP), the base daily per capita water use in the City (15 year average – 1996-2010) was 226. Actual GPCD for 2010 was 202.

Although these amounts can typically be significantly reduced during crisis situations, The City of Shasta Lake has found it useful to develop an estimate for the quantity of supplemental water required for a number of potential outage scenarios. These estimates are as follows:

<table>
<thead>
<tr>
<th>Outage Period</th>
<th>Number of Customers (Service Connections) Affected</th>
<th>Quantity Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 hour</td>
<td>3,675</td>
<td>72,000 gallons</td>
</tr>
<tr>
<td>12 hours</td>
<td>3,675</td>
<td>860,000 gallons</td>
</tr>
<tr>
<td>1 day</td>
<td>3,675</td>
<td>1,720,000</td>
</tr>
<tr>
<td>2 days</td>
<td>3,675</td>
<td>3,440,000</td>
</tr>
</tbody>
</table>
### 3.5.2 Estimated Emergency Supply of Water

The City of Shasta Lake has estimated the amount of water storage available in the system under an emergency situation according to the following formula:

\[
\text{Emergency supply of water} = \frac{\text{amount of storage} + \text{backup/emergency supply}}{\text{system demand}}
\]

- **Calculations for** The City of Shasta Lake: 
  
  Amount of storage = 6,150,000 gallons

**Backup/Emergency Supply**

- Bella Vista Water District = 1,224,000 gallons/day
- City of Redding, 432,000 gallons/day

  System Demand = 1,900 gpm Average, 6,250 gpm Maximum

  Emergency Supply = 2.85 days at Average Demand, .87 days at Max Demand

### 3.6 Emergency Equipment and Supplies

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

#### 3.6.1 Facility Emergency Equipment List

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

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

<table>
<thead>
<tr>
<th>Equipment/Supply Description</th>
<th>Location</th>
<th>Specific Function &amp; Capability</th>
<th>Responsible Person/Title</th>
<th>Telephone Number</th>
<th>Inventory/Restocking Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy Equipment:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dump Trucks</td>
<td>Public Works</td>
<td>Haul spoils</td>
<td>Jeff Breedlove</td>
<td>530.275.1564 530.241.7061</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Kyle Egan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gary Black</td>
<td>530.221.8851</td>
<td>unknown</td>
</tr>
<tr>
<td>Skip Loaders</td>
<td>United Rentals</td>
<td>Move dirt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment/Supply Description</td>
<td>Location</td>
<td>Specific Function &amp; Capability</td>
<td>Responsible Person/Title</td>
<td>Telephone Number</td>
<td>Inventory/Restocking Frequency</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
<td>----------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Backhoes</td>
<td>Public Works</td>
<td>excavate</td>
<td>Janice Clement</td>
<td>530.221.8851</td>
<td></td>
</tr>
<tr>
<td>Dozers</td>
<td>United Rentals</td>
<td>Move dirt</td>
<td>Gary Black, Janice Clement</td>
<td>530.221.8851, 530.221.8851</td>
<td>unknown</td>
</tr>
<tr>
<td>Water trucks</td>
<td>United Rentals</td>
<td>Move dirt</td>
<td>Gary Black, Janice Clement</td>
<td>530.221.8851, 530.221.8851</td>
<td>unknown</td>
</tr>
<tr>
<td>Communication Equipment:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radios</td>
<td>Public Works</td>
<td>communication</td>
<td>Jose Castro, John Horisk</td>
<td>530.275.2832, 530.275.2219</td>
<td>two</td>
</tr>
<tr>
<td>Cell Phones</td>
<td>Personnel</td>
<td>communication</td>
<td>All employees</td>
<td>vary</td>
<td>N/A</td>
</tr>
<tr>
<td>Cell Phone Rentals</td>
<td>ATT</td>
<td>communication</td>
<td>John Jones</td>
<td>530.527.1334</td>
<td>N/A</td>
</tr>
<tr>
<td>General Equipment:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Compressors</td>
<td>Public Works</td>
<td>Provide compressed air</td>
<td>Jeff Breedlove, Peter Bird</td>
<td>530.275.1564, 530.246.8483</td>
<td>N/A</td>
</tr>
<tr>
<td>Fans and Blowers</td>
<td>Public Works</td>
<td>Move air</td>
<td>Jeff Breedlove, Peter Bird</td>
<td>530.275.1564, 530.246.8483</td>
<td>N/A</td>
</tr>
<tr>
<td>Generators</td>
<td>United Rentals</td>
<td>Provide electric power</td>
<td>Gary Black, Janice Clement</td>
<td>530.221.8851, 530.221.8851</td>
<td>unknown</td>
</tr>
<tr>
<td>Shop Vacuums</td>
<td>Public Works</td>
<td>Clean up dirt or water</td>
<td>Jeff Breedlove, Peter Bird</td>
<td>530.275.1564, 530.246.8483</td>
<td>N/A</td>
</tr>
<tr>
<td>Pumps</td>
<td>Public Works</td>
<td>Pump water</td>
<td>Jeff Breedlove, Peter Bird</td>
<td>530.275.1564, 530.246.8483</td>
<td>N/A</td>
</tr>
<tr>
<td>Personnel Protective Equipment:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tyveks</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Boots</td>
<td>In vehicles</td>
<td>Foot protection</td>
<td>Individual employees</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Respirators</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Cartridges</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Gloves</td>
<td>In vehicles</td>
<td>Hand protection</td>
<td>Individual employees</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Bulk Supplies:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sand</td>
<td>Public works corp. yard</td>
<td>Bedding, filling sandbags</td>
<td>Jose Castro</td>
<td>530.275.2832, 530.941.0724</td>
<td>N/A</td>
</tr>
<tr>
<td>Absorbents</td>
<td>Public works corp. yard</td>
<td>Absorbent</td>
<td>Jose Castro</td>
<td>530.275.2832, 530.941.0724</td>
<td>N/A</td>
</tr>
</tbody>
</table>
3.6.2 Personnel Protective and Other Emergency Equipment

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

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

3.6.3 Telephone Equipment

Standard land-based telephones are potentially useful for communication during an emergency. The City of Shasta Lake has not installed emergency telephones to serve as a critical connection during a business disruption or an employee emergency.

Emergency telephones of this kind, which directly connect to the security desk, are primarily used for safety and security purposes. At The City of Shasta Lake the main office number of 530-275-7400 will be manned during an emergency. Another number could be assigned for employee contacts in an emergency.

In general, during an emergency, use of telephones will be minimized. If employees see telephones off the hook they should hang them up. This will help the telephone company to restore service.

3.6.4 VHF Radio Communications

Specific instructions will be provided by The City of Shasta Lake’s Command Center on the operation and prioritization of The City of Shasta Lake’s radio facilities. It is important to note that radio communications are NOT SECURE; therefore, radios must not be used to transmit sensitive messages or data that is not ready for public release or would give advantage to an attacker. For this reason, it is anticipated that radios will be of limited use during an attack on the water system, unless there is a loss of off-site power or other event affecting the land-based and cell phone service.

3.6.4.1 VHF Communications Channel

<table>
<thead>
<tr>
<th>Channel</th>
<th>Use Group / Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPWD947</td>
<td>153.45500 City Wide and 153.63500 Tactical</td>
</tr>
</tbody>
</table>
3.6.4.2 Trunked Radios (Mobile)

<table>
<thead>
<tr>
<th>Serial Number</th>
<th>Storage Location</th>
<th>EOC Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>Emergency Operations Center (EOC) may have these radios</td>
</tr>
</tbody>
</table>

The City does not currently own any trunked or digital radios.

3.6.5 Citizen’s Band Radio / Military Radios / Amateur Radios

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

The city has a number of FRS (Family Radio Service) portable radios that could be used in an emergency for local communications. Additionally, the city is aware that Shasta Tehama Amateur Radio Emergency Services (STARES) could be activated if long range communication was needed that did not require the use of commercial phone infrastructure.

The City of Shasta Lake is aware that most readily-available radios do not provide secure communication.

3.7 Property Protection

In the event of a real or potential malevolent event, the Water Utility Emergency Response Manager (WUERM, pg. 6-1, 6-2) will make the determination as to what water system facilities should be immediately “locked down,” including the implementation of specific access control procedures and the establishment of a security perimeter. The possibility of secondary malevolent events will be considered, given that the initial act may be diversionary.

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

Specific lockdown procedures for each of The City of Shasta Lake’s major facilities are:

1. Fisherman’s Point Water Treatment Plant at 16349 Lake Blvd. = City personnel will lock the entry gate to the plant and lock up the water plant doors. City personnel or possibly Shasta County Sheriffs will patrol the perimeter of the plant site to look for suspicious activity. Shasta Dam Security personnel or the Chenega Security, who guard the dam, will be asked to assist in surveillance.
4.0 SEMS/ICS Integration and Organization

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

4.1 Five Levels of SEMS

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

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

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

**Local Government:** Local Government includes City of Shasta Lake, City of Redding and Anderson, Shasta County, Gateway School District, Shasta Lake Fire Protection District and several other Special Districts.

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

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

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

4.2 Five Principle Functions of SEMS

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

A summary of the functions and the responsibilities of each section, as they relate to the City of Shasta Lake’s Operations during an emergency, is provided in the table below.
<table>
<thead>
<tr>
<th>Function</th>
<th>Responsibilities</th>
</tr>
</thead>
</table>
| **Management**      | • Serves as Command Staff and/or Incident Commander at the Field Level.  
• Directs Water System Emergency Operations Center (EOC).  
• May Serve as WUERM.                                                                 |
| **Operations**      | • Responsible for management of all operations directly applicable to the primary mission.  
• Operations Section Chief activates and supervises organizational elements in accordance with incident AP and directs execution of the AP.  
• Coordinates emergency response activities at the water utility EOC level.  
• Implements priorities established by management or Incident Command.  
• Field Coordinators  
  - Operations staff who are linked to water utility personnel at other fixed facilities or who are assigned to incidents within the water utility.  
  - Receive and pass information up the chain of command.  
  - Receive and coordinate requests for services and support. |
| **Planning/Intelligence** | • Oversees the collection, evaluation, verification, and display of current information related to the emergency.  
  - Understand current situation.  
  - Predict probable course of the incident events.  
  - Prepare alternative strategies and control operations for the incident.  
• Responsible for preparing action plans and maintaining documentation related to the emergency. |
| **Logistics**       | • Provides facilities, services, and material in support of the Incident.  
• Oversees the acquisition, storing, and distribution of essential resources and support services needed to manage the emergency.  
• Tracks the status of resources.  
• Provides services to all field units in terms of obtaining and meeting their personnel, materials and equipment needs including communications. |
| **Finance/Administration** | • Responsible for all financial, administrative and cost analysis aspects of the incident.  
• Prepares vendor contracts, maintains records of expenditures for personnel and equipment, and maintains records and processes claims.  
• Provides preliminary estimates of damage costs and losses. |
The following graphics illustrate the expanding nature of the ICS and show model ICS structures that can be used during an emergency. The intent is for the command structure to be expanded and contracted as necessary to provide the best fit for a particular situation. This template includes three different command structures for different-sized utilities, and for different levels of emergencies. Choose the template or templates that work best for your utility and edit them as necessary. Individual’s names can be added to the graphics to designate specific roles and responsibilities.
4.3 The City of Shasta Lake Incident Command Structure

**EXAMPLE OF SMALL WATER UTILITY UTILIZING A SEMS ORGANIZATION CHART**

**Incident Manager**
(Water Utility Emergency Response Manager) (WUERM)

**Public Information**

**Advisory Support Incident Manager**

**Legal Counsel**
Board Policy
Safety Risk

**Operations**

**Planning/Assessment**

**Logistics/Resources**

**Administration**

**Distribution System**
Water Quality
Distribution Maintenance
Communication Systems

**Damage Assessment**
EOC Operations
Interagency Liaison
Engineering Support

**Personnel**
Equipment
Materials
Other Supplies

**Cost Accounting/Financial Audit**
FEMA Documentation

**Section Leader Assignments**

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PRIMARY</th>
<th>ALTERNATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incident Manager</td>
<td>General Manager or Water Utility Emergency Response Manager (WUERM)</td>
<td>Chief Engineer</td>
</tr>
<tr>
<td>Operations</td>
<td>Water Quality/District Superintendent or WUERM</td>
<td>Field Main. Superintendent</td>
</tr>
<tr>
<td>Planning/Assessment</td>
<td>Head of Engineering Services</td>
<td>Principal Engineer</td>
</tr>
<tr>
<td>Logistics/Resources</td>
<td>Asst. Field Maintenance Superintendent</td>
<td>Field Supervisor</td>
</tr>
<tr>
<td>Administration</td>
<td>Admin. Manager Accounting</td>
<td>Personnel Administrator Human Resources</td>
</tr>
<tr>
<td><strong>COMMAND STAFF</strong></td>
<td><strong>PRIMARY</strong></td>
<td><strong>ALTERNATE</strong></td>
</tr>
<tr>
<td>Public Information</td>
<td>Public Education Coordinator</td>
<td>Customer Service Admin.</td>
</tr>
<tr>
<td>Advisory Support</td>
<td>Safety Coordinator</td>
<td>Assistant Safety Coordinator</td>
</tr>
</tbody>
</table>
Depending on the size and scope of the emergency, the Water Utility Emergency Response Manager (WUERM) may serve as the Emergency Operations Center Director until the position is delegated to a general manager or replacement for the duration of the incident.
EXAMPLE OF A CITY/COUNTY (OPERATIONAL AREA) EMERGENCY OPERATIONS CENTER WITH WATER UTILITY AGENCY REPRESENTATIVE

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

4.4.1 EOC Description

The City of Shasta Lake’s EOC is a pre-designated facility to coordinate the overall response and support to an emergency. The primary EOC is located at the Law Enforcement Center, 4488 Red Bluff Street (note that it can be a separate room equipped and designated for emergencies only or a room that has been equipped to be easily used during emergency events).

The City of Shasta Lake has also identified and stocked an alternate EOC in the event that the primary EOC is not available or rendered unusable by the emergency. The alternate EOC location is at the City of Shasta Public Works Building, 4332 Vallecito Street.

During an emergency situation, the EOC will:

- Establish an EOC Director to manage the Operations, Planning/Intelligence, Logistics, Finance/Administration Sections, and related sub-functions.
- Set priorities and develop APs.
- Coordinate and support all field-level incident activities within the utility service area.
- Gather, process, and report information within the utility service area and to other levels of SEMS.
- Coordinate with local government, operational areas, or regional EOCs as appropriate.
- Request resources from higher SEMS levels.

The EOC has sufficient communication equipment (phones, computer, two-way radios, etc.), copies of all engineering and operational plans and procedures for the City of Shasta Lake chalk or white boards, and tables and chairs sufficient to meet the needs of any on-site emergency.

4.4.2 EOC Activation

In the event a credible or confirmed threat has been established, the City of Shasta Lake staff will notify the General Manager, John Duckett, or his designee. The General Manager or designee should then make the decision to activate the EOC. Once the decision to activate the EOC has been made, subsequent notification to the Shasta County Office of Emergency Services should be made to notify the agency of the threat and the activation of the City of Shasta Lake EOC.

Based on the severity of the incident, the General Manager or designee may also recommend that the Shasta County Office of Emergency Services EOC be activated.

Once the Shasta County Office of Emergency Services has been notified of the threat and the City of Shasta Lake’s EOC activation, the City of Shasta Lake EOC designee should provide
immediate, specific information to the relevant agencies by telephone or two way radio and be prepared to describe the magnitude and potential impact of the event on public health and safety. Updates on the actions of the City of Shasta Lake, as well as damages and recovery actions, should be provided regularly and consistently during the event.
5.0 Concept of Operations

5.1 Decision Process

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

5.1.1 Threat Warning

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

FIGURE 1
Summary of Potential Threat Warnings

5.1.1.1 Threat Warning Conditions

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

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

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

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

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

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

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

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

5.1.2 ERP Activation

Once a threat warning is issued by the General Manager or his/her designee, the threat decision process begins. The WUERM (pg. 6-1) or designated alternate should immediately be notified since this person will be involved in this decision process.

The threat decision process is considered in three successive stages: “possible,” “credible,” and “confirmed.” As the threat escalates through these three stages, the actions that might be considered also change. The following table describes the stages, actions that will be taken, and activation of the ERP. The WUERM (pg. 6-1) is responsible for working through the threat decision process and implementing the ERP as needed.

<table>
<thead>
<tr>
<th>Decision Process Stage</th>
<th>Actions Taken</th>
<th>ERP Activation Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possible Threat</td>
<td>Evaluate available information.</td>
<td>Implement precautionary response actions.</td>
</tr>
<tr>
<td></td>
<td>Review findings from VA.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Determine if threat is possible. (Could something have actually happened?)</td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credible Threat</td>
<td>Determine that threat is credible by establishing corroborating information.</td>
<td>Activate portions of ERP.</td>
</tr>
<tr>
<td></td>
<td>• Initiate internal and external notifications.</td>
<td></td>
</tr>
</tbody>
</table>
### 5.0 CONCEPT OF OPERATIONS

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

### 5.2 Response Capability Identified in the Water System VA

This section describes the response capabilities for The City of Shasta Lake that were identified in the water system VA.

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

### 5.3 Personnel Safety

The safety of City of Shasta Lake staff, emergency responders, and the public is paramount during an emergency. This section provides basic safety information and procedures to be followed in an emergency, including a toxic or potentially toxic release of chlorine or other chemical agents from a water treatment plant. Additional information regarding proper
procedures during and after a chemical release can be found in The City of Shasta Lake’s Risk Management Plan and in the associated AP. This section will cover Facility Protective Actions, Personnel Accountability, Public Notification for Protective Actions, and Emergency First Aid procedures.

5.3.1 Facility Protective Actions

Facility protective actions include sheltering-in-place, evacuation, and a combination of the two. When determining the appropriate protective action decision, the City of Shasta Lake’s General Manager or designee will carefully consider:

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

5.3.1.1 Evacuations

- Facility evacuation should follow the pre-designated evacuation routes from buildings and plant grounds as shown in Appendix B.
- These evacuation routes are posted at the entrance to all buildings and within employee break areas.
- If an evacuation is ordered by the General Manager or designee all employees shall report to the pre-designated assembly areas shown on the evacuation plans to be accounted for by their supervisor, assembly area coordinator, or other pre-designated individual.
- Supervisors are responsible to assure their disabled employees are provided with adequate assistance during the evacuation.

5.3.1.2 Sheltering-in-place

- Sheltering in place should occur in the pre-designated facilities and locations as described in Section 5.5.1 and as shown in Appendix B.
- Locations should be equipped with emergency medical supplies and provisions.
5.3.2 Personnel Accountability
- All designated assembly areas are indicated on the facility evacuation plans.
- All personnel are responsible to report to their designated assembly area.
- Supervisors are responsible to assure all their personnel have reported after an ordered evacuation.
- Personnel who are not accounted for at the assembly area must be reported to the General Manager or designee to assure a proper response is coordinated. This response may include checking with other assembly areas, radio communication, or organization of a formal search.
- No search of a contaminated area should be performed unless all rescue personnel are fully equipped and trained for the expected hazards.

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

The City of Shasta Lake will respond to requests from the local agencies for recommendations, or protective actions for the general population surrounding the facility.

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

- Provide post-emergency medical evaluation as required by Occupational Safety and Health Administration (OSHA).

5.4 Protective Action Protocols

The protocols that the City of Shasta Lake uses for sheltering-in-place and for evacuation are described below.

5.4.1 Sheltering-in-Place Protocol

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

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

- Provide information on the procedure to employees and visitors on the facility public address system. If the information is provided to a local agency at their request, it should be coordinated through the Facility EOC.
- Close all doors to the outside and close and lock the windows.
- Inform staff to assemble at the pre-designated areas of the facility as identified in section 5.4.3. (preferred locations are windowless rooms).
- Close as many internal doors as possible.
- If an outdoor explosion is possible, close drapes, curtains, and shades over windows, stay away from windows to prevent potential injury from flying glass.
- If sheltering-in-place was necessary during a hazardous materials release the ventilation system should be shut off.

5.4.2 Evacuation Procedures

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

5.4.2.1 Evacuation Areas

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

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

5.4.2.2 Evacuation Warning and Instruction

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

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

- **General Public (Responsibility of Local Public Responders)**

  Although protective actions for the general public are the responsibility of the Shasta Lake Fire Protection District and the Shasta County Sheriff’s Department. This information may be helpful if you are requested to provide recommendations to the local **Incident Commander**:

  - Door-to-door: Requires significant personnel and is a slow process but is very thorough.
  - Public address system (from a mobile unit or within a building): Requires fewer personnel than door-to-door and is quicker to accomplish but is not as thorough.
  - Combination of Door-to Door and Public Address system: Dependent on the area to be evacuated a combination of methods of instruction may be warranted.

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

5.4.3 Evacuee Assembly Areas

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

1. Water Plant------------ Main Office
2. Wastewater Plant------Main Office
3. Public Works Bldg.-----Lunch Room
4. Electric Bldg.---------Lunch Room
5. Main Office (City Hall)----------Annex Conference Room
Each manager/supervisor shall be responsible for head counts, assembly security and safety and will communicate with the Incident Commander to obtain support for various needs, such as food, water, medical aid, or transportation.

### 5.4.4 Shelter Locations

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

1. Water Plant---------- Main Office
2. Wastewater Plant----- Main Office
3. Public Works Bldg---- Lunch Room
4. Electric Bldg ---------- Lunch Room
5. Main Office (City Hall)---------- Annex Conference Room

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

- Incident site personnel.
- Assembly area personnel.
- EOC, if activated.
- Responders on-site: for example, the communications coordinator and the Medical Unit.

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

The medical unit will be notified of the shelter locations and be provided with information on any injuries or the type of hazardous material and any known exposures.

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

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

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

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

6.1 The City of Shasta Lake Chain of Command

The City of Shasta Lake Primary Position Descriptions and Assignments

<table>
<thead>
<tr>
<th>Name and Title</th>
<th>Responsibilities during an Emergency</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Duckett</td>
<td>Sets incident objectives and priorities.</td>
<td>Office: 530-275-7427</td>
</tr>
<tr>
<td>Incident Commander</td>
<td></td>
<td>Cell: 530-604-0050</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pager:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home: 530-347-5946</td>
</tr>
<tr>
<td>Tony Thomasy</td>
<td>Overall management and decision making for the water system.</td>
<td>Office: 530-275-7450</td>
</tr>
<tr>
<td>Water Utility Emergency Response Manager</td>
<td>WUERM is lead for managing the emergency and contacting the regulatory agencies.</td>
<td>Cell: 530-227-0022</td>
</tr>
<tr>
<td></td>
<td>All communications to external parties are approved by the WUERM.</td>
<td>Pager:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home: 530-223-5323</td>
</tr>
</tbody>
</table>
### The City of Shasta Lake Primary Position Descriptions and Assignments

<table>
<thead>
<tr>
<th>Name and Title</th>
<th>Responsibilities during an Emergency</th>
<th>Contact Numbers</th>
</tr>
</thead>
</table>
| Jeff Tedder    | Takes over for primary WUERM if primary WUERM is unavailable. | Office: 530-275-7423  
Cell: 530-339-0904  
Home: 530-275-1952 |
| Tony Thomasy   | Heads water utility's EOC.  
Provides operational and resource management during an emergency. | Office: 530-275-7450  
Cell: 530-227-0022  
Home: 530-223-5323 |
| John Jones     | Member of the command staff and reports directly to the Incident Commander.  
Interfaces with media and disseminates public information.  
Plans the information strategy. | Office: 530-275-7481  
Cell: 530-604-1957  
Home: |
| John Jones     | Member of the command staff  
On-scene contact for representatives from other agencies. | Office: 530-275-7481  
Cell: 530-604-1957  
Home: |
| Kevin Estabrook| Develops and recommends measures for assuring personnel safety.  
Assess and anticipates hazardous and unsafe conditions. | Office: 530-275-7445  
Cell: 530-227-8775  
Home: 530-243-8518 |
| John Jones     | Responsible for administrative functions in the office.  
Receives customer phone calls and maintains a log of complaints and calls.  
In an emergency, could provide a standard carefully pre-scripted message for customers who call with general questions. | Office: 530-275-7481  
Cell: 530-604-1957  
Home: |
| Tom Chism      | In charge of collecting samples, having samples analyzed by certified labs, receiving the results.  
Determines the quality of the water being served meets all drinking water and public health requirements. | Office: 530-275-7447  
Cell: 530-941-0720  
Home: 530-244-9652 |
| Chris Carr     | In charge of running water treatment plant.  
Performs inspections, maintenance, sampling of the WTP and relaying critical information to the WUERM.  
Assess WTP facilities and treatment provided and provides | Office: 530-275-7450  
Cell: 530-515-0741  
Home: 530-515-0741 |
The City of Shasta Lake Primary Position Descriptions and Assignments

<table>
<thead>
<tr>
<th>Name and Title</th>
<th>Responsibilities during an Emergency</th>
<th>Contact Numbers</th>
</tr>
</thead>
</table>
| Chris Carr | In charge of operating the water system. Performs inspections, maintenance, sampling of the system and relaying critical information to the WUERM. Assess facilities and provides recommendations to the WUERM. | Office: 530-275-7450  
Cell: 530-515-0741  
Home: 530-515-0741 |
| Joe Castro | Delivers water quality notices or door hangers. Provides backup to water system operator. Conducts site inspections of all facilities. | Office: 530-275-7455  
Cell: 530-941-0724  
Home: 530-275-2832 |

6.2 Drinking Water Field Operation Branch – Chain of Command

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

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

The following flow chart shows the chain of command structure within the California Department of Water Resources Division of Drinking Water (DDW). The DDW Web site has a map showing all the contact information for each District Office and District Engineer.

http://www.waterboards.ca.gov/drinking_water/programs/documents/ddwem/DDWdistrictoffices
Notification Procedures

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

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

6.3.2 Internal Contact List
The contact information in Table C-2 in Appendix C represents the network of City of Shasta Lake personnel and serves as the primary means of contacting internal staff.

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

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

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

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

6.3.4 Additional Information on State of California Agencies
The initial notification response to any emergency should be to call 911 for the needed first responder and then to the State Water Board DDW. The Water Board DDW is the Drinking Water Primacy Agency in California and has regulatory jurisdiction over all public water systems in the state.
Contact to the Water Board DDW should be to their DE. If the water system is unable to contact the District Engineer (or one of their staff), the water system should use the California OES Warning Center Phone Number: 1-800-852-7550, which is a 24/7 phone number. A second phone number for the OES Warning Center is 916-845-8911.

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

The DE will be able to assist The City of Shasta Lake with:

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

6.3.5 Critical Customers Contact List

In addition to the agencies listed in the previous tables in Appendix C, Table C-8 in Appendix C contains contact information for The City of Shasta Lake’s Critical Care Customers (Primary Notification) and Large Water Users (Secondary Notification). The WUERM (pg. 6-1) will decide if the PIO will notify some or all of these customers in the event of an emergency involving the water system.

The City of Shasta Lake’s Water Quality Emergency Notification Plan, as required under Section 116460, California Health and Safety Code, is included in Appendix E of this ERP.

6.3.6 Contact Information for Fire-fighting Water Alternate Sources

If the water becomes contaminated with substances that render it unsafe to be used for fire-fighting, then an order will be issued to discontinue use of the affected fire hydrants. Alternate sources for fire-fighting water are shown in Table C-8 in Appendix C.

6.3.7 Contact Information for Bulk and Bottled Water Suppliers

The City of Shasta Lake has identified agencies and private companies as shown in Table C-10 in Appendix C that could provide water supplies (bottled or bulk) in the event of an incident.
6.4 Public Notice Procedures

6.4.1 Media Notification
Effective communication with the public is a key element of this ERP. The City of Shasta Lake personnel have been instructed to direct all media questions or information requests related to an emergency situation to The City of Shasta Lake’s Public Information Officer, PIO (pg. 6-2). The PIO is the official spokesperson for The City of Shasta Lake and is the only City of Shasta Lake employee who is authorized to speak directly to public media representatives.

Table C-11 in Appendix C provides contact information for the various media agencies that The City of Shasta Lake PIO might use to disseminate information to the public.

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

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

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

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

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

The City of Shasta Lake will ensure that all public notifications (BWO, UWA, or Do Not Drink Notices) will be coordinated with the DDW DE, County Environmental Health Department, and the County Public Health Officer prior to issuing a public notice.
The City of Shasta Lake will notify the DDW DE, the County Environmental Health Department and the County Public Health Officer prior to or immediately after issuing a public notice. Notice must be given to a person rather than a message left on voicemail. Table C-12 in Appendix C shows the primary, 1st Alternate and 2nd Alternate contacts for the County Public Health Officer and the County Environmental Health Department.

The City of Shasta Lake has prepared a series of public notices and press releases for use during various emergency situations in accordance with DDW guidance. These notices can be found in Appendix D.

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

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

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

1. Biological contamination of water supply system, including but not limited to:
   - Positive total or fecal coliform bacteriological samples.
   - Prolonged water outages in areas of ruptured sewer and/or water mains.
   - Failed septic tank systems in close proximity to ruptured water mains.
   - Ruptured water treatment, storage, and/or distribution facilities in areas of known sewage spills.
   - Known biological contamination.
   - Cross-connection contamination problems.
   - Illness attributed to water supply.

2. Unusual system characteristics, including but not limited to:
   - Prolonged loss of pressure.
   - Sudden loss of chlorine residual.
   - Severe discoloration and odor.
   - Inability to implement emergency chlorination.

3. Implemented due to treatment inadequacies.

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

1. Known or suspected widespread chemical or hazardous contamination in water supply distribution, including but not limited to:
   - Ruptured water distribution system (storage tanks, mains) in area of known chemical spill coupled with loss of pressure.
   - Severe odor and discoloration.
   - Loss of chlorine residual.
   - Inability of existing water treatment process to neutralize chemical contaminants prior to entering the distribution system.

2. Threatened or suspected acts of sabotage confirmed by analytical results, including but not limited to:
   - Suspected contamination triggered by acts of sabotage or vandalism.

3. Emergency use of an unapproved source to provide a supplemental water supply.

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

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

**6.5 Cancellation of Public Notification**

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

State Water Board DDW will not lift the BWO until two rounds, collected one day apart, of coliform bacteria samples have been analyzed and the results are negative. The City of Shasta Lake will fax two sets of sample results to the DDW District Office for final approval before rescinding the BWO.

Special chemical sampling will be required to rescind an UWA. The City of Shasta Lake will contact the DDW District Office to determine required sampling.


7.0 Water Quality Sampling

NOTE: Laboratory protocols and procedures identified in Section 7.0 are still under development by federal and state Agencies. Water utilities are encouraged to customize this section to reflect the laboratory resources that are currently available, and to update this section as new information becomes available. Some utilities will rely primarily on the local HAZMAT team, health department, or emergency management agency to collect and analyze samples during a contamination threat or incident. If that is the case for your utility, completion of Section 7.8 should be sufficient water quality sampling information for your ERP.

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

7.1 Laboratory Resources

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

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

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

7.2 CDPH Laboratory

The California Department of Public Health (CDPH) Drinking Water and Radiation Laboratory (DWRL) is part of the Center for Environmental Health (CEH). DWRL is the State’s primary drinking water quality testing laboratory, and is the only State laboratory capable of measuring environmental radiation. DWRL’s mission is to provide analytical services, reference measurements and technical support to the State’s Drinking Water Program, now the Division of Drinking Water in the State Water Resources Control Board.
(SWRCB), the Radiologic Health Branch (RHB), and the Environmental Management Branch (EMB). DWRL also supports the federal Centers for Disease Control and Prevention (CDC) under contract support. DWRL plays a supporting role by ensuring that California drinking water is healthful and suitable for human consumption. The DWRL chemistry unit tests water for inorganic contaminants including cyanide, metals such as lead and arsenic, anions such as nitrate and fluoride, and organic contaminants such as pesticides and petroleum products. The DWRL radiochemistry unit measures radioactivity in environmental samples (e.g., water, soils, air, biota) and identifies and quantifies naturally-occurring and man-made radionuclides. The DWRL microbiology unit provides environmental microbiology services that support the Drinking Water Program and EMB. DWRL’s biomonitoring unit determines chemicals and contaminants in human urine and blood specimens.

7.3 California Mutual Aid Laboratory Network

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

7.4 Chemical Analysis Classification

N/A

7.5 Biological Analysis Classification

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

- Level A Lab uses a Class II biosafety lab (BSL) cabinet.
- Level B Lab is a BSL-2 facility + BSL-3 safety practices.
- Level C Lab is a BSL-3 facility.
- Level D Lab is a BSL-4 facility.
- Level A Labs are used to rule out and forward organisms.
- Level B Labs are used for limited confirmation and transport.
- Level C Labs are used for molecular assays and reference capacity.
- Level D Labs are used for the highest level of characterization.
Currently, in California there are 28 Level A labs, 10 Level B labs, and two Level C labs. The two Level C laboratories are the Los Angeles County Public Health Laboratory in Los Angeles, California and the CDHS MDL in Richmond, California. Lawrence Livermore National Laboratory is also a Level C laboratory, but access to that lab is restricted. The only Level D laboratories available in the LRN are the national laboratories, such as those at the CDC and the Department of Defense. These laboratories test and characterize samples that pose challenges beyond the capabilities of the Level A, B, and C reference labs and provide support for other LRN members during a serious outbreak or terrorist event. The most dangerous or perplexing pathogens are handled only at the Bio-Safety Level 4 laboratories at CDC and the United States Army Medical Research Institute of Infectious Diseases.

7.6 Natural Disaster

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

7.7 Terrorist Event/Contamination Event

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

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

The City of Shasta Lake’s first step in this process will be to contact the DDW DE so the utility can notify the CDPH-DWRL of the incoming samples. The following steps are

The original sample kit was developed by the Metropolitan Water District of Southern California to be used during a terrorist or contamination event. USEPA reviewed the sample kit and provided a list of the sample bottles in the USEPA Toolbox. The CAMAL Net has also reviewed this kit and made some minor changes that will allow water quality samples to be collected under all conditions. The CAMAL Net version of the sample kit has been finalized for deployment. This kit will continue to evolve as the USEPA develops sampling protocols for these new constituents in drinking water. The estimated cost of one kit is approximately $200.

State Water Board DDW will purchase the supplies to create enough EWQSK to supply 2-3 in each DDW District Office. If water systems do not want to purchase and maintain their own kits, then the DWP will provide one of these kits in the event of an emergency. Requests for these kits should be made to the District Engineer when the water system reports the incident. Travel time from the District Office to the water system should be incorporated in the water system’s emergency response plan.
described in more detail below:

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

### 7.7.1 Emergency Water Quality Sampling Kit

The City of Shasta Lake’s EWQSK is located at the State Water Board DDW local office and contains sample bottles needed for chemical, radiological, and microbiological analysis that can be split into three complete sample sets. A complete list of the EWQSK contents is provided in Appendix B. The EWQSK should remain sealed before the sample is collected. Since some of the sample bottles contain reagents that expire, the bottles in each kit are replaced annually.

### 7.7.2 Sample Collection

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

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

### 7.7.3 Laboratory

Depending on the results of the field screening and actual event, the required laboratories will be notified and prepared to accept the samples. If an EWQSK (supplied by The City of Shasta Lake or DDW) is used, the CAMAL Net and the LRN will be notified and involved in the process for laboratory selection. The first step in this process is for the DE working with The City of Shasta Lake to contact DWRL.

### 7.7.4 Sample Transport

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

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

7.8 City of Shasta Lake Water Sampling and Monitoring Procedures
The name of agency (could be water utility or local emergency management or HAZMAT team) will have the primary responsibility for all water sampling and monitoring activities during an actual or potential contamination event. The City of Shasta Lake’s Laboratory Director, which will be Basic Lab, will provide technical support and advice to the local emergency management agency or HAZMAT team as needed throughout the incident.

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

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

<table>
<thead>
<tr>
<th>Contaminant</th>
<th>Sampling/Monitoring Procedures</th>
<th>Quantity of Required Samples</th>
<th>Responsible Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>VOC’s</td>
<td>Use sample-site plan for system wide contamination using VOC bottles from Basic Lab to collect samples</td>
<td>System contamination wide = 16 minimum</td>
<td>Tom Chism</td>
</tr>
<tr>
<td>Chemicals</td>
<td>Use sample-site plan for system wide contamination using bottles from Basic Lab to collect samples.</td>
<td>System contamination wide = 16 minimum</td>
<td>Tom Chism</td>
</tr>
<tr>
<td>Poisons</td>
<td>Use sample-site plan for system wide contamination using bottles from Basic Lab to collect samples.</td>
<td>System contamination wide = 16 minimum</td>
<td>Tom Chism</td>
</tr>
<tr>
<td>Bacteria and Viruses</td>
<td>Use sample-site plan for system wide contamination using colilert bottles to collect samples.</td>
<td>System wide contamination = 16 minimum</td>
<td>Tom Chism</td>
</tr>
</tbody>
</table>
The City of Shasta Lake laboratory has the following analytical capabilities:

*Chlorine residual, PH, Turbidity*

If outside laboratory assistance is needed, the City of Shasta Lake will contact the following laboratory facilities:

<table>
<thead>
<tr>
<th>Outside Laboratory Name</th>
<th>Contact Number</th>
<th>Capabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Lab</td>
<td>Regular hrs: 530-243-7234 After hrs: 530-355-2579</td>
<td>Coliform, metals, chemicals, VOC’s</td>
</tr>
</tbody>
</table>
8.0 Emergency Response, Recovery, and Termination

8.1 Response Phase

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

General information to be reported from the City of Shasta Lake facilities (or incident sites) includes:

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

Additionally, immediate specific information should include the status of the City of Shasta Lake:

- Personnel
- Equipment
- Vehicles
- Communications capabilities
- Facilities

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

1. Notify the WUERM (pg. 6-1) or the Alternate WUERM (pg. 6-2) as soon as possible.
2. Remain in a safe location in the vicinity to meet and assist medical, fire, and police personnel and other first responders as necessary.

8.1.2 Damage Assessment
Damage assessment is used to determine the extent of damage, estimate repair or replacement costs, and identify the resources needed to return the damaged system to full operation. This assessment is accomplished during the emergency response phase of the event, before the recovery phase is implemented.
The **WUERM** (pg. 6-1) is responsible for establishing a Damage Assessment Team.

The City of Shasta Lake Damage Assessment Team will be led by *an operations or maintenance supervisor, with representatives from engineering and procurement*. Team composition may vary, however, depending upon the nature and extent of the emergency.

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

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

Appendix F contains a damage assessment form that can be used for all the City of Shasta Lake facilities.

### 8.2 Recovery phase

#### 8.2.1 Recovery Planning

During emergency response operations, the Incident Commander or **WUERM** (pg. 6-1) will appoint a Recovery Manager. The Recovery Manager is responsible for selecting a recovery team and developing a recovery strategy prior to emergency termination.

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

- Facilitate the transition from emergency to recovery operations.
- Develop, implement, and maintain the Recovery Plan.
- Coordinate all vendor and contractor activities that occur on site.
- Ensure that the appropriate safety inspections have been completed.
- Coordinate the completion of emergency repairs and schedule permanent repairs.
- Notify key agencies of emergency repair status and the scheduled completion of system repairs.
- Complete permanent repair and/or replacement of system facilities.
- Review press releases prior to distribution.
8.0 EMERGENCY RESPONSE, RECOVERY

- Release repaired facilities and equipment for normal use.
- Replace, or authorize the replacement of, materials and supplies used in the emergency.
- Document all recovery activities.

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

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

8.2.2 Recovery Activities

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

- Notify all appropriate regulatory agencies that recovery phase is underway.
- Install warning signs, barriers, and shielding as needed.
- Take measures to protect workers and the public from hazardous exposures.
- Complete detailed evaluations of all affected water utility facilities and determine priorities for permanent repair, reconstruction, or replacement at existing or new locations.
- Begin repair activities design and make bids for contractor services.
- Make necessary repairs to the system and un-tag repaired facilities and equipment.
- Restore all telecommunications, data processing, and similar services to full operation.
- Complete assessment of losses and costs for repair and replacement, determine approximate reimbursements from insurance and other sources of financial assistance, and determine how residual costs will be financed by the water utility.
- Define needs for additional staff, initiate recruitment process, and adopt temporary emergency employment policies as necessary.
- Execute agreements with vendors to meet service and supply needs.
- Address needs for handling and disposing of any hazardous waste generated during recovery activities.
8.0 EMERGENCY RESPONSE, RECOVERY

- Control discharges as a result of recovery activities within regulatory and environmental compliance limits.

- Reevaluate need for maintaining the emergency management organization; consider returning to the normal organizational structure, roles, and responsibilities when feasible.

- Collect cost accounting information gathered during the emergency and prepare request for Emergency Disaster Funds (follow FEMA and State OES requirements).

- Debrief staff to enhance response and recovery efforts in the future by identifying lessons learned, developing action plans and follow-up mechanisms, and providing employee assistance programs if needed.

- Prepare After-Action Reports as required. Complete reports within 6 months of the event (90 days for public utilities which are part of a city or county government.).

8.3 Termination and review phase

The Recovery Manager will officially terminate the recovery phase when normal operations are resumed at all facilities affected by the emergency. Termination and review actions include the following:

- Initiate permanent reconstruction of damaged water utility facilities and systems.

- Obtain inspections and/or certifications that may be required before facilities can be returned to service.

- Restore water utility operations and services to full pre-event levels.

- Determine how emergency equipment and consumable materials should be replenished, decontaminated, repaired or replaced.

- Identify operational changes that have occurred as a result of repair, restoration, or incident investigation.

- Document the recovery phase, and compile applicable records for permanent storage.

- Continue to maintain liaison as needed with external agencies.

- Update training programs, the City of Shasta Lake ERP, and standard operating procedures, as needed, based upon lessons learned during the emergency response and recovery phases of the event.
9.0 Emergency Plan Approval, Update, Training, and Exercises

This section of the ERP describes the plan review and approval process, the practice and update schedule, plan for assessment of the ERP effectiveness and training, exercises, and drills of the ERP.

9.1 Plan Review and Approval

The City of Shasta Lake process for review and approval of the ERP is described in the sections below.

9.1.1 City of Shasta Lake Approval Authority

This plan is intended to be a living document that is reviewed regularly and updated as needed to ensure that the information it contains is correct. The ERP will be reviewed and approved by the WUERM (pg. 6-1), GM, and other approval personnel. The plan will undergo an initial review and approval process and will be reviewed and signed off by the SD after each revision. A revision log is found in the front of the ERP binder.

9.1.2 Local Government Approval

Local Government will review this plan annually for coordination and consistency with the City of Shasta Lake’s emergency planning programs.

9.2 Practice and Update Schedule

The schedule for training, updating, and review of the ERP is discussed below.

9.2.1 Schedule and Responsibility for Training and Exercises

A schedule for general security training and incident-specific exercises/drills for testing of the emergency response plan will be developed and reviewed annually.

The exercises, drills, and training sessions will be conducted annually or more frequently if the SD deems it necessary.

The SD will be responsible for the organization and management of the security-training program.

9.2.2 Schedule for ERP Review and Update

The SD will review and update the ERP and APs as follows:

- Annually prior to the annual ERP/AP training sessions.
- Upon update of the VA.
• Following the ERP exercises.
• Within 2 months of any significant plant modification or water system change.
• Immediately when there is a utility staff change where the staff member was named in the ERP.
• Immediately when there is a change in the roles and responsibilities of anyone involved in response activities.
• Immediately upon changes in internal and external contact information.

Any of the above activities will instigate a review and update of the ERP. All ERP holders will receive these updates, including the City’s main files and the copy with the State Health Dept.

9.3 Assessment of ERP Effectiveness

To evaluate the effectiveness of the ERP and to ensure that procedures and practices developed under the ERP are adequate and are being implemented properly, the City of Shasta Lake staff will perform audits of the program on a periodic basis.

One method of audit will be through exercises and drills. Members of the City of Shasta Lake management will act as observers during the exercises and will evaluate the staff’s performance in responding to emergency incidents as well as the overall effectiveness of the ERP in accomplishing their goals. The City of Shasta Lake management will review the results of the evaluation, and the ERP and APs will be updated as appropriate to incorporate any lessons learned from the exercises.

The ERP program will also be discussed as an agenda item during the GM’s meeting each time the VA is updated. At this time, the City of Shasta Lake management and staff will discuss the need to update or augment the ERP based on new information regarding threats or critical asset vulnerability.

The SD will maintain a file of ERP assessment and after-action reports.

9.4 Training, Exercises, and Drills

All The City of Shasta Lake personnel who may be required to respond to emergencies will receive initial and refresher training class on this ERP. The training will be conducted annually and when any of the following occurs:

• New employees are hired.
• Special emergency assignments are designated to operations staff.
• New equipment or materials are introduced.
• Procedures are updated or revised.

The training will consist of the following programs:
**Orientation Sessions:** The orientation sessions will include basic instruction and explanation of the ERP and AP procedures. Written tests may be used to ensure some level of comprehension by the attendees.

**Table Top Workshop:** Table top workshops involve developing scenarios that describe potential problems and providing certain information necessary to address the problems. Employees will be presented with a fabricated major event. Next they will verbally respond to a series of questions and then evaluate whether their responses match what is written in the ERP.

**Functional Exercises:** The functional exercise is designed to simulate a real major event. A team of simulators is trained to develop a realistic situation. By using a series of pre-scripted messages, the simulation team sends information in to personnel assigned to carry out the ERP procedures. Both the simulators and personnel responding to the simulation are focused on carrying out the procedures to test the validity of the ERP.

**Full-scale Drills:** Emergency response personnel and equipment are actually mobilized and moved to a scene. A problem is presented to the response personnel, and they respond as directed by the ERP and the Incident Commander or WUERM at the scene.
10.0 References and Links

The following is a list of references and Internet links that provide additional water system security and ERP information.

**California Department of Health Services Drinking Water Program:** CDHS DWP is the Drinking Water Primacy Agency for all California public water systems serving over 200 service connections. CDHS has published a guidance document to assist California public water systems in developing or revising their emergency response plans. General information, as well as the guidance document and its appendices, is available at [http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Security.shtml](http://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Security.shtml)

**Department of Homeland Security (DHS):** DHS is the overall lead agency for homeland security issues. DHS will become involved in incident response if needed. General information is available at [http://www.dhs.gov](http://www.dhs.gov).

**United States Environmental Protection Agency:** USEPA has numerous resources available. The following are key sources:

- Water Infrastructure Security information, guidance, and training information can be found at [http://water.epa.gov/drink/emerprep/index.cfm](http://water.epa.gov/drink/emerprep/index.cfm)
- Information on Local Emergency Planning Committees (LEPCs) can be found at [http://www2.epa.gov/epcra/local-emergency-planning-committees](http://www2.epa.gov/epcra/local-emergency-planning-committees).

**The Center for Disease Control and Prevention:** The CDC develops resources to assist hospital staff, clinics, and physicians in diagnosing diseases related to terrorism, reporting incidences of disease, and controlling the spread of infection. Information on emergency preparedness and response can be found at [http://www.bt.cdc.gov/](http://www.bt.cdc.gov/).


**Federal Emergency Management Agency (FEMA):** FEMA’s mission is to reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery. FEMA takes the lead if an incident is assigned to DHS. General information can be found at [http://www.fema.gov](http://www.fema.gov). In addition, several online training courses relevant to emergency management are available on-line from FEMA at [http://training.fema.gov/EMIWeb/IS/crslist.asp](http://training.fema.gov/EMIWeb/IS/crslist.asp).
The American Water Works Association (AWWA): USEPA training developed through partnership with AWWA covers the entire spectrum of security issues including assessing vulnerabilities, emergency response plans, and risk communication. AWWA information can be accessed at http://www.awwa.org. Specific AWWA resources can be found at http://www.awwa.org/resources-tools.aspx

The Association of State Drinking Water Administrators (ASDWA): ASDWA has information on water security planning, training, and links to state programs and other information sources. Go to the security link at http://www.asdwa.org.

National Rural Water Association (NRWA): NRWA developed the SEMS Software Program, which can be loaded on a personal computer. It is based on NRWA/ASDWA’s Security Vulnerability Self-Assessment Guide for Small Drinking Water Systems Serving Populations Between 3,300 and 10,000. More information can be found at http://www.nrwa.org.

Agency for Toxic Substances and Disease Registry (ATSDR): ATSDR is directed by congressional mandate to perform specific functions concerning the effect on public health of hazardous substances in the environment. These functions include public health assessments of waste sites, health consultations concerning specific hazardous substances, health surveillance and registries, response to emergency releases of hazardous substances, applied research in support of public health assessments, information development and dissemination, and education and training concerning hazardous substances. More information can be found at http://www.atsdr.cdc.gov.
Appendix A
Action Plans
# 1A - Threat of or Actual Contamination to Water System

## POSSIBLE STAGE

### AP Summary:

This Action Plan applies to the intentional introduction of a contaminant into the water system. The contaminant could be introduced at any point within the system, including raw water, treatment facilities, distribution system including distribution pipes, finished water storage, or pump stations. The adversary may or may not give notice of the contaminant or provide the location. Contamination may have actually occurred or it may be a hoax.

### Initiation and Notification:

1. Initiate this AP if any of the following has occurred:

   **Security Breach** (including, for example):
   - Unsecured Doors
   - Open Hatches
   - Unlocked/Forced Gates
   - Alarm Triggered

   **Witness Account** (including, for example):
   - Suspicious Activity
   - Trespassing
   - Breaking and Entering
   - Tampering with Equipment or Property

   **Direct Notification by Perpetrator** (including, for example):
   - Verbal Threat
   - Threat in Writing

   **Notification by Law Enforcement** (including, for example):
   - Suspicious Activity
   - Threat made to Water System

   **Notification by News Media** (including, for example):
   - Threat Delivered to News Media
   - Media Discovers Threat

   **Unusual Water Quality Parameters** (including, for example):
   - Changes in pH, chlorine residual or turbidity
   - Unexpected monitoring or sampling results

   Use this AP if you receive any incident warning (see types of warnings to left) indicating possible contamination of your water system.

   If you have evidence that corroborates the warning, or if collective information indicates that contamination is likely, **GO TO AP 1B – CREDIBLE STAGE**.

   If there is confirmed evidence and/or definitive information that the water system has been contaminated, **GO TO AP 1C – CONFIRMED STAGE**.
### 1A - Threat of or Actual Contamination to Water System

#### POSSIBLE STAGE

- Strange odor, color or appearance

Customer Complaints (including, for example unexplained or unusually high complaints of):
- Odor
- Color or Appearance
- Taste

Public Health Notification (including, for example):
- Victims in Emergency Rooms and/or Clinics
- High Incidence of Similar Health Complaints in one Local Area

#### Initiation and Notification:

2. Notify WUERM (pg. 6-1) or Alternate WUERM (pg. 6-2) immediately upon discovery of any of the above Threat Warnings.

The individual who first notices or receives the threat warning should contact the WUERM immediately by whatever means of communication may be available.

#### Equipment Identified:

1. Chlorine test kits are at the Water Plant and at Public Works.

2. Bacteria sample bottles are available at the Water Plant, Public Works, or at Basic Lab.

3. The DHS District Office should have a Sampling kit available to test all toxins.

This equipment is available to assist in the execution of this AP.

#### Specific Activities:

**I. Assess the Problem**

A. Complete the following Threat Warning Report Forms according to the type of Threat Warning received. (Appendix F of ERP).

- Security Incident Report Form

Threat Warning Report Forms help document, organize and summarize information about a security incident. The individual who discovers the incident warning, the WUERM,
### 1A - Threat of or Actual Contamination to Water System

#### POSSIBLE STAGE

<p>| | |</p>
<table>
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</thead>
</table>
|   | - **Witness Account Report Form**  
- **Phone Threat Report Form** *(to be filled out during actual phone call)*  
- **Written Threat Report Form**  
- **Water Quality / Consumer Complaint Report Form**  
- **Public Health Information Report Form** |

B. Complete **Threat Evaluation Worksheet** *(Appendix F-17 of ERP)*.

C. Evaluate **Threat Evaluation Worksheet**, and determine if threat is Possible.

   - If YES, perform Response Steps 1 – 8 below.
   - If NO,
     - i. Return to normal operations.
     - ii. Document and record the threat for future reference.

#### II. Isolate and Fix the Problem

1. Notify local law enforcement.
3. Do not disturb site if location could be possible crime scene. Consult **Maintaining Crime Scene Integrity** Form in Appendix F5.
4. Alert staff and emergency response personnel about threat.
5. Consider containment / isolation, elevating chlorination, and/or discharge of suspect water.
6. Evaluate spread of suspect water and potential impact on public health.

#### III. Monitoring

7. Initiate Site Characterization Activities:
   - Define the investigation site.
   - Designate site characterization team members.
   - Conduct preliminary assessment of potential site hazards.
### 1A - Threat of or Actual Contamination to Water System

#### POSSIBLE STAGE

- Approach site and conduct field safety screening to detect any hazards to the characterization team.
- Search for physical evidence (discarded containers, etc.).
- Investigate records from CCTV cameras.
- Look for environmental indicators (dead animals or fish, dead vegetation, unusual odors or residues).
- Perform rapid field testing of the water.
- Collect water samples according to sampling plan.

During the site approach, the team should halt their approach and immediately inform the [WUERM] of their findings. The site may then be turned over to the HAZMAT Team.

The [WUERM] may determine the threat is credible based preliminary information before the site characterization has been completed.

### IV. Recovery and Return to Safety

#### 8. Determine if threat is credible.

- If YES, initiate AP 1B.
- If NO,
  - Return to normal operations.
  - Store water samples for 6 months.

You should determine whether or not the threat is ‘credible’ within 2 to 8 hours (preferably within 2 hours) from the time the threat is deemed ‘possible’, depending on the effectiveness of the containment strategy.

If the threat is not deemed ‘credible’, the samples obtained during site characterization should be stored in case the situation changes and analysis is determined to be necessary.

### V. Report of Findings


The Utility [Security Director] should file an internal report for the Utility’s files, and also provide information as requested to Local Law Enforcement.

### VI. AP-1A Revision Dates
# AP 1B - Threat of or Actual Contamination to Water System

## CREDIBLE STAGE

### AP Summary:
This Action Plan applies to the intentional introduction of a contaminant into the water system. The contaminant could be introduced at any point within the system, including raw water, treatment facilities, distribution system including distribution pipes, finished water storage, or pump stations. The adversary may or may not give notice, identify the contaminant, or provide the location. Contamination may have actually occurred or it may be a hoax.

### Initiation and Notification:

<table>
<thead>
<tr>
<th>A.</th>
<th>Initiate this AP if there is credible evidence that the water system has been contaminated:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Additional information collected during the investigation corroborates the threat warning.</td>
</tr>
<tr>
<td></td>
<td>• Collective information indicates that contamination is likely.</td>
</tr>
<tr>
<td></td>
<td>• Signs of contamination are observed during site characterization.</td>
</tr>
<tr>
<td></td>
<td>• Additional water quality data shows unusual trends that are consistent with the initial data and corroborate the threat.</td>
</tr>
<tr>
<td></td>
<td>• A pattern of customer complaints emerges.</td>
</tr>
<tr>
<td></td>
<td>• Previous threats and incidents corroborate the current threat.</td>
</tr>
</tbody>
</table>

| B. | Notify [WUERM pg. 6-1] or [Alternate WUERM pg. 6-2] immediately upon discovery of credible evidence of threat (if not already notified). |

| C. | Initiate ERP. |

| D. | Initiate partial or full activation of the Emergency Operations Center (EOC). |

Perform internal and external notifications according to ERP.

### Equipment Identified:

| 1. Chlorine test kits are at the Water Plant and at Public Works. |
| 2. Bacteria sample bottles are available at the Water Plant, |

If there is confirmed evidence and/or definitive information that the water system has been contaminated, **GO TO AP 1C – CONFIRMED STAGE.**

The individual who first notices or receives the credible evidence should contact the [WUERM] immediately by whatever means of communication may be available. The [WUERM] will decide whether to initiate the ERP on a partial or full basis. The [WUERM] will also decide when and to what extent to activate the EOC.

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.

The [Information Officer], [IO] is the only one authorized to make notifications to outside agencies.

This equipment is available to assist in the execution of this AP.
# AP 1B - Threat of or Actual Contamination to Water System

## CREDIBLE STAGE

<table>
<thead>
<tr>
<th>Specific Activities:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Assess the Problem</strong></td>
<td></td>
</tr>
<tr>
<td>1. Assess results of previous sample analysis.</td>
<td></td>
</tr>
<tr>
<td>2. Perform additional site characterization at primary sites as needed.</td>
<td></td>
</tr>
<tr>
<td>3. Perform site characterization at any new investigation sites.</td>
<td></td>
</tr>
<tr>
<td><strong>II. Isolate and Fix the Problem</strong></td>
<td></td>
</tr>
<tr>
<td>4. Perform actions to estimate the contaminated area and predict movement of contamination.</td>
<td>The contaminated area can be estimated using hydraulic models, consumer complaints, public health agency reports, water quality data, or other available information. The estimate may define additional locations where site characterization should be performed</td>
</tr>
<tr>
<td>5. Take actions to isolate portions of system containing suspect water. See ERP Appendix B for System Shut Down Plan.</td>
<td></td>
</tr>
<tr>
<td>7. Initiate Alternate Water Supply Plan (ERP Section 3.4) to provide alternate water supply for customers and fire protection as necessary.</td>
<td></td>
</tr>
<tr>
<td><strong>III. Monitoring</strong></td>
<td></td>
</tr>
<tr>
<td>8. Continue to monitor water quality in suspect parts of system by manual sampling, rapid field testing, or automated means.</td>
<td></td>
</tr>
<tr>
<td><strong>IV. Recovery and Return to Safety</strong></td>
<td></td>
</tr>
<tr>
<td>9. Determine if threat is confirmed.</td>
<td>It may take several days to collect sufficient evidence to confirm a contamination incident, depending on the type of information used for confirmation. (Some microbiological analytical</td>
</tr>
<tr>
<td>• If YES, Initiate AP 1C.</td>
<td></td>
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<tr>
<td>• If NO,</td>
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<tr>
<td>• Verify that water is safe.</td>
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</tbody>
</table>
### AP 1B - Threat of or Actual Contamination to Water System

**CREDIBLE STAGE**

- Notify public that water is safe.
- Notify outside agencies that water is safe.
- Return to normal operations.
- Store water samples for at least 30 days

*procedures may take several days.*

If the threat is not deemed ‘confirmed’, the samples obtained during site characterization should be stored in case the situation changes and an analysis is determined to be necessary.

### V. Report of Findings

E. File incident reports.

The Utility [Security Director] should file an internal report for the Utility’s files, and also provide information as requested to Local Law Enforcement and other outside agencies.

### VI. AP-1B Revision Dates

- [ ]
- [ ]
- [ ]
- [ ]
### AP 1C - Contamination to Water System

#### CONFIRMED STAGE

<table>
<thead>
<tr>
<th>AP Summary:</th>
<th>This Action Plan applies to the intentional introduction of a contaminant into the water system. The contaminant could be introduced at any point within the system, including raw water, treatment facilities, distribution system including distribution pipes, finished water storage, or pump stations. The adversary may or may not give notice, identify the contaminant, or provide the location. Contamination may have actually occurred or it may be a hoax.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation and Notification:</td>
<td>A. Initiate this AP if there is confirmed evidence that the water system has been contaminated:</td>
</tr>
<tr>
<td></td>
<td>1. There is <strong>analytical confirmation</strong> of the presence of one or more contaminants in the water system.</td>
</tr>
<tr>
<td></td>
<td>2. The <strong>preponderance of the evidence</strong> confirms that a contamination incident has occurred.</td>
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<td></td>
<td>- There is a security breach with obvious signs of contamination along with unusual water quality and consumer complaints in the vicinity of the security breach.</td>
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<tr>
<td></td>
<td>- Additional findings (laboratory analysis, field observations) of continued site characterization activities add to other credible evidence of contamination.</td>
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<td></td>
<td>- There is information from public health officials, area hospitals, or 911 call centers indicating a problem with the water supply.</td>
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<tr>
<td></td>
<td>- Law enforcement agencies have discovered crucial evidence or apprehended a suspect that helps confirm that the water has been contaminated.</td>
</tr>
<tr>
<td></td>
<td>- Specific information on a number of potential contaminants can be used in conjunction with other available...</td>
</tr>
<tr>
<td>If there is no confirmed evidence and no definitive information that the water system has been threatened or contaminated, GO TO AP 1B – CREDIBLE STAGE.</td>
<td>It may take several days to collect sufficient evidence to confirm a contamination incident, and the required time will depend on the type of information used for confirmation (some microbial analytical procedures may take several days).</td>
</tr>
</tbody>
</table>
### AP 1C - Contamination to Water System

#### CONFIRMED STAGE

<table>
<thead>
<tr>
<th>Information to narrow down the number of contaminant candidates.</th>
<th>The individual who first becomes aware of the confirmed evidence should contact the [WUERM] immediately by whatever means of communication may be available. The [WUERM] will decide whether to initiate the ERP on a partial or full basis. The [WUERM] will also decide when and to what extent to activate the EOC. Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP. The [Information Officer], [IO], should make the notifications to the outside agencies.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initiation and Notification:</strong></td>
<td></td>
</tr>
<tr>
<td>B. Notify [WUERM pg. 6-1] or [Alternate WEURM pg. 6-2] immediately upon discovery of confirmed evidence of contamination (if not already notified).</td>
<td></td>
</tr>
<tr>
<td>C. Initiate full ERP activation.</td>
<td></td>
</tr>
<tr>
<td>D. Initiate full activation of Emergency Operations Center (EOC).</td>
<td></td>
</tr>
<tr>
<td>E. Engage other organization as needed (drinking water primacy agency, public health agency, response agencies, law enforcement).</td>
<td></td>
</tr>
<tr>
<td>F. Perform internal and external notifications according to ERP.</td>
<td></td>
</tr>
</tbody>
</table>

#### Equipment Identified:

<table>
<thead>
<tr>
<th>A. Cl₂ test kit and bacteria sample bottles are located at the Water Plant and at the Public Works Building.</th>
<th>This equipment is available to assist in the execution of this AP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. The Emergency Sampling Kit for poisons, biological agents, or any toxins is located at the California Department of Health Services “Office of Drinking Water” at 415 Knollcrest in Redding.</td>
<td></td>
</tr>
</tbody>
</table>

#### Equipment Location
### AP 1C - Contamination to Water System

#### CONFIRMED STAGE

<table>
<thead>
<tr>
<th>Specific Activities:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Assess the Problem</strong></td>
<td></td>
</tr>
</tbody>
</table>
1. Assess results of previous sample analysis and attempt to identify the contaminant.  
2. Confirm the identity of the contaminant.  
3. Perform a full characterization of the contaminated area, including contaminant properties, contaminant concentration profiles, and characteristics of the impacted area.  
4. Evaluate the likely direction and extent of future movement of the contaminant within the distribution system.  
5. Evaluate all available information about the contamination incident.  
6. The contaminated area can be estimated using hydraulic modes, consumer complaints, public health agency reports, water quality data, or other available information. The estimate may define additional locations where site characterization should be performed.  
7. Continue sampling and analysis to monitor the status and extent of the contamination, and to verify that containment strategies are working.  
8. Consult with appropriate officials to develop a Remediation and Recovery Plan.  
   a. Evaluate options for treating Remediation and recovery activities will likely be planned and implemented by a number of agencies. The first step of the process is to establish the roles and responsibilities of each organization.  
| **II. Isolate and Fix the Problem** |  
| **III. Monitoring** |  
| **IV. Recovery and Return to Safety** |  
| Effective implementation of response actions depends on positive identification of the contaminant and knowledge of contaminant properties, including public health protection strategies and selection of treatment technologies.  
If information from site characterization activities indicates that the contaminant impacts water quality in a certain manner (i.e., consumes free chlorine or imparts a certain odor to the water), the contaminant specific information may facilitate tentative identification of a contaminant and determine the analytical approach that should be used to positively identify the specific contaminant. Sources of contaminant information include:  
EPA Water Contaminant Information Tool (WCIT) – under development  
|  |  |
# AP 1C - Contamination to Water System

## CONFIRMED STAGE

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>contaminated water and rehabilitating system components.</td>
</tr>
<tr>
<td>b.</td>
<td>Select treatment and rehabilitation technology/approach.</td>
</tr>
<tr>
<td>c.</td>
<td>Develop strategy for disposal of contaminated residuals.</td>
</tr>
<tr>
<td>d.</td>
<td>Develop sampling and analysis plan to verify remediation.</td>
</tr>
<tr>
<td>e.</td>
<td>Develop communications and public relations plan.</td>
</tr>
</tbody>
</table>


<p>| | |</p>
<table>
<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td>Verify that water is safe by performing additional sampling and analysis to confirm the progress of system treatment and remediation.</td>
</tr>
<tr>
<td>b.</td>
<td>Notify public that water is safe.</td>
</tr>
<tr>
<td>c.</td>
<td>Notify outside agencies that water is safe.</td>
</tr>
<tr>
<td>d.</td>
<td>Return to normal operations.</td>
</tr>
<tr>
<td>e.</td>
<td>Store water samples for one year.</td>
</tr>
</tbody>
</table>

### V. Report of Findings

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>G. File incident reports with internal and external agencies as required.</td>
<td>The Utility [Security Director] should file an internal report for the Utility’s files, and also provide information as requested to outside agencies.</td>
</tr>
</tbody>
</table>

### VI. AP-1C Revision Dates

<p>| | |</p>
<table>
<thead>
<tr>
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</table>
# AP 2 - Structural Damage from Explosive Device

## AP Summary:
This Action Plan applies to an incident where intentional structural damage has occurred to the water system as a result of an explosive device. The assumed intent of the explosion is to disrupt normal system operations at any point within the system, including raw water, treatment, finished water storage, or the distribution network.

## Initiation and Notification:

### A. Initiate this AP if it appears that an explosive device has caused damage, or has the potential to cause damage to one or more components of the water system. The event will begin with an “incident discovery” which may come to COSL by one (or more) of the following:

- Security Equipment
- Employee Discovery
- Witness Account of Explosion
- Notification By Adversary
- Notification by Fire Department
- Notification by Law Enforcement
- Notification By News Media

### B. Call 911 and notify [WUERM pg. 6-1] or [Alternate WUERM pg. 6-2] immediately upon discovery of the explosion. The [WUERM pg. 6-1] should then notify others as appropriate. Examples include:

- Local Fire Department
- Local Police Department
- FBI
- ATF

### C. Take all practical measures to ensure that the building or facility is evacuated.

### D. In cases where an adversary calls a COSL employee in advance that employee should complete the Bomb Threat Checklist OR Phone Threat Report Form found in Section VIII of the ERP.

### E. Initiate partial or full ERP activation.

### F. Initiate partial or full activation of the Emergency Operations Center (EOC).

The individual who first notices or receives word of the explosion should contact the [WUERM] immediately by whatever means of communication are available. Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.

The Bomb Threat Checklist and the Phone Threat Report Form contain questions that should be asked the caller if possible to help determine the specifics of the threat including the location of the explosive device, type of device, time of detonation, and reason for the attack.

The [WUERM] will decide whether to initiate the ERP on
## AP 2 - Structural Damage from Explosive Device

| G. Engage other organization as needed (Law Enforcement, Fire Protection, FBI). |
| H. Perform internal and external notifications according to ERP. |
| a partial or full basis. The [WUERM] will also decide when and to what extent to activate the EOC. |

<table>
<thead>
<tr>
<th>Equipment Identified:</th>
<th>Equipment</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>O2 sensors are located at the Public Works Bldg.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backhoe and dump truck at Public Works.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Equipment Identified:

| O2 sensors are located at the Public Works Bldg. |
| Backhoe and dump truck at Public Works. |

### Specific Activities:

#### I. Assess the Problem

1. **Deploy Damage Assessment Team(s) (DAT)**
   - Perform a thorough assessment of the structural damage caused by the explosion.
   - Determine how explosion is effecting system operations.

2. Check and monitor all other water system functions and facilities to ensure that the rest of the system is operating normally. (The initial explosion could be a diversion to a larger event, or it could be the first in a series of similar attacks.)

3. If the damage appears to be intentional, treat as a crime scene. Consult with local police, state police, and the FBI on evidence preservation. Also see *Maintaining Crime Scene Integrity* Form, Appendix F of ERP.

4. Isolate damaged facility from rest of water system, and take measures to bypass the damaged area if possible.

5. Inform local police, state police, and the FBI of potential hazardous materials.

---

The DAT will work in conjunction with local/state law enforcement in terms of incident command and control.

UNDER NO CIRCUMSTANCES WILL THE DAT TEAM ENTER THE AREA CONTAINING THE EXPLOSIVE DEVICE UNTIL AFTER THE LOCAL LAW ENFORCEMENT EXPLOSION SPECIALISTS (BOMB SQUAD) HAS DETERMINED THAT THE AREA IS SAFE.
### AP 2 - Structural Damage from Explosive Device

| II. Isolate and Fix the Problem | 6. Physically secure water system facilities and implement heightened security procedures throughout the system. |
| | 7. Initiate Alternate Water Supply Plan (ERP Section 3.4) to provide alternate water supply for customers and fire protection as necessary. |
| | 8. Based on extent of damage, consider alternate (interim) treatment schemes. |
| | 10. Request assistance from outside contractors or other water utilities if needed to help repair the damage. |
| III. Monitoring | 11. Perform sampling and monitoring activities and analysis to determine if the explosion has rendered the water supply unsafe for customers. |
| | 12. Perform a system pressure evaluation to determine how the explosion has affected customers and fire water capability in each pressure zone. |
| IV. Recovery and Return to Safety | 13. Repair damage to critical equipment and facilities as soon as possible. |
| | 14. Determine and mitigate effects on other system components. For example, replace water storage capacity if it was diminished during repairs. |
| | 15. Clean and disinfect system components as necessary. |
| | 16. Resume normal operations. |
| | 17. Assess need for additional protection/security measures. |

The [WUERM] will inspect the repairs and will give the OK to resume normal operation of the water system. The [WUERM] will evaluate a heightened security posture. As a result, security will be increased or decreased as necessary according to the perceived threat. The Utility [Security Director] should file an internal report for the Utility’s files, and also provide information as...
### AP 2 - Structural Damage from Explosive Device

<table>
<thead>
<tr>
<th>Revision Dates</th>
<th>requested to Local Law Enforcement and other outside agencies.</th>
</tr>
</thead>
</table>

**VI. AP-2**
AP 3 – Employee Assaulted with Weapon  
*(Armed Intruder)*

**AP Summary:** This Action Plan applies to the threat of an employee(s) being assaulted by an intruder (possibly an ex-employee), with a weapon. Incidents of this type will vary in scale and severity, but the following should generally apply across the spectrum of threat conditions.

If you believe this threat is of current importance and have not yet dialed 911 or an emergency equivalent, do so immediately before proceeding.

**Initiation and Notification:** Initial notification of the incident will vary in both method and urgency, however in any scenario the first priority is the welfare of the assault victim. Under all circumstances, emergency personnel should be notified and consulted immediately.

This threat requires a response addressing three distinct categories:

- Ensuring the health and safety of the victim and other employees.
- Notifying and facilitating involvement of the proper authorities.
- Communicating specifics of the incident to other staff, the media, and the victim’s relatives.

Remain aware of these aspects of your response as the AP is initiated and consulted.

**Equipment Identified:**

- First-aid kits are in every truck.
- Larger First-aid kits are at every large city facility

**Specific Activities:**

The individual who first notices or receives word of the assault should contact 911 immediately by whatever means of communication may be available.

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.

This equipment is available to assist in the execution of this AP.
## AP 3 – Employee Assaulted with Weapon (Armed Intruder)

### I. Assess the Problem

Assessment of the severity of injury should not be made by Utility staff; proper diagnosis should be made only by trained medical personnel. The following general steps will be prudent:

1. The first task upon discovery of the incident is to dial 911 and report the incident in detail.
2. An ambulance (or other transportation to the hospital in less urgent situations) should be immediately arranged in all cases.
3. Decision-making control of the situation should be readily surrendered to the proper authorities.
4. In the event of a hostage situation or extended incident, Utility staff should notify the authorities and evacuate the area quickly.
5. Under no circumstances should Utility personnel attempt to subdue the adversary or bring personal weapons onto the scene.

### II. Isolate and Fix the Problem

6. If witnesses were present they should be readily available to provide information to the authorities. Fill out the **Suspect Identification Form**. See Appendix F of ERP.

7. The area surrounding the incident is a crime scene and care should be taken not to alter anything that may impair the ability of the authorities to interpret or recreate the assault. Consult the **Maintaining Crime Scene Integrity** Form located in Appendix F of this ERP.

8. The weapon, if present, should not be handled or touched in any way.

### III. Monitoring

9. Communication with the media should be handled in a proactive fashion, with statements made only by the identified Utility spokesperson. Similarly, employees should not be left to spread the word through gossip and hearsay. An announcement carrying relevant details should be disseminated promptly.

10. If the assault victim is injured or otherwise unable

**Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.**
### AP 3 – Employee Assaulted with Weapon (Armed Intruder)

| to perform his/her duties, the replacement personnel may also be under significant stress. Care should be taking in selecting replacement personnel including monitoring of performance and behavior |
|---|---|
| **IV. Recovery and Return to Safety** |
| 11. Staff stress may have serious ramifications. It is important to evaluate these effects in an ongoing fashion and address them accordingly. The Utility should consider temporary mental health counselors under such tragic circumstances. |
| 12. In the event of a fatality, notification of family is an unfortunate duty, which may be best handled by the local police or other authorities experienced in such tasks. |
| 13. If security was breached during the incident, rapidly address any weakness the incident may have identified. Evaluate access to the incident location and modify where necessary. |
| 14. If the adversary was acting with an identifiable motive, consider the mentality and culture of the utility to evaluate if the underlying issue may be significant and widespread. |
| 15. If assault was of a sexual nature consider awareness training for utility staff. |
| 16. The need to maintain a heightened security posture should be evaluated, and security should be increased and decreased as necessary according to the perceived threat. |
| **V. Report of Findings** |
| 17. In addition to completing the appropriate filings with the local police and other agencies, the utility should assemble relevant personnel to review the effectiveness of the action plan and reinforce lessons learned in the process. |
| **VI. AP-3 Revision Dates** |
### AP4 – SCADA Security

#### AP Summary:
This Action Plan applies to a cyber attack on a SCADA network system when the cyber intruder is:

- Conducting DoS (Denial of Service)
- Initiating SCADA/DCS command spoofing
- Attempting to take the SCADA/DCS system down
- Attempting to take control of or is in control of the system

#### Prepare for problems by:

- Updating all network documentation around the SCADA/DCS
- Documenting all network data flows to/from Intranet systems, SCADA/DCS and surrounding systems
- Identifying Zones of Vulnerability
- Identifying ramifications and feasibility of disconnecting networks, computers and data flows
- Ensuring that sufficient monitoring and network control points (firewalls, IPS, etc.) are in place to both know what’s happening on your network and how to control it
- Characterizing network traffic so that anomalous behavior can be identified
- Becoming familiar with computer forensics tools and practices before being forced to learn them “under fire”
- Becoming familiar with host-based monitoring and intrusion detection, since most hacking over networks is now conducted via encrypted tunnels or data streams.
- Ensuring that backup/restore procedures are up to date, as are the backups themselves

#### Initiation and Notification:
Notify immediately upon discovery of the attack:

- **[WUERM pg.6-1]**, Data (IT) Manager
- Others as appropriate (for example):
  - Internet Service Provider
  - Computer Equipment Vendor
  - Computer Emergency Response Team

The individual that first notices or receives word of an attack should contact the Data (IT) manager and [WUERM] immediately by whatever means of communication may be available.

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.

#### Equipment Identified:

<table>
<thead>
<tr>
<th>Equipment Location</th>
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<tbody>
<tr>
<td>This equipment is available to assist in the execution of this AP.</td>
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</table>
## AP4 – SCADA Security

<table>
<thead>
<tr>
<th>Specific Activities:</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Assess the Problem</strong></td>
<td>An attack on SCADA system may be manifested in several different manners and may be quite difficult to initially determine the specific mode of attack or objective of the SCADA threat. Initial areas for investigation are:</td>
</tr>
<tr>
<td></td>
<td>- SCADA is not controlling plant parameters</td>
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<tr>
<td></td>
<td>- Complaints from customers</td>
</tr>
<tr>
<td></td>
<td>- Quality of water results</td>
</tr>
<tr>
<td></td>
<td>- Inadequate throughput</td>
</tr>
<tr>
<td><strong>II. Isolate and Fix the Problem</strong></td>
<td>In a DoS an intruder breaks into a number of computers and plants programs that lie dormant until activated by the attacker. The computers then send a steady stream of data packets to a targeted Web site in an attempt to crash a service (or server), overload network links, or disrupt other mission-critical resources. DoS attacks are powerful because they can be launched simultaneously from hundreds of remotely controlled computers, thereby amplifying their reach. The objective of a DoS attack is to exhaust the resources of the target until the underlying network fails. The tools for DoS attacks are widely available and can be found at numerous hacker Web sites.</td>
</tr>
<tr>
<td>1. Restrict physical access to the area.</td>
<td>Restricting access helps to preserve fingerprints for later prosecution (if physical access to systems is involved)</td>
</tr>
<tr>
<td>2. Physically unplug any phone lines that could dial in to the attacked computer.</td>
<td>These steps isolate the SCADA system from the outside world where the cyber attack is originating.</td>
</tr>
<tr>
<td>3. Unplug the computer from the network.</td>
<td>The SCADA system itself may be malfunctioning as a result of the attacks with equipment not operating as originally intended.</td>
</tr>
<tr>
<td>4. Determine if the SCADA system needs to be isolated from process operations and taken completely off line.</td>
<td>Useful for later reference if the machine needs to be disassembled for examination.</td>
</tr>
<tr>
<td>5. Photograph the scene, including connections to any peripherals.</td>
<td>Merely turning on a Windows computer changes time stamps and other important evidence, for example.</td>
</tr>
<tr>
<td>6. IF the computer is off, DO NOT turn it on (preferred method is to jumper system disk drive(s) as read only, and perform a post-mortem on a separate</td>
<td>Rebooting your computer may launch viruses or time bombs.</td>
</tr>
<tr>
<td></td>
<td>Access timestamps may be altered.</td>
</tr>
<tr>
<td></td>
<td>Manual sampling may be necessary if computerized process are not functioning</td>
</tr>
</tbody>
</table>
### AP4 – SCADA Security

7. IF the computer is on, DO NOT reboot it.

8. Avoid accessing any files on the compromised machine.

9. Increase sampling at or near system intakes – consider whether to isolate.

10. Preserve latest full battery background test at baseline.

11. Increase sampling efforts.

12. Check for NIPC water sector warnings (NIPC may contain additional protective actions to consider: [http://www.dhs.gov/office-infrastructure-protection](http://www.dhs.gov/office-infrastructure-protection) or [http://www.infraguard.org](http://www.infraguard.org)).

### III. Monitoring

13. Monitor unmanned components (storage tanks & pumping stations) – consider whether to isolate. With the SCADA system down, it may be easier for attackers to physically enter the site undetected.

### IV. Recovery and Return to Safety

14. Solicit the assistance of a Computer Emergency Response Team or Network Forensics Specialists. OR with appropriate training, develop site-specific procedures to:

15. Retrieve logged data from the various equipment and server logs.

16. Collect adequate information (make image copies).

17. With law enforcement/FBI assistance, check for implanted backdoors and other malicious code (i.e., Trojan horse, or worm).

18. Install safeguards and patch to properly. Computer Emergency Response Teams:

   - Preserve the evidence,
   - Determine the extent of damage,
   - Return the system to normal operation.

   The goal is for proper forensics to be performed on these logs such that it cannot be claimed that these logs were tampered or altered and prosecution can therefore take place.

   The goal is to preserve evidence for identifying and prosecuting the attacker utilizing assistance from the proper authorities in command (FBI, EPA, Police, Computer Emergency Response Team, etc.).
<table>
<thead>
<tr>
<th>IV. Recovery and Return to Safety</th>
<th>19. Test security breach to ensure plugged (in a safe mode, in case the either the problem hasn’t been fixed or some other attack was installed unbeknownst).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prematurely returning the system to operation may make the utility susceptible to specific attack via purposefully implanted attack pathways.</td>
</tr>
<tr>
<td></td>
<td>Simply returning the system to operation may be insufficient and invite future attacks.</td>
</tr>
<tr>
<td></td>
<td>Ensures attacker can not use same method to compromise SCADA system.</td>
</tr>
<tr>
<td></td>
<td>Simply restoring from recent backup media may be insufficient to restore the system to a trusted state.</td>
</tr>
<tr>
<td></td>
<td>20. Assess / implement additional precautions for SCADA system.</td>
</tr>
<tr>
<td>V. Report of Findings</td>
<td>21. Turn over evidence to the proper authorities.</td>
</tr>
<tr>
<td>VI. AP-4 Revision Dates</td>
<td>Supports prosecution of attack</td>
</tr>
</tbody>
</table>
**AP5 – IT Security**

**AP Summary:** This Action Plan applies to a cyber attack on an IT intranet system. Examples of cyber include:

- Virus
- Denial of Service (DoS) including Smurf, ICMP, TCP SYN, UDP, TCP, Distributed Denial of Service, and various combinations
- Internet facing server attacks
- Unauthorized Network Intrusions / Unauthorized Access

**Prepare for problems by:**

- Updating all network documentation around the SCADA/DCS
- Documenting all network data flows to/from Intranet systems, SCADA/DCS and surrounding systems
- Identifying Zones of Vulnerability
- Identifying ramifications and feasibility of disconnecting networks, computers and data flows
- Ensuring that sufficient monitoring and network control points (firewalls, IPS, etc.) are in place to both know what’s happening on your network and how to control it
- Characterizing network traffic so that anomalous behavior can be identified
- Becoming familiar with computer forensics tools and practices before being forced to learn them “under fire”
- Becoming familiar with host-based monitoring and intrusion detection, since most hacking over networks is now conducted via encrypted tunnels or data streams
- Ensuring that backup/restore procedures are up to date, as are the backups themselves

**Initiation and Notification:**

Notify immediately upon discovery of the attack:

- [WUERM pg. 6-1],
- Data (IT) Manager

Contact others as appropriate:

- Internet Service Provider,
- Computer Equipment Vendor,
- Computer Emergency Response Team

The individual that first notices or receives word of the attack should contact both the [Data (IT) Manager] and [WUERM] by whatever means of communication may be available.

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.

**Initiation and Notification:** Initiate this AP if any of the following has occurred:

- More than one user reports unusual behavior of any IT system or software.

Unusual log file entries - Although expert intruders are good at covering their tracks, examples include numerous failed login attempts, and logins into dormant or default accounts (logins when not expected,
### AP5 – IT Security

- Network intrusion detection indicates a violation.
- Unusual IT system activity is noted on holidays, evenings, or weekends.
- Unusual log file entries are noticed.
- Presence of new `setuid` or `setgid` files are discovered.
- Changes in system directories and files are noted.
- Unusual hidden files or ambiguous files, such as those from past incidents, are noticed.
- Users’ home pages are altered.
- Accounting discrepancies are noticed.
- Suspicious probes and/or browsing is identified.
- Presence of cracking utilities is found.
- Unaccounted for changes in the DNS tables, router rules, or firewall rules are discovered.
- Unexplained elevation or use of privileges.

<table>
<thead>
<tr>
<th>Equipment Identified:</th>
<th>Firewall</th>
<th>Virus protection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>This equipment is available to assist in the execution of this AP.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific Activities:</th>
<th>Complete:</th>
<th>IT Incident Response and Reporting Checklist.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Human error or a software failure can sometimes mimic the actions of an intruder. New content on a Web server, newly released products, or anything that may generate above-normal amounts of traffic may seem like a DoS attack.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In many incidents, the perpetrator gains unauthorized access, but doesn’t actually access privileged information or alter data.</td>
</tr>
</tbody>
</table>

### Note:
Because the approach to addressing an incident can vary depending on the nature of the

### I. Assess the

Note: Be prepared to revise the response plan as necessary based on
### AP5 – IT Security

#### Problem

Incident, it is critical to be aware of the type of incident that has occurred **BEFORE** taking action.

1. Protect Customer Information (Take the customer information database, assuming it is a standard database, off the network, so that it is no longer accessible). Note: Modems should not be allowed on the database machine.

2. Isolate and Contain the Threat (Insert site-specific procedures consistent with your system architecture)

3. Document the event (See items 4 and 16)

4. Take a snapshot of the system – Obtain forensic images and preserve original media.
   - Registers, peripheral memory, caches
   - Memory (kernel and physical)
   - Network state
   - Running processes
   - Hardware data residue, memory chips, and PDA-type systems
   - Hard disks
   - Disks and backup media
   - CD-ROMs
   - Printouts

#### II. Isolate and Fix the Problem

5. Save the system state by backing up as much of the system as necessary.

6. Alert others according to the response strategy including contacting a Computer Emergency Response Team.

7. Determine if the system should be disconnected from the network.

8. Determine if the system should be shut new information. Flexibility is important. Be ready to change monitoring and defensive strategies during an incident as necessary to handle the distinctive circumstances of an individual attack.

You might maintain critical customer information on your network. If a hacker steals, modifies, destroys, or even posts the information to the Internet, you may find yourself in court.

In general, the intruder or the malicious code should be prevented from working through the network. Attempts to contain the threat should also take into account every effort to minimize the impact to business operations. Prevent the use of your systems to launch attacks against other companies. Your computer may become one of hundreds of “soldier” machines rather than an “end target”.

Recording all of the details may provide management with the information necessary to assess the break-in and could assist in the prosecution of specific individuals.

A snapshot is basically a photo of what a computer’s memory (primary storage, specific registers, etc) contains at a specific point in time. It can be used to catch intruders by recording information that the hacker may erase before the attack is completed or repelled.

Serves to further diagnose the incident Alerting others may be done in parallel with other steps. The Computer Emergency Response Team may know how to fix the flaw in the vendor’s software or hardware that allowed the intruder to access your network.

Users should still be able to use some local services. Be careful. The network might involve wireless local area networks. In these cases, it might be
### AP5 – IT Security

<table>
<thead>
<tr>
<th>III. Monitoring</th>
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<tbody>
<tr>
<td>9. Perform real-time scanning and detection to prevent further infection</td>
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<tr>
<td>10. Set up traps.</td>
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<tbody>
<tr>
<td>13. Remove any hidden malicious programs or directories added by the intruder or deployed by the malicious code, up to and including a system-wide removal of all programs and files (i.e., format the disk and re-install).</td>
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</tr>
<tr>
<td>15. Eliminate the vulnerability that allowed</td>
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<td>15. Eliminate the vulnerability that allowed</td>
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</table>

**Important to disable and/or remove the wireless access points from the internal network.** Sometimes you may need to disconnect a system from the network to prevent further damage and limit the extent of the attack.

This action might appear drastic, but is sometimes advisable usually based on a decision to prevent further loss and/or disruption. Shut down or disconnect resources only when absolutely necessary.

---

**III. Monitoring**

9. Perform real-time scanning and detection to prevent further infection
10. Set up traps.

This involves actively tracking traffic for unusual activity (for example, port scanning) or patterns of an attack stream of bits, bytes, or packets. Attackers sometimes use a “smoke screen”, an attack that attempts to divert attention from a more stealthy network intrusion. It is therefore important not to focus all attention on an initial attack, but to continue diligently looking for other attacks.

This action involves learning the intruder’s identity or modus operandi (MO). The MO is a mechanism by which the perpetrator commits his or her crime. It is a learned behavior and can change over time. A MO can be considered a pattern, allowing for some variance. Examples of traps are honeypots (that is, computers designed to attract attackers in order to record their behavior and to gather evidence, but not meant for legitimate users.)

---

**IV. Recovery and Return to Safety**

11. Change the filtering rules of firewalls and routers.
12. Disable known vulnerable services.
13. Remove any hidden malicious programs or directories added by the intruder or deployed by the malicious code, up to and including a system-wide removal of all programs and files (i.e., format the disk and re-install).
15. Eliminate the vulnerability that allowed

This action excludes traffic from hosts that appear to be the source of an attack.

Such as file transfer or calendar services. This action is effective when attackers exploit newly discovered service vulnerabilities.

Need to balance the need recovery with the need to preserve evidence for prosecution.

Although it takes longer to update antivirus signatures to the desktop community, IT professionals can
## AP5 – IT Security

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<tbody>
<tr>
<td>the exploit and ensure the system is restored with an optimal security configuration.</td>
<td>quickly update antivirus signatures at the gateway and perimeter to minimize the impact immediately.</td>
</tr>
<tr>
<td>16. Complete a break-in report.</td>
<td>Break-in reports provide an overall picture of the status of network security. Chronic, increasing break-in reports indicate need to update system security overall and help pinpoint weak points.</td>
</tr>
<tr>
<td>17. Based on experience, identify and document tools and techniques that would improve future incident responses.</td>
<td>Thoroughly examine how well your procedures worked and decide whether you need to make changes for the future.</td>
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</table>

### V. Report of Findings

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<tbody>
<tr>
<td>18. Turn over evidence to the proper authorities.</td>
<td>Supports prosecution of attack.</td>
</tr>
</tbody>
</table>

### VI. AP-5 Revision Dates

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</table>
# AP 6 – Chlorine Release

| AP Summary: | This Action Plan applies to an uncontrolled release of any quantity of chlorine gas. |
| Initiation and Notification: | When a release of chlorine gas has been confirmed. Notify:  
  - [WUERM pg. 6-1]  
  - [Alternate WUERM pg. 6-2]  
  The individual who first notices the release should contact the [WUERM] immediately by whatever means of communication may be available. Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP. |
| Equipment Identified: | Note only trained personnel should attempt to use any emergency tools or Personal Protective Equipment (PPE) |
  Equipment Location  
  Located at the Water Plant  
  Ammonia bottle for small leaks  
  Located at the Water Plant  
  Designated chlorine use tools  
  Located at the Water Plant  
  Oxygen sensors are at Public Works Bldg. Chlorine is a highly toxic gas stored under pressure on this site. Chlorine is toxic by inhalation and high concentrations can cause skin irritation and severe eye injury. See MSDS |
| Specific Activities: | I. Assess the  
  1. Determine number and severity of any injured Personnel need to be moved |
## AP 6 – Chlorine Release

<table>
<thead>
<tr>
<th><strong>Problem</strong></th>
<th><strong>Action Plans</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>to or seek shelter away from the release area. Fully PPE protected personnel may be required to rescue personnel in the release area. Rate &amp; volume of release, size of container, and wind direction will all influence the ability to control the release as well as determine the impact of the release on both on-site and off-site personnel.</td>
</tr>
</tbody>
</table>

### II. Isolate and Fix the Problem

Note: Only trained personnel using pre-planned procedures should respond to uncontrolled chlorine releases. Attempt to install a Chlorine Emergency Kit ONLY if you are familiar with the kit and trained in its use.

| 5. | Remove clothing of contaminated personnel. |
| 6. | Bag the clothing. |
| 7. | Wash victims thoroughly with soap and water. |
| 8. | Rinse eyes with plain water for 10 to 15 minutes. |
| 9. | Have Safety/Security notify the incoming emergency equipment and ambulances of staging location. |
| 10. | Detect small chlorine leaks with an atomizer or squeeze bottle filled with aqueous ammonia. (A white cloud will show the location of the leak). |
| 11. | Attempt to close the main source valve prior to entering the area. |
| 12. **IF** this does not stop the release (or it is not possible to reach the valve), THEN allow the gas to release in place or remove it to a safe area and allow the gas to be released there. |

### III. Monitoring

13. Monitor the surrounding area for Chlorine gas levels and oxygen. (The Chlorine level must be below 0.5 ppm and the atmosphere must have at least 19.5 percent oxygen before personnel can be allowed in the area without Self Contained)

<table>
<thead>
<tr>
<th></th>
<th>0.5 ppm chlorine over 8 hours has shown no effects. Oxygen can be replaced by chlorine gas. A 19.5% O₂ level is required for entry. Some symptoms of exposure</th>
</tr>
</thead>
</table>
### AP 6 – Chlorine Release

<table>
<thead>
<tr>
<th>Breathing Apparatus (SCBAs.)</th>
<th>can be delayed so all potentially exposed personnel should be routinely monitored. Facility area monitoring should continue until all levels reach below 0.5 ppm after repairs are completed.</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Victim should be monitored for signs of exposure which can include:</td>
<td></td>
</tr>
<tr>
<td>• Coughing</td>
<td></td>
</tr>
<tr>
<td>• Chest Tightness</td>
<td></td>
</tr>
<tr>
<td>• Burning sensation in the nose, throat, and eyes</td>
<td></td>
</tr>
<tr>
<td>• Burning pain, redness, blisters similar to frostbite</td>
<td></td>
</tr>
<tr>
<td>• Blurred Vision</td>
<td></td>
</tr>
<tr>
<td>• Nausea and Vomiting</td>
<td></td>
</tr>
<tr>
<td>• Fluid in the lungs within 2-4 hours</td>
<td></td>
</tr>
<tr>
<td>• Difficulty breathing or shortness of breath</td>
<td></td>
</tr>
<tr>
<td>• Watery Eyes</td>
<td></td>
</tr>
</tbody>
</table>

### IV. Recovery and Return to Safety

| 15. Maintain detailed notes of all actions | Notes will provide details of who, what, when, and why decisions were made. This will help in the evaluation of the incident response and also in cost recovery. Exposure to chlorine should not exceed OSHA levels for workers. Lower levels of exposure to chlorine may be established for members of the community. Exposure levels for community members should be separately determined. |
| 16. Re-entry by unprotected facility personnel should not occur until all repairs are made and the ppm of chlorine is below 0.5. Community re-entry levels should be established by off-site emergency personnel, but should not be higher than 0.5 ppm. | |
| 17. Conduct a detailed evaluation of the failure that caused the release. This could include engineering, personnel, security and metallurgical evaluations. | |
| 18. Hold post-incident discussions to include all responders and actors in the response and recovery | |

### V. Report of Findings

| 19. All the components of the incident should be correlated and established in writing. This would include why the release occurred, how the | To learn from the incident and reduce the likelihood of future such events, a Report of Findings should be |
| | |
### AP 6 – Chlorine Release

| | response was managed and suggestions to improve the facility/community response in the future. The report should incorporate all relevant data from the forensics of the release to suggested changes in the emergency response plans and procedures. |
| | provided to the decision makers for the Utility so consideration can be given for changes in facility structure, security, procedures or personnel. |
| | 20. Suggestions from the report should be submitted to the governing board/individuals for evaluation and actions to be taken. |

#### VI. AP 6 - Revision Dates
# AP 7 - Power Outage

**AP Summary:** This Action Plan applies to events that result in power outages. Note that this Action Plan may need to be implemented in conjunction with other Action Plans (for example, severe weather) as necessary.

Consider agreement with the power company to determine the priority of drinking water and wastewater systems for recovery prior to the emergency.

**Initiation and Notification:**
- Initiate this AP upon a loss of offsite power
- Notify:
  - [WUERM pg. 6-1]
  - [Alternate WUERM pg. 6-2]
- Others as appropriate, examples include:
  - Fuel supplier (back up generator)
  - Critical Care Customers
  - Large Water Users

**Equipment Identified:**

<table>
<thead>
<tr>
<th>Mobile battery-powered radios</th>
</tr>
</thead>
<tbody>
<tr>
<td>In all Electric Department trucks, Main Office, Animal Control, Public Works Department. Radios have receive/transmit capability to the local fire districts repeater on the Montana Ave. water tank. Additionally some radios have the Non-Federal VHF National Interoperability Channels (VCALL10 etc.) programmed into them. More will be modified to include the channels as upgrades allow.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mobile/cellular phones</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most employees have cell phones</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flashlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>In trucks and offices</td>
</tr>
</tbody>
</table>

| Radios should have access to a frequency compatible with the local fire dept, sheriff, public health officials, other government departments, utilities, services, or consultants. |

| Cell phones may not be available during power outages. |

Notify the [WUERM pg. 6-1] by whatever means of communication may be available.

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.
# AP 7 – Power Outage

**Spare batteries**

The city has a solar system at the Corporation Yard that is capable of charging radios and tools during the day even when there is no grid power.

**Quick connect cables for a generator are located in the Motor Control room**

Accessory requirements (cables for generators, transformers, load banks, bus bars, distribution panels, feeder panels, fuses, outlets, load centers, etc)

**Emergency kits**

<table>
<thead>
<tr>
<th>Specific Activities:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Assess the Problem</strong></td>
<td><strong>II. Address the Problem</strong></td>
</tr>
<tr>
<td>1. Call local hydro-electric supply company – request information on the estimated down time.</td>
<td>Consider agreements with fuel supply company to supply fuel automatically upon a power loss if the capability to store fuel on site is not practical. A fuel tank with capacity for at least 24 hours of run time is advisable.</td>
</tr>
<tr>
<td>2. <strong>IF</strong> backup generation is available, <strong>THEN</strong> assess the ability to supply fuel for extended periods.</td>
<td><em>If on-staff personnel are not experienced with power-generation equipment, it is necessary to arrange for professional assistance to install and operate the mobile units.</em></td>
</tr>
<tr>
<td>3. Assess ability for HVAC or alternate to provide proper temperatures for SCADA, computer, and control systems.</td>
<td><em>Evaluate back-up power with controllers that sense problems with purchased power and come up automatically.</em></td>
</tr>
<tr>
<td>4. Estimate potable water requirements under the emergency condition and determine if the utility can still meet requirements.</td>
<td><em>Complete assessment as quickly as</em></td>
</tr>
</tbody>
</table>
### AP 7 – Power Outage

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.</td>
<td><strong>IF</strong> telephone is also down, <strong>THEN</strong> SCADA communications may be blocked.</td>
</tr>
<tr>
<td>6.</td>
<td>Loss of power could affect utility access gates, CCTV, intrusion alarms and other remote monitoring abilities. Loss of power may be a diversionary tactic for other terrorist activity. Be alert.</td>
</tr>
<tr>
<td>II.</td>
<td><strong>Isolate and Fix the Problem</strong></td>
</tr>
<tr>
<td>7.</td>
<td>Turn off unnecessary electrical equipment.</td>
</tr>
<tr>
<td>8.</td>
<td>Start back up generators as necessary for key components: Note: Uninterruptible Power Supply (UPS) for SCADA and computers, battery back-up for Remote Terminal Unit (RTU) may only supply power for a few hours.</td>
</tr>
<tr>
<td>II.</td>
<td><strong>Isolate and Fix the Problem</strong></td>
</tr>
<tr>
<td>9.</td>
<td>Increase disinfectant residual as a precaution to potential contamination.</td>
</tr>
<tr>
<td>10.</td>
<td><strong>IF</strong> not able to meet community requirements for water <strong>THEN</strong> arrange for water to be supplied by another source. See Mutual aid agreements Section II B. of ERP and Section III.G of ERP for Alternate Water Sources.</td>
</tr>
<tr>
<td>11.</td>
<td>Notify priority customers</td>
</tr>
<tr>
<td>12.</td>
<td>Notify users of interruption of service if backup pump(s) is/are not capable of maintaining supply.</td>
</tr>
<tr>
<td>13.</td>
<td>Issue “Boil Water”, “Do not Drink”, or “Do not Use” orders and Press Releases as appropriate. See <strong>Appendix D</strong> of ERP for <strong>Press Release Forms</strong>.</td>
</tr>
<tr>
<td>14.</td>
<td>Initiate back up plan for retrieval of current information from outside sources.</td>
</tr>
</tbody>
</table>
## AP 7 – Power Outage

### II. Isolate and Fix the Problem

15. Consider initiating back-up portable pumping and generating capability to serve areas with limited storage, critical wastewater collection and treatment operations.

16. Facilities with freezing temperatures should turn off and drain the following lines in the event of a long term power loss:
   - a. Fire sprinkler system
   - b. Standpipes
   - c. Potable Water Lines
   - d. Toilets

### III. Monitoring

17. **IF** damage to equipment occurs, **THEN** contact vendor/mutual aid companies to replace/repair damaged equipment.

18. Monitor the status of the backup power supply and regularly test whether battery levels are adequate and the backup generators are functional.

19. **IF** power outage occurs during freezing conditions **THEN** allow electronic equipment to reach ambient temperatures before energizing to prevent condensate from forming on circuitry.

20. Fire and potable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.

21. Notify public/customers when it is safe to use the drinking water again.

### IV. Recovery and Return to Safety

19. Conduct disinfection, flushing, and bacteriological sampling after repairs of equipment lost.

20. **IF** power outage occurs during freezing conditions **THEN** allow electronic equipment to reach ambient temperatures before energizing to prevent condensate from forming on circuitry.

21. Fire and potable water piping should be checked for leaks from freeze damage after the heat has been restored to the facility and water turned back on.

22. Notify public/customers when it is safe to use the drinking water again.

### V. Report of Findings

23. All the components of the incident should be correlated and established in writing. This would include how the response was managed and suggestions to improve the
### AP 7 – Power Outage

facility / community response in the future. The report should incorporate all relevant data from the incident and suggested changes in the emergency response plans and procedures.

24. Suggestions from the report should be submitted to the governing board/individuals for evaluation and actions to be taken.

### VI. AP-7 Revision Dates

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### AP 8A – Natural Event (Flood)

**AP Summary:**

This Action Plan applies to flooding events. In general, these events occur with reasonable lead times, and it is possible to take proactive measures, as outlined below. Response and recovery can be time consuming during flood events, as they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel.

**Initiation and Notification:**

This AP should be initiated upon official notification of either a flood “watch” (a flood is possible in your area), or a flood “warning” (flooding is already occurring or will occur soon in your area). Such information will almost certainly be issued in the form of forecasts from the National Weather Service (NWS) and other governmental agencies. Also initiate if actual flooding is discovered.

Notify

- [WUERM pg. 6-1]

Links to specific RFCs can be found at the following website: [http://www.cnrfc.noaa.gov/](http://www.cnrfc.noaa.gov/)

The NWS maintains 13 regional River Forecast Centers (RFC) that are responsible for issuing flood forecasts synthesized from hydro-meteorological data. These centers offer current river conditions and observations, as well as forecast and guidance for both major river and flash floods, hydrographs for gauging stations, and flood outlook potentials. Be aware that floods often occur without local precipitation as a result of precipitation upstream.

Flash flood guidance values can also typically be obtained via your local RFC. These values show data suggesting the amount of rain...
# AP 8A – Natural Event (Flood)

- [Alternate WUERM pg. 6-2]
  The [WUERM pg. 6-1] will make the decision to contact local response authorities to request possible assistance.

<table>
<thead>
<tr>
<th>Equipment Identified:</th>
<th>Equipment</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Binoculars, Water Quality testing equipment, Camera = at Water Plant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Specific Activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I. Assess the Problem</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If a Flood Watch or Warning is received:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Contact local representative of NWS for additional information on exact location and probable extent (stage) of flooding, relative to utility facilities.</td>
</tr>
<tr>
<td>2. Use site maps or other available information to assess location of all facilities for location in flood plain.</td>
</tr>
<tr>
<td>3. Prioritize pre-flooding activities on basis of flooding potential (in part, necessary over 1-, 3-, and 6-hour periods that could cause flash floods.</td>
</tr>
<tr>
<td>While major floods can take several hours to days to develop, flash floods can take only a few minutes to a few hours to develop.</td>
</tr>
<tr>
<td>Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.</td>
</tr>
</tbody>
</table>

Flood damage is proportional to the to the volume and the velocity of the water. Floods are extremely dangerous because they destroy through inundation and soaking as well as the incredible force of moving water. High volumes of water can move heavy objects and undermine roads and bridges. Flooding can also facilitate other hazards such as landslides, or cause other hazards such as material hazard events.
### AP 8A – Natural Event (Flood)

<table>
<thead>
<tr>
<th>II. Isolate and Fix the Problem</th>
<th>The following steps should be taken in preparation for the event:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steps in advance of flooding obviously will be different than steps in reaction to flooding. Both may be needed for any one flooding event.</td>
</tr>
<tr>
<td>1. Activate Emergency Operations Center (EOC).</td>
<td></td>
</tr>
<tr>
<td>2. Assemble essential personnel and designate duties, such as:</td>
<td></td>
</tr>
<tr>
<td>• Elevate in-place or remove water-sensitive equipment within structures to prevent flood damage.</td>
<td></td>
</tr>
<tr>
<td>• Anchor fuel tanks.</td>
<td></td>
</tr>
<tr>
<td>• Elevate electrical system components.</td>
<td></td>
</tr>
<tr>
<td>• Take appropriate flood-proofing steps (sandbags or other).</td>
<td></td>
</tr>
<tr>
<td>• Install sewer backflow valves.</td>
<td></td>
</tr>
<tr>
<td>• Flood-proof or elevate heating, cooling, and ventilating equipment.</td>
<td></td>
</tr>
<tr>
<td>• Assemble and stage mobile stand-by generators and auxiliary water pumps.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>II. Isolate and Fix the Problem</th>
<th>3. Notify neighboring utilities or other sources of emergency response support if manpower or equipment will be needed.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Flood water may have to be pumped out of facilities before utility equipment can be restored.</td>
</tr>
<tr>
<td></td>
<td>Decision to shutdown must balance protection of utility equipment and maintenance of fire</td>
</tr>
<tr>
<td>4. The [IO pg. 6-2] is to notify</td>
<td></td>
</tr>
</tbody>
</table>

4. If flooding has already occurred:
   - Conduct site assessment from nearest safe location.
   - Based on peak flood stage, predict and build inventory of equipment likely to be most affected.
   - List equipment needed to restore water service when flood waters recede.
### AP 8A – Natural Event (Flood)

| customers, media, and state and local authorities that service may be disrupted and/or that demand reductions may be necessary. |
| 5. Pre-test and/or initiate emergency communications plan |
| 6. Consider shut-down if flooding appears imminent. |

### III. Monitoring

| Observe the following recommended practices during the flood event: |
| • Take pictures of the damage, both of buildings and their contents, for insurance claims. |
| • Instruct Utility personnel to avoid floodwaters whenever possible. |
| • If a vehicle stalls in rapidly rising waters, abandon it immediately and climb to higher ground. Vehicles can be swept away in two feet of water. |
| • Stay out of any building if floodwaters remain around the building. |
| • Avoid smoking inside buildings. Smoking in confined areas can cause fires. |
| • Wear sturdy shoes. The most common injury following a disaster is cut feet. |
| • Use battery-powered lanterns or flashlights when examining buildings. Battery-powered lighting is the safest and easiest, preventing fire hazard for the user, occupants, and building. |
| • Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances. Flammable or explosive materials may travel from upstream. Fire is the most frequent hazard following floods. |
| • The [WUERM pg. 6-1] or [IO pg. 6-2] is to communicate with customers and the flows. |

If it is moving swiftly, even water six inches deep can knock an individual off their feet. Many people are swept away wading through floodwaters, resulting in injury or death. Floodwaters may still be rising. Staff may not be able to see on the surface how fast floodwater is moving or see holes and submerged debris.

Floodwaters often undermine foundations, causing sinking, floors can crack or break and buildings can collapse. Buildings may have hidden damage that makes them unsafe such as gas leaks or electric hazards.
### AP 8A – Natural Event (Flood)

<table>
<thead>
<tr>
<th><strong>IV. Recovery And Return to Safety</strong></th>
<th>Once floodwaters recede, the following may be of relevance:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Check insurance policy for procedures to recover losses, including the national Flood Insurance Program.</td>
</tr>
<tr>
<td></td>
<td>- Inspect foundations for cracks or other damage.</td>
</tr>
<tr>
<td></td>
<td>- Check power lines for damages.</td>
</tr>
<tr>
<td></td>
<td>- Arrange for alternate source of electrical power or fuel for diesel generators, sufficient for period of outage following flood. See AP-7 Power Outage.</td>
</tr>
<tr>
<td></td>
<td>- Throw away all food that has come into contact with floodwaters.</td>
</tr>
<tr>
<td></td>
<td>- Inspect, clean, rebuild, replace all affected equipment as necessary</td>
</tr>
<tr>
<td></td>
<td>- Contact state and local authorities to determine if there are any restrictions on disposal of materials and debris removed from the site or if a temporary discharge permit (NPDES or other) is needed for the water pumped from tanks and other flooded structures.</td>
</tr>
</tbody>
</table>

| **V. Report of Findings** | Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned. |

| **VI. AP-8A Revision Dates** | |

More information can be found here: http://www.fema.gov/nfip

Cracks and damage to a foundation can render a building uninhabitable.

See AP-7 Power Outage

Contaminated floodwater contains bacteria and germs. Eating foods exposed to flood waters can make personnel very sick.

In the longer-term, mitigation against loss of life and property caused by flood events is principally accomplished before the events, through sensible floodplain management and regulation. This involves strategies to modify flooding and to modify infrastructure to reduce likelihood of damage.

Guidelines to a variety of flood-proofing and elevation methods are available from FEMA and NOAA.
# AP 8B – Natural Event
## (Winter Storm)

### AP Summary:
This Action Plan applies to winter storm events. In general, these events occur with reasonable lead times, and it is possible to take proactive measures, as outlined below. Response and recovery can be time consuming during such events, and they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel.

### Initiation and Notification:
When hazardous winter weather conditions are expected to affect the region, the National Weather Service (NWS) issues public advisories. This AP should be initiated upon official notification of a “winter storm watch” or more elevated status. In order of increasing severity, the standard terminology is as follows:

**Winter Storm Outlook**: Issued prior to a Winter Storm Watch. The Outlook is given when forecasters believe winter storm conditions are possible and are usually issued 3 to 5 days in advance of a winter storm.

**Winter Weather Advisory**: Issued for accumulations of snow, freezing rain, freezing drizzle, and sleet which will cause significant inconveniences and, if caution is not exercised, could lead to life-threatening situations.

**Winter Storm Watch**: Alerts the public to the possibility of a blizzard, heavy snow, heavy freezing rain, or heavy sleet. Winter Storm Watches are usually issued 12 to 48 hours before the beginning of a Winter Storm.

**Winter Storm Warning**: Issued when hazardous winter weather in the form of heavy snow, heavy freezing rain, or heavy sleet is imminent or occurring. Winter Storm Warnings are usually issued 12 to 24 hours before the event is expected to begin.

**Blizzard Warning**: Issued for sustained or gusty winds of 35 mph or more, and falling or blowing snow creating visibilities at or below $\frac{1}{4}$ mile; these conditions should persist for at least three hours.

It is expected that the local the Local Emergency Planning Committee (LEPC) will carefully and continually monitor meteorological conditions and forecasts. During such events, the Local Emergency Planning Committee (LEPC) shall be in constant contact with the National Weather Service (NWS) and disseminate information to agencies via conference call, e-mail and broadcast fax.
### AP 8B – Natural Event (Winter Storm)

#### Equipment Identified:

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Backhoes, Dump Trucks, snow plow, Road sanding equipment, Chains, Sand Bags, Water Quality Testing Equipment</td>
</tr>
<tr>
<td></td>
<td>at Public Works Bldg.</td>
</tr>
</tbody>
</table>

This equipment is available to assist in the execution of this AP.

#### Specific Activities:

**I. Assess the Problem**

Winter storms, accompanied by strong winds and blizzard conditions, have resulted in localized power and phone outages; closures of streets, highways, schools, businesses, and nonessential government operations. People have been isolated from essential services in their homes and vehicles. A winter storm may escalate into a catastrophic event paralyzing municipalities, and rural areas for several days. Life threatening situations may occur in which emergency response agencies cannot perform their duties due to extreme weather conditions. Individual jurisdictions may be over-whelmed and need mutual aid assistance.

**II. Isolate and Fix the Problem**

Snow removal capabilities will vary widely, general procedures are as follows:

**Before the storm:**

1. Activate Emergency Operations Center (EOC).
3. Release nonessential personnel, as warranted.
4. Assemble essential personnel and designate duties.
5. Typical duties at this stage may include:
   - Fill gravity storage tanks.
   - Test auxiliary power sources.
   - Fill fuel tanks.
## AP 8B – Natural Event
(Winter Storm)

| II. Isolate and Fix the Problem | 6. Discuss needs with electric company.  
7. Test back-up communications system.  
8. Review mutual aid agreements and verify connections to/from neighboring water systems.  
Review specific power outage contingency action plan.  
**During the storm:**  
1. Notify customers, media, and state and local authorities if service is disrupted or if significant demand management is necessary.  
2. Monitor reservoirs.  
3. Monitor changes in water quality. If a water quality emergency should develop, follow the appropriate procedure.  
4. Open connections with neighboring water systems if necessary.  
5. Provide backup power to facilities utilizing mobile generators, as appropriate.  
|  
| III. Monitoring | In order to monitor the infrastructure status and residents' health during a winter weather event, it is expected that the Utility will assist the Local Emergency Planning Committee (LEPC) in gathering the following types of information:  
- Electrical load  
- EMS cold-related responses / total responses  
- Cold weather-related water main breaks  
- Available sheltering centers  
- Status of salt and sand stockpiles  
- Available snow removal assets |
**AP 8B – Natural Event**  
**(Winter Storm)**

- Cold-related incidents / concerns

During winter weather emergencies, heavy snowfall, coupled with icy roads or ice accumulations on aboveground electrical transmission lines, can result in vehicular accidents and transmission line failure. Power outages during winter weather events can pose serious problems, particularly among those communities where life-sustaining equipment (LSE) is a necessity.

### III. Monitoring

Personnel should avoid traveling by vehicle, but if necessary, it is important to communicate destinations, routes, and expected arrival times. If vehicles get stuck along the way, help can be sent along the predetermined route. If personnel do get stuck:

- Staff should stay with their car and not try to walk to safety.
- Tie a colored cloth to the antenna for rescuers to see.
- Start the car and use the heater for about 10 minutes every hour. Keep the exhaust pipe clear so fumes won't back up in the car.
- Leave the overhead light on when the engine is running to be seen.

Keep arms and legs moving to keep blood circulating and to stay warm and keep one window away from the blowing wind slightly open to let in air.

During heavy storms, search and rescue operations, movement of emergency response agencies to assigned duties and restoration of essential services are likely to become the primary focus of the EOC.

Priorities of response forces, prioritization of the use of snow removal equipment and allocation of all critical resources and response personnel will be the responsibility of the EOC.

### IV. Recovery And Return to Safety

It is recommended that staff observe the following safety tips in recovery from winter storm events:

- After the storm, if personnel are required to shovel snow, be extremely careful. It is physically strenuous work, requiring frequent breaks. Avoid overexertion. Heart attacks from shoveling heavy snow are a leading cause of deaths during winter.
| **AP 8B – Natural Event**  
<table>
<thead>
<tr>
<th><strong>(Winter Storm)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>V. Report of Findings</strong></td>
</tr>
<tr>
<td>Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.</td>
</tr>
<tr>
<td><strong>VI. AP-8B Revision Dates</strong></td>
</tr>
<tr>
<td>• Walk carefully on snowy, icy, sidewalks.</td>
</tr>
</tbody>
</table>
### AP 8C – Natural Event
(Hurricane / Tropical Storm)

**AP Summary:**
This Action Plan applies to Hurricane / Tropical Storm events. In general, these events occur with reasonable lead times, and it is possible to take proactive measures, as outlined below. Response and recovery can be time consuming during such events, and they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel.

**Initiation and Notification:**
Initiation of the hurricane/tropical storm AP will occur when the NWS has determined a “Hurricane Watch” is in effect. The general terminology they utilize is as follows, in order of increasing severity:

- **Advisory:** Hurricane and storm information is disseminated to the public every six hours.
- **Special Advisory:** Information is disseminated when there is significant change in storm-related weather conditions.
- **Gale Warning:** Sustained winds of 35-54 mph and strong wave action are expected.
- **Storm Warning:** Sustained winds of 55-73 mph are expected.
- **Hurricane Watch:** There is a threat of hurricane conditions within 24-36 hours.
- **Hurricane Warning:** A hurricane is expected to strike within 24 hours or less, with sustained winds of 74 mph or more and dangerously high water.
- **Tropical Disturbance:** A moving area of thunderstorms is in the tropics.
- **Tropical Depression:** An area of low pressure, rotary circulation of clouds and winds up to 38 mph is identified.
- **Tropical Storm:** A storm characterized by counterclockwise circulation of clouds and winds 39-73 is brewing.

The Atlantic and Caribbean hurricane season runs from June 1 through November 30, with the Eastern Pacific hurricane season running from May 15 through November 30.
### AP 8C – Natural Event (Hurricane / Tropical Storm)

<table>
<thead>
<tr>
<th>Equipment Identified:</th>
<th>Equipment Location</th>
<th>This equipment is available to assist in the execution of this AP.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Equipment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Location = Backhoes, Dump Trucks, Road sanding equipment, Chains, Sand Bags, Water Quality Testing Equipment = at Public Works Building</td>
<td></td>
</tr>
</tbody>
</table>

**Specific Activities:**

**I. Assess the Problem**

It is expected that the Local Emergency Planning Committee (LEPC) will carefully and continually monitor meteorological conditions and forecasts. During such events, the Local Emergency Planning Committee (LEPC) shall be in constant contact with the National Weather Service (NWS) and disseminate information to agencies via conference call, e-mail and broadcast fax.

**II. Isolate and Fix the Problem**

In preparation for the hurricane, the following general steps are to be followed, as per the US EPA’s Water Security Division:

**General:**

1. Line up and schedule emergency operations and clean up crews.

2. Notify State and Federal Agencies (FEMA and others) of location and telephone numbers of the emergency operating center or command post for the utility. For public water systems, be sure to line up contacts to request emergency water supply, if necessary.

3. Notify media where to access information and press advisories.

4. Arrange for food and water for the crews.

5. Notify and set up clear lines of communication with local authorities, such as police and fire in case of an injury or other emergency.

6. Make arrangements with the local power utility to be prepared to disconnect power to the plant if plant is evacuated or if power lines are downed and to restore
### AP 8C – Natural Event  
(Hurricane / Tropical Storm)

<table>
<thead>
<tr>
<th>Action Plan</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make arrangement with local companies to purchase materials and supplies and to borrow/lease heavy equipment needed to make repairs to the plant.</td>
<td></td>
</tr>
<tr>
<td>Make arrangement with local companies to have materials and chemicals delivered to the plant as soon as it is safe and units are repaired and ready for operation.</td>
<td></td>
</tr>
</tbody>
</table>

### II. Isolate and Fix the Problem  
**Grounds and Common Areas:**

1. Check inventory of emergency repair equipment and supplies (i.e., sand and sand bags, hand shovels, power equipment, fuel, batteries, flashlights, portable radio, first aid kits, etc.). Resupply if possible.
2. Stock service vehicles with equipment and supplies.
3. Fuel all vehicles and emergency generators.
4. Move service vehicles to high ground (above expected flood crest).
5. Check all communications equipment and charge or replace batteries (i.e., two way radios, cell phones, walkie-talkies, pagers, etc.).
6. Sand bag critical areas.
7. Board up critical windows and doors to prevent wind damage.
8. Shut down exposed pipes at river crossing to prevent discharge of raw sewage or to prevent loss or contamination of potable water, if the pipes brake.

### Administration and Laboratory Buildings:

1. Remove portable electrical equipment and small motors from the flood zone.
2. Remove all sensitive laboratory equipment from the flood zone, where possible.
3. Remove or store computers in a safe area.
4. Remove or store all important records in a safe area.
5. Move vital records such as built drawings, wiring diagrams,
### AP 8C – Natural Event
**(Hurricane / Tropical Storm)**

<table>
<thead>
<tr>
<th>II. Isolate and Fix the Problem</th>
<th>Treatment Plant and Pumping Stations:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Fill empty tanks with water to prevent floating.</td>
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<tr>
<td></td>
<td>2. Disconnect power to all units in the flood zone. Have the power utility disconnect power to the entire plant, if ordered to evacuate the facility.</td>
</tr>
<tr>
<td></td>
<td>3. Remove or move chemicals to a safe area. If chemicals are removed from an underground or above ground tank, fill the tank with water to prevent floating.</td>
</tr>
<tr>
<td></td>
<td>4. Remove fuel from under ground tanks to prevent contamination of the fuel and to protect the environment. If possible move above ground fuel storage tanks to a safe area (fuel will be need for emergency and plant vehicles until new supplies arrive). If it is not practical to move above ground fuel storage tanks, remove the fuel and fill tanks with water.</td>
</tr>
<tr>
<td></td>
<td>5. Remove electrical motors, where possible.</td>
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<tr>
<td></td>
<td>6. When it is not practical to remove large motors, wrap the motors in plastic and seal as tight as possible. This will not keep the motor from getting wet, but will protect the motor from silt, mud, and dirt getting into the windings. Submerged motors can be washed with clean water and dried, and in most case restored to service.</td>
</tr>
<tr>
<td></td>
<td>7. Remove shop tools and electrical hand tools to the emergency operations center or command post.</td>
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<tr>
<td></td>
<td>8. For drinking water systems, as appropriate try to have elevated storage at full capacity.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Monitoring</th>
<th>1. Emergency power should be utilized to the extent necessary and available to maintain pressure within the distribution system.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Systems which have been flooded or otherwise had bacterial quality compromised must be disinfecting their water system and maintaining chlorine residuals throughout the</td>
</tr>
</tbody>
</table>
### AP 8C – Natural Event
**(Hurricane / Tropical Storm)**

- Where such flooding, loss of pressure, or other damage has occurred resulting in potential bacterial compromise, COSL should Issue “Boil Water”, “Do not Drink”, or “Do not Use” orders and Press Releases as appropriate. See Section Appendix D of ERP for Press Release Forms until further testing can be conducted and the situation normalizes. If necessary, a “Boil Water” notice must be announced as soon as possible, and realize that it may be necessary to issue a “Boil Water” notice before the Health Department can be reached.

### IV. Recovery
**And Return to Safety**

In the aftermath of the hurricane, the following general steps are to be followed, as per the US EPA’s Water Security Division:

- **General:**
  1. For water utilities, the first priority should be restoring fire flow and pressure.
  2. For wastewater utilities, the first priority should be to restore primary treatment and disinfection.
  3. Line up and schedule emergency operations and clean up crews
  4. Make arrangements with the local power utility to repair and restore power to the plant as a primary customer. Power should not be turned on to buildings or process units until the floodwater has been removed and the area is safe to occupy.
  5. Notify State and Federal Agencies when the facility is back in operation.
  6. The [IO pg. 6-2] is to notify the media where to access information and press advisories, such as boil water orders, beach closures, and other public instructions.
  7. Make arrangements with local companies to deliver materials and supplies and to provide heavy equipment needed to make repairs to the plant.
  8. Make arrangements with local companies to deliver materials and chemicals as soon as it is safe, and facilities are prepared and ready for operation.
  9. Contact State and local authorities to determine if there are any restrictions on disposal of materials and debris removed from the site or if a temporary discharge permit (NPDES or other) is needed for the water pumped from tanks and other...
### AP 8C – Natural Event (Hurricane / Tropical Storm)

<table>
<thead>
<tr>
<th>IV. Recovery And Return to Safety</th>
<th>Grounds and Common Areas:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Inspect all service vehicles for water and wind damage.</td>
</tr>
<tr>
<td></td>
<td>2. Check site including remote locations for visible damage to power lines and above ground structures.</td>
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<tr>
<td></td>
<td>3. Inspect all sewage collection systems for damage and blockages. Most collection systems will require cleaning after a flood.</td>
</tr>
<tr>
<td></td>
<td>4. Inspect all exposed pipes, especially at river crossings, for leakage. Broken pipes can discharge raw sewage into rivers and streams. Broken water pipes including service connections to severely damaged structures can provide a source of contamination and/or pressure loss to the potable water system.</td>
</tr>
<tr>
<td></td>
<td>5. Check all remote control systems, including telemetering, telephone, and SCADA, etc.</td>
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<table>
<thead>
<tr>
<th>IV. Recovery And Return to Safety</th>
<th>Administration and Laboratory Building:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Check windows and doors for wind damage. Replace and repair as needed to prevent further damage and to provide security.</td>
</tr>
<tr>
<td></td>
<td>2. Check roofs for water and wind damage. Make repairs as needed to prevent further damage.</td>
</tr>
<tr>
<td></td>
<td>3. Pump out and remove silt, mud and sand from basements and other below grade areas.</td>
</tr>
<tr>
<td></td>
<td>4. Clean and disinfect masonry walls with bleach solution to prevent the growth of mold and mildew.</td>
</tr>
<tr>
<td></td>
<td>5. Remove all plasterboard, wallboard, and sheet rock that is wet or shows signs of water damage. Clean and disinfect all the interior studs and other support structures behind the damaged walls with bleach solution to prevent the growth of mold and mildew.</td>
</tr>
<tr>
<td></td>
<td>6. Inspect all switchgear, motor control centers, electrical boxes, junction boxes, and other electrical equipment in flooded areas for silt and sand or lose connections. Boxes should be cleaned and dried with portable or hand held...</td>
</tr>
</tbody>
</table>
**AP 8C – Natural Event**  
*(Hurricane / Tropical Storm)*

<table>
<thead>
<tr>
<th><strong>IV. Recovery And Return to Safety</strong></th>
<th><strong>Treatment Plant and Pumping Stations:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>dryers before the electrical power is restored.</td>
<td>1. Pump out all tanks, wet wells, dry wells, channels, vaults and pits to remove silt, mud, sand, and debris. In some cases washing down walls will be necessary before returning to service. Make sure you have all the necessary permits to dispose of the collected material and for discharging the wastewater.</td>
</tr>
<tr>
<td>7. Thoroughly clean all wet carpets. It is advisable to remove carpets for cleaning. If removing the carpets is not practical, carpets should be steam cleaned, disinfected and mechanically dried. The carpets also should be treated with an anti-bacterial agent to prevent the growth of mold and mildew.</td>
<td>2. Inspect all equipment, clean and lubricate.</td>
</tr>
<tr>
<td>8. Check and reset fire alarms, door alarms, clocks and other control and measurement devices.</td>
<td>3. Inspect all switchgear, motor control centers, electrical boxes, junction boxes, and other electrical connections in flooded areas for silt and sand or lose connections. Boxes should be flushed with fresh water and dried before the electrical power is restored. Breaker boxes and other contacts may need additional cleaning to remove corrosion, especially if the damage was caused by salty or brackish water.</td>
</tr>
<tr>
<td>9. Start sampling, monitoring and testing, including the water distribution system for coliform bacteria, as soon as the laboratory is operational.</td>
<td>4. Inspect all electric motors. Generally, it is more cost-effective to replace small flood damaged motors than to try and repair them. In some cases, motors can be flushed with de-ionized water. Be sure the motor is thoroughly (oven dried) dry before restoring power. Starters and other electrical controls may also be damaged and will need to be replaced.</td>
</tr>
<tr>
<td>5. Large motors that were not removed but were wrapped in plastic should be inspected for damage. Be sure the motor is</td>
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</table>
### AP 8C – Natural Event (Hurricane / Tropical Storm)

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<tbody>
<tr>
<td>6.</td>
<td>Large horsepower motors that were not wrapped in plastic should be removed and sent out for cleaning and drying. Check with the motor or armature specialists in your area. They often have equipment to clean and ovens to dry motors under controlled temperatures.</td>
</tr>
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<td></td>
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<tr>
<td><strong>IV. Recovery And Return to Safety</strong></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Inspect and clean debris from all air intakes and vents.</td>
</tr>
<tr>
<td>8.</td>
<td>Inspect all chemical storage and feed equipment to make sure that the equipment is undamaged and is properly calibrated.</td>
</tr>
<tr>
<td>9.</td>
<td>Chemical and fuel tanks that were filled with water should be pumped out and restocked with fresh materials. Caution: Water from fuel tanks may still contain hydrocarbon residues and may require special handling and disposal.</td>
</tr>
<tr>
<td>10.</td>
<td>Check and refuel emergency generators in the event of future power outages. If generators and diesel engines have been flooded, they will need to be overhauled or engines rebuilt. Getting emergency power capability resorted, should be a high priority. Renting portable generators or pumps should also be considered.</td>
</tr>
<tr>
<td><strong>V. Report of Findings</strong></td>
<td>Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.</td>
</tr>
<tr>
<td><strong>VI. AP-8C Revision Dates</strong></td>
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</tbody>
</table>
AP 8D – Natural Event (Earthquake)

| AP Summary: | This Action Plan applies to earthquake events. In general, these events occur without any lead times, making it impossible to take proactive measures. Response and recovery can be time consuming during such events, and they can involve loss of electrical power supply, damage of structures and equipment, disruptions of service, and injuries to utility personnel. |
| Initiation and Notification: | An earthquake usually occurs without any type of warning. Due to the suddenness, all personnel should attempt to find immediate shelter. This may include: |
| | • Standing in a doorway and bracing your hands and feet against each side. |
| | • Getting under a desk or heavy table. |
| | • Standing flat against an interior wall. |
| | • Do not seek cover under laboratory tables or benches as chemicals could spill and harm personnel. |
| | After an earthquake has stopped, initiate this earthquake AP 8D. |
| Equipment Identified: | Equipment |
| | Location = Backhoes, Dump Trucks, Road sanding equipment, Chains, Sand Bags, Water Quality Testing Equipment = at Public Works Bldg |
| Specific Activities: | In general, the [WUERM pg. 6-1] will organize an assessment team to undertake the following activities: |
| I. Assess the Problem | • Inspect all structures for obvious cracks and damage. |
| | • Assess condition of all electrical power feeds and switchgear. |
| | • If SCADA is working, immediately review system for all types of malfunctions, including telemetry, pressure in the |
| | Be prepared for aftershocks. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. |
| **AP 8D – Natural Event**  
| **(Earthquake)** |
|---|---|
| **distribution system, and operation of pumps and other equipment.** |
| - If buildings have any sign of damage, such as cracked walls, broken windows, downed power lines, do not enter, but wait for trained personnel. |
| - If buildings appear safe, cautiously inspect condition of interiors for damaged equipment, leaks, chemical spills, etc. |
| - Communicate all findings via radio to Emergency Operations Center (EOC) or [WUERM pg. 6-1], as appropriate. |
| - Activate personnel accountability network to check for injury of staff. |

| **I. Assess the Problem** |
|---|---|
| Earthquakes can cause significant power outages because of the impact on outside generation and transmission lines. After a major earthquake, power might be interrupted for an extended period of time over the entire operations area. In this instance, power restoration will most probably be slow and, depending upon the infrastructure damage, localized. Some isolated areas could take considerably longer for power restoration than others. |

| **II. Isolate and Fix the Problem** |
|---|---|
| General earthquake procedures during an earthquake are as follows: |
| 1. Seek shelter under a deck, table, doorway, or inside wall. |
| 2. Once the shaking has stopped, gather valuables and quickly make your way outside. (DO NOT USE ELEVATORS.) |
| 3. Avoid electric wires, poles and equipment, once outside. |
| 4. Prepare for aftershocks. |

| **III. Monitoring** |
|---|---|
| At all times, personnel should observe the following general steps: |
| - Stay calm and await instructions from the designated official. |
| - Keep away from overturned fixtures, windows, filing cabinets, and electrical power. |
| - Provide assistance and/or call for medical help for injured employees as needed. |
| - If major structural damage has occurred, order a complete evacuation. The building should be inspected by trained personnel. |

**Aftershocks can occur in the first hours, days, weeks, or even months after the quake. Follow the same procedures as for earthquakes. See AP 7 for specific power loss procedures.**
### AP 8D – Natural Event
#### (Earthquake)

- Protect from further danger by putting on long pants, a long-sleeved shirt, sturdy shoes, and work gloves.
- Look for and extinguish small fires. Eliminate fire hazards.
- Monitor the radio for instructions.
- Expect aftershocks.
- Use the telephone only to report life-threatening emergencies.

### IV. Recovery
#### And Return to Safety

General earthquake procedures after an earthquake are as follows:

1. Activate Emergency Operations Center (EOC).
2. Contact emergency assistance (local police, local fire department, rescue squad, etc) as necessary to respond to injuries of staff.
3. The [IO pg. 6-2] is to notify customers, media, and state and local authorities if service is disrupted or if significant demand management is necessary.
4. Inspect facilities for structural damage, including: buildings, storage tanks, pipelines, and process equipment. Consider the use of an outside engineering consultant.
5. Prioritize and repair water main leaks.
6. Contact neighboring purveyors for mutual aid arrangements, and open connections as needed.
7. Respond to side effects (loss of power, fire chemical spills, etc.)

### V. Report of Findings

Assemble relevant personnel to review effectiveness of action plan and reinforce lessons learned.

### VI. AP-8D Revision Dates
## AP 9 - Water Supply Interruption

| AP Summary: | This action plan applies to water supply interruptions. These events will vary in scale from compromised incremental supply volumes to complete, catastrophic loss of water supply. The ability for a utility to successfully respond to a catastrophic water supply interruption will be highly correlated to the existence of interconnections and alternative sources of supply. |
| Initiation and Notification: | Catastrophic water supply interruptions will generally be identified by other events, such as physical equipment damage, severe weather or others, which are likely to have a specific direct action plan. Incremental interruptions due to longer-term events such as drought or acute loss of one source, will lead to a prescribed series of contingency measures, as outlined below. |
| Equipment Identified: | Equipment  
**Location** = Water Quality Testing Equipment is located at the Water Plant and at Public Works  
Bella Vista and Redding Inter-ties could be used |
| Specific Activities: | Start Delivering water through the inter-ties.  
Boil water orders may be necessary.  
Call for conservation |
| I. Assess the Problem | There are a number of potential levels of severity involved in a water supply interruption. A series of stages of action corresponding to increasing impacts on water are:  
- Normal Conditions  
- Water Alert  
- Water Warning  
- Water Crisis  
- Water Emergency |
| II. Isolate and Fix the | Each stage has specific customized definitions, in terms of percent of Water Supply reduction, with appropriate |
### AP 9 – Water Supply Interruption

| Problem | actions or restrictions at each stage. Utilities will have a series of escalating penalties for successive violations of restrictions. These stages are:  

**Normal Conditions** – Normal conditions apply. Water is available; but in arid environments there are specific watering days for various addresses or penalties for excess watering. |
<table>
<thead>
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<tbody>
<tr>
<td>II. Isolate and Fix the Problem</td>
<td>The following water rationing stages are identified in the City’s Water Shortage Contingency Plan, which details water use restrictions imposed during a reduction in the City’s 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.</td>
</tr>
</tbody>
</table>
|  | 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.  

**Water Alert** There is a 10% 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. Voluntary restrictions are encouraged in an effort to reduce water consumption. The City of Shasta Lake maintains an ongoing public information campaign consisting of distribution of literature, speaking engagements, bill inserts, and conversation messages printed in local newspapers. Free Water Conservation kits are distributed. Water audits are offered to high water-use customer.  

**Stage 2: Moderate Water Shortage.** There is an 11 - 20% 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. In Stage 2, all voluntary restrictions from Stage 1 become mandatory. Additional restrictions apply in an effort to increase |
**AP 9 – Water Supply Interruption**

<table>
<thead>
<tr>
<th>Conservation by 10 percent above Stage 1. Unnecessary and wasteful uses of water are prohibited. Water use for ornamental ponds and fountains is prohibited. Large water users are required to develop or update Water Conservation Plans addressing all of the rationing stages and demonstrating the applicable reduction in water use. Use of landscape irrigation systems is limited. Violators are required to install retrofit kits. Excessive water use penalties are imposed on all customers.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 4: Severe Water Shortage. There is a 31 - 40% 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 10 percent above Stage 3. Water use is restricted to meet the minimum requirements for personal health and safety. In addition to mandatory restrictions in prior phases, filling of swimming pools is prohibited. Flushing of sewers and fire hydrants is prohibited except in emergencies. No potable water may be used for construction purposes.</td>
</tr>
<tr>
<td>Stage 5: Critical Water Shortage Emergency. There is a 41 - 50% 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 10 percent above Stage 4. In addition to mandatory restrictions in prior phases, no new residential development is permitting. Use of landscape irrigation systems for all customers is prohibited.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>III. Monitoring</th>
<th>Communication of water supply interruption stages should be handled according to the identified public notification procedures. Press releases should also be handled according to the identified utility procedures.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See ERP Section 6.4.2 See ERP Section 6.4.1 for Press Releases.</td>
</tr>
</tbody>
</table>
## AP 9 – Water Supply Interruption

### IV. Recovery and Return to Safety

Alternative water supply options have been identified in the utility emergency response plan (ERP). In the event of a catastrophic, immediate need, it is likely these will be utilized. This includes information on local interconnections with neighboring sources, area water haulers, temporary storage options, etc.

If there have been lines with no water or negative pressures, a precautionary boil order should be issued by the utility until line tests on two consecutive days show the lines to be safe. Chlorine residuals should be increased temporarily.

The water system may have to valve off portions of the distribution system until above ground storage tanks are refilled. Valved off areas have the potential for external contamination to enter the system through leaking joints or cracked pipe. Before placing a valved off area back in service, the system should issue a precautionary boil order, increase the chlorine residual throughout the system and obtain safe bacteriological samples from representative areas of the system on two consecutive days. The precautionary boil order may be lifted once the required safe samples are obtained.

The system should be repressurized slowly to avoid water hammer and the potential for damage to the lines.

Air should be bled from lines as they refill since entrapped air can impede flows and may cause line damage.

See ERP Alternative Water Sources, Section 3.4.3
See boil water order release Section 6.4.2, Press Releases, Appendix D

### V. Report of Findings

In addition to completing the appropriate filings with local authorities and agencies, it is recommended that the Utility assemble the relevant personnel to review the effectiveness of the action plan and reinforce lessons learned in the process.

### VI. AP-9 Revision Dates
## AP 10A – Bomb Threat (Telephone / In Person)

### AP Summary:
This Action Plan applies to the receipt of a bomb threat via telephone or in person. It is important to develop this plan in counsel with the local police and the local fire department services.

### Initiation and Notification:
Initiate this AP as soon as the bomb threat is received
As soon as possible, notify:
- 911
- [WUERM pg. 6-1]

The WUERM should then notify others as appropriate. Examples include:
- Local Fire Department
- Local Police Department
- FBI
- ATF

Notification phone numbers can be obtained from the Organization Contact List in the Appendices as well as from Section 6.1 of the ERP.

### Equipment Identified:
Equipment
Location = Backhoes, Dump Trucks, Road sanding equipment, Chains, Sand Bags, Water Quality Testing Equipment, and two way radios = at Public Works Building

### Specific Activities:

#### I. Assess the Problem
As a rule, all bomb threats should be considered credible until proven otherwise.

Due to the diversity of facilities, each utility is encouraged to undertake an audit of their own facilities and consult with local emergency services such as fire and police while creating their evacuation plan. If it is not possible during the creation, then certainly consult before instituting the plan.
### AP 10A – Bomb Threat (Telephone / In Person)

#### II. Isolate and Fix the Problem

<table>
<thead>
<tr>
<th>Threat received via Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remain Calm</td>
</tr>
<tr>
<td>2. If possible record the message</td>
</tr>
<tr>
<td>3. Fill out Bomb Threat Checklist while performing the following:</td>
</tr>
<tr>
<td>a. Listen</td>
</tr>
<tr>
<td>b. Be Calm and Courteous</td>
</tr>
<tr>
<td>c. Keep the caller on the line as long as possible</td>
</tr>
<tr>
<td>d. Ask him/her to repeat the message</td>
</tr>
<tr>
<td>e. Record every word spoken by the person</td>
</tr>
<tr>
<td>f. Do not speak to anyone unless directed to do so</td>
</tr>
<tr>
<td>g. <strong>WHEN</strong> caller hangs up, <strong>THEN</strong> implement COSL policy to either hang up or not hang up the phone.</td>
</tr>
<tr>
<td>4. Notify the [WUERM pg. 6-1] if not already done</td>
</tr>
<tr>
<td>5. Call the local police (911 or the emergency number for your area) and report the threat immediately.</td>
</tr>
<tr>
<td>6. Implement the COSL policy on searching for the bomb.</td>
</tr>
<tr>
<td>7. Implement the COSL policy evacuation.</td>
</tr>
<tr>
<td>8. <strong>IF</strong> evacuating building, <strong>THEN</strong> Take the Bomb Threat Checklist with you.</td>
</tr>
</tbody>
</table>

---

**It is always desirable that more than one person listens in on the call. To do this, have a pre-established signaling system in place to engage another listener if possible.**

**Not hanging up the phone may be useful to law enforcement authorities in tracing the call. Hanging up and dialing *57 (where available) may allow a trace of the call. Consult with COSL management and local law enforcement.**

**Develop a plan for conducting a bomb search. Establish time considerations in the plan commensurate with utility size and resources. For example, if time until detonation is less than ½ hour, immediate evacuation may be advisable. If greater than ½ hour a search should be conducted. Consult with the local police, local fire department, or other local authority to determine who will conduct the search. In most cases, because of their familiarity with the facility, the search is best conducted by utility personnel, however this requires that they be trained properly in search techniques. The police or fire department may be available to assist in the training or be able to provide advice as to who can provide the training.**

---

**II. Isolate and Fix the Problem**

- Make a quick visual sweep of your area for any unusual items and proceed to a designated gathering area sufficiently located away from the building.
- **Direct any media questions to the [Information Officer], [IO pg. 6-2].**

**Let the trained bomb technician determine what is or is not a bomb.**

**Note that a bomber wishing to cause personal injuries could place a bomb near an exit normally used to evacuate and then call in the threat.**
### AP 10A – Bomb Threat

(Telephone / In Person)

- If a bomb is found note:
  - Exact location of the object
  - Size of object
  - Type of container or wrappings and marking on package
  - Any sound coming from object

### Threat received in person:

1. Cooperate with the individual or group.
2. Try to get the attention of a co-worker.
4. Co-worker calls [WUERM pg.6-1]
5. Create a description of the adversary using a **Suspect Description Form**. See ERP Appendix Section F.
6. Direct any media questions to the [Information Officer], [IO pg.6-2].

### III. Monitoring

During a search of the building, rapid two-way communication is essential.

1. Use existing installed telephones.
2. Alert medical personnel to stand by in the event of an accident caused by the explosion of the devise.
3. Alert fire department to stand by.

### In event of an explosion:

1. Get out of the building as quickly as calmly as possible.
2. **IF** items are falling from bookshelves or the ceiling, **THEN** get under a sturdy table or desk until the situation has stabilized enough for your safe passage.
3. Ensure your own safety before trying to help others.

### IV. Recovery and Return to Safety

**IF** evacuated, **THEN** do not return to the building until it is determined safe by appropriate authorities.

---

**DO NOT USE RADIOS OR OTHER WIRELESS DEVICES DURING A SEARCH.** The radio transmission energy can cause premature detonation of an electric initiator (blasting cap).
## AP 10A – Bomb Threat (Telephone / In Person)

### V. Report of Findings

| Debrief after every bomb threat response to improve procedures. |
| The Utility [Security Director] should file an internal report for the Utility’s files and also provide information as requested to Local Law Enforcement and other outside agencies |

### VI. AP 10A Revision Dates
# AP 10B – Bomb Threat
(Suspicious Package / Letter)

## AP Summary:
This Action Plan applies to the receipt of a suspicious package / letter or a bomb found at the utility. It is important to develop this plan in counsel with your local police and local fire department.

## Initiation and Notification:
Initiate this AP as soon as a suspicious package or letter has been discovered

As soon as possible, notify:

- 911
- [WUERM pg. 6-1]

The WUERM should then notify others as appropriate. Examples include:

- Local Fire Department
- Local Police Department
- FBI
- ATF

## Equipment Identified:

## Specific Activities

### I. Assess the Problem
Determining if a package is suspicious involves a careful evaluation. Some points to consider are:

- Incorrect address and or titles
- Titles but no names
- Visual distractions
- Possess a foreign postmark, airmail, or special delivery markings (Personal, Confidential, Special Delivery, Open By Addressee Only)
- Return address irregularities, including no address, one not matching the postmark, or not familiar
- Badly typed or poorly written addresses
- A package not expected by the addressee
- Deficient or excessive postage, unusual stamps
- Packages within packages

Most bombs are homemade and can look like nearly anything. Suspect anything that looks unusual.

Although the presence of one of these conditions does not mean, for certain, that there is a bomb in the package. check further if any of these indicators are present. Find out if the recipient is expecting the package, recognizes the return address, and if the package is the right size for the item expected. Verify the return address. If any of these comes up a “no,” investigate further and alert [WUERM], and police.
# AP 10B – Bomb Threat

(Suspicious Package / Letter)

## I. Assess the Problem

| DO NOT OPEN SUSPICIOUS PACKAGES and/or LETTERS. |
| Packages within packages may be an attempt to mask or hide the actual explosive device |
| If the bomb contains nitrogen based fertilizers there will be an odor that people can smell. The next time you fertilize your lawn or garden, smell the fertilizer. This is similar to the odor of nitrogen based bomb components. |
| Chemicals used may “sweat” that in turn stain the package wrapper. |
| Letters have a normal ‘feel’. Those that contain devices may not ‘feel’ right as the presence of plastic or metallic components may alter the normal ‘feel’ of a letter. |

- Be from a company/person you do not recognize
- Be hand delivered by a person other than normal delivery persons, especially by a person using a non-delivery type vehicle
- Foul Odor
- Left behind by someone you have not seen before
- Left behind by someone known to carry a grudge against you, your facility, someone at your facility
- Oily, stained, or crystallization
- on the outside
- Rigid or bulky
- Odd shaped, unevenly-weighted, lopsided, or lumpy
- Possess protruding wires or tinfoil
- Over-wrapped with excessive securing material such as tape or string
- Feel (See notes section to the right)

## II. Isolate and Fix the Problem

1. Remain Calm.
2. Do not touch or move package.
3. Notify the [WUERM pg. 6-1] if not already done.
4. While waiting for instructions, clear the area around the object and try to determine ownership. (Did anyone see who left this here?)

Let the trained bomb technician determine what is or is not a bomb.

5. Notify police.
6. Implement the City of Shasta lake policy on evacuation.
7. Direct any media questions to the [Information Officer], [IO pg. 6-2].

If a bomb is found note:

- Exact location of the object
- Size of object
- Type of container or wrappings and

**DO NOT USE RADIOS OR OTHER WIRELESS DEVICES NEAR A SUSPECTED BOMB.**
The radio transmission energy can cause premature detonation of an electric initiator (blasting cap).
# AP 10B – Bomb Threat

**(Suspicious Package / Letter)**

<table>
<thead>
<tr>
<th>III. Monitoring</th>
<th>In event of an explosion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Get out of the building as quickly as calmly as possible.</td>
</tr>
<tr>
<td></td>
<td>- <strong>IF</strong> items are falling from bookshelves or the ceiling, <strong>THEN</strong> get under a sturdy table or desk until the situation has stabilized enough for your safe passage.</td>
</tr>
<tr>
<td></td>
<td>- Ensure your own safety before trying to help others.</td>
</tr>
</tbody>
</table>

| IV. Recovery and Return to Safety | **IF** evacuated, **THEN** do not return to the building until it is determined safe by appropriate authorities. |

<table>
<thead>
<tr>
<th>V. Report of Findings</th>
<th>Debrief after every bomb threat response to improve procedures.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The Utility [Security Director] should file an internal report for the Utility’s files and also provide information as requested to Local Law Enforcement and other outside agencies.</td>
</tr>
</tbody>
</table>

| VI. AP 10B Revision Dates |   |
## AP 10C – Bomb Threat
(Written Threat Received)

### AP Summary:
This Action Plan applies to the receipt of a written bomb threat. It is important to develop this plan in counsel with your local police and local fire department.

### Initiation and Notification:
Initiate this AP as soon as a written threat has been discovered
As soon as possible, notify:
- 911
- [WUERM pg. 6-1]
The WUERM should then notify others as appropriate. Examples include:
- Local Fire Department
- Local Police Department
- FBI
- ATF

### Equipment Identified:
- Equipment
- Location

### Specific Activities

#### I. Assess the Problem
As a rule, all bomb threats should be considered credible until proven otherwise.

#### II. Isolate and Fix the Problem
**Written Threats:**
1. Remain Calm.
2. Save all materials, including any envelope or container.
3. Once recognized as a bomb threat, avoid further handling.
4. Leave the message where found.
5. Do not alarm others; however

Every effort must be made to retain evidence such as fingerprints, handwriting, or typewriting, paper, and postal marks. These will prove essential in tracing the threat and identifying the writer.

Let a trained bomb technician determine what is or is not a bomb. Develop a plan for conducting a bomb search. Establish time considerations in the plan commensurate with utility size and resources. For example, if time until detonation is less than ½ hour, immediate evacuation may be advisable. If greater than ½ hour a search should be
## AP 10C – Bomb Threat
(Written Threat Received)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.  Contact [WUERM pg. 6-1] immediately.</td>
<td></td>
</tr>
<tr>
<td>6.  Contact the local police.</td>
<td></td>
</tr>
<tr>
<td>7.  Implement the City of Shasta Lake policy on searching for the bomb.</td>
<td>conducted. Consult with the police, fire department, or other local authority to determine who will conduct the search. In most cases, because of their familiarity with the facility, the search is best conducted by utility personnel, however this requires that they be trained properly in search techniques. The police or fire department may be available to assist in the training or be able to advise as to who can provide the training.</td>
</tr>
<tr>
<td>8.  Implement the City of Shasta Lake policy on evacuation.</td>
<td></td>
</tr>
<tr>
<td>9.  Make a quick visual sweep of your area for any unusual items and proceed to a designated gathering area sufficiently located away from the building.</td>
<td></td>
</tr>
<tr>
<td>10. Direct any media questions to the [Information Officer], [IO pg. 6-2].</td>
<td></td>
</tr>
</tbody>
</table>

### If a bomb is found note:
- Exact location of the object
- Size of object
- Type of container or wrappings and marking on package
- Any sound coming from object

Note that a bomber wishing to cause personal injuries could place a bomb near an exit normally used to evacuate and then call in the threat.

Due to the diversity of facilities, each utility is encouraged to undertake an audit of their own facilities and consult with local emergency services such as fire and police while creating their evacuation plan. If it is not possible during the creation, then certainly consult before instituting the plan.

### III. Monitoring

During a search of the building, rapid two-way communication is essential.
- Use existing installed telephones.
- Alert medical personnel to stand by in the event of an accident caused by the explosion of the devise.
- Alert fire department to stand by.

**DO NOT USE RADIOS OR OTHER WIRELESS DEVICES DURING A SEARCH.** The radio transmission energy can cause premature detonation of an electric initiator (blasting cap)

**In event of an explosion**

1. Get out of the building as quickly as calmly as possible.
2. **IF** items are falling from bookshelves or the ceiling, **THEN**
**AP 10C – Bomb Threat**  
(Written Threat Received)

<table>
<thead>
<tr>
<th>IV. Recovery and Return to Safety</th>
<th>IF evacuated, THEN do not return to the building until it is determined safe by appropriate authorities.</th>
</tr>
</thead>
<tbody>
<tr>
<td>V. Report of Findings</td>
<td>Debrief after every bomb threat response to improve procedures.</td>
</tr>
</tbody>
</table>

The Utility [Security Director] should file an internal report for the Utility’s files and also provide information as requested to Local Law Enforcement and other outside agencies.
Appendix B
System and Facility Information
## System Shut Down and Isolation Plan

<table>
<thead>
<tr>
<th>System Component</th>
<th>Method of Shutdown or Isolation</th>
<th>Location &amp; Person to Perform Shutdown or Isolation</th>
<th>Special Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Automated</td>
<td>SCADA Controlled</td>
<td>Manual Operation</td>
</tr>
<tr>
<td>Raw Water line</td>
<td>No</td>
<td>2 Valves at the Y to the new tank to the filters</td>
<td>Water Plant Operator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Located 50' west of the old raw water tank,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>now a finished tank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The valve to the tank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>closed counter-clockwise, and is</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>closed the other valve</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>operates normally</td>
</tr>
<tr>
<td>Raw water tank</td>
<td>No</td>
<td>1 valve is for inflow and outflow</td>
<td>Water plant operator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Valve is 15’ south of #3 filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Valve wrench</td>
</tr>
<tr>
<td>Water Plant Filters</td>
<td>PLC</td>
<td>Filter inlets have manual valves</td>
<td>Water Plant Operator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Filter inlets have manual valves</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Keys to plant and security code</td>
</tr>
<tr>
<td>Finished Water Tanks</td>
<td>No</td>
<td>Shut off clearwell pumps / close valve at inlet to tank 1 and 2 / close valve at outlet of tank 1 and 2.</td>
<td>Water plant operator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Shut off pumps in motor control room. Inlet valve</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>next to tank 1 and 2 on east side. Outlet valve on</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>north side of tank 1 &amp; 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Keys to plant and security code and long valve key</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>located by filters near backwash inlet.</td>
</tr>
<tr>
<td>Summit City Water Tank</td>
<td>No</td>
<td>One valve for inflow and outflow</td>
<td>Distribution Operator / Valve is in ground</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>on the side of the tank</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Valve key</td>
</tr>
<tr>
<td>Storage Tank No. 1</td>
<td>No</td>
<td>Gate or Altitude valve for inflow Wheel valve for</td>
<td>Distribution Operator. Inlet valve or altitude</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>valve is in vault beside</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Key to vault and chain</td>
</tr>
<tr>
<td>Storage tank</td>
<td>No. 2</td>
<td>Altitude valve for inflow or gate valve in front of vault. valve for outflow</td>
<td>No</td>
</tr>
<tr>
<td>--------------</td>
<td>-------</td>
<td>--------------------------------------------------------------------------</td>
<td>----</td>
</tr>
<tr>
<td>Storage tank No 3-A</td>
<td>No</td>
<td>2 way altitude valve or Gate valve at tank</td>
<td>No</td>
</tr>
<tr>
<td>Storage tank No 3-B</td>
<td>No</td>
<td>2 way altitude valve or Gate valve at tank</td>
<td>No</td>
</tr>
<tr>
<td>Storage tank No 4-A One million</td>
<td>No</td>
<td>2 way altitude valve or Gate valve at tank</td>
<td>No</td>
</tr>
<tr>
<td>Storage tank No 4-B 2.9 million</td>
<td>No</td>
<td>2 way altitude valve or Gate valve at tank</td>
<td>No</td>
</tr>
<tr>
<td>Bella Vista Inter-tie pump station</td>
<td>No</td>
<td>Manually shut off pumps Close gate valve to our water system</td>
<td>No</td>
</tr>
</tbody>
</table>
Instructions for System Shut Down and Isolation Plan Table
The purpose of the System Shut Down and Isolation Plan is to provide clear and easy-to-understand guidance regarding how and where to isolate and/or shut down portions the water system to prevent the movement of contamination.

1. **System Components** – Enter all physical assets that could potentially be the introduction point for a contaminant. The System Components list can be imported from the VSAT physical asset list.

2. **Method of Shut Down or Isolation** – Describe automated and manual methods by which shutdown or isolation of the asset can occur. In cases where automated controls are available, be sure to list manual control points (valves, power cut-offs, etc.) that can be used if the SCADA system is not functioning.

3. **Location & Person to Perform Shut Down or Isolation** – Describe the individual (position, title, workplace) who will actually perform the SCADA controlled or manual shut down or isolation procedures. This table will serve as a reference for the WUERM during emergency situations and/or contamination incidents, so it is important to be as specific as possible regarding who will actually be executing the shut down or isolation order, and where the person can be found.

4. **Special Requirements** – Describe any special requirements that need to be considered in order to perform the shut down or isolation of the asset. Examples of special requirements include: confined space certification, PPE, entry codes, keys, specialized tools and safety equipment (wrenches, ladders, harnesses, flashlights, etc.), and locations of power cut-offs.
<table>
<thead>
<tr>
<th>Quantity Per Kit</th>
<th>Total Quantity Needed (50 Kits)</th>
<th>Size</th>
<th>Description</th>
<th>Supplier</th>
<th>Page No.</th>
<th>MFG Number</th>
<th>Catalog No.</th>
<th>Quantity to Order</th>
<th>Unit Price</th>
<th>Extended Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>150</td>
<td>1 L</td>
<td>Wheaton Glass 24/case</td>
<td>VWR</td>
<td>190</td>
<td>219820</td>
<td>16159-903</td>
<td>7</td>
<td>$166.46</td>
<td>$1,165.22</td>
</tr>
<tr>
<td>4</td>
<td>200</td>
<td>1 L</td>
<td>Amber Glass 12/case</td>
<td>VWR</td>
<td>176</td>
<td>15900-142</td>
<td>15900-024</td>
<td>17</td>
<td>$26.20</td>
<td>$445.40</td>
</tr>
<tr>
<td>3</td>
<td>150</td>
<td>2 1/2 L</td>
<td>Amber Glass 6/case</td>
<td>VWR</td>
<td>179</td>
<td>15900-192</td>
<td></td>
<td>25</td>
<td>$26.10</td>
<td>$652.50</td>
</tr>
<tr>
<td>5</td>
<td>250</td>
<td>40 ml</td>
<td>Amber Glass Vials 72/case</td>
<td>VWR</td>
<td>175</td>
<td>15900-024</td>
<td></td>
<td>4</td>
<td>$70.15</td>
<td>$280.60</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>125 ml</td>
<td>125 ml (4 oz) Nalgen Polypropylene Wide Mouth Bottle 12/case</td>
<td>Fischer Scientific</td>
<td>191</td>
<td>2105-0004</td>
<td>02893A</td>
<td>9</td>
<td>$19.74</td>
<td>$177.66</td>
</tr>
<tr>
<td>3</td>
<td>150</td>
<td>1/2 Gal</td>
<td>Plastic 64 oz Type F Natural</td>
<td>Mayfair Plastics</td>
<td>150</td>
<td></td>
<td></td>
<td>150</td>
<td>$0.458</td>
<td>$68.70</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>125 ml</td>
<td>Amber Glass w/septa 12/case</td>
<td>VWR</td>
<td>176</td>
<td>15900-146</td>
<td></td>
<td>9</td>
<td>$17.75</td>
<td>$159.75</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>250 ml</td>
<td>Disposable Plastic Bac-t Bottle w/thiosulfate (Forest Biomedical)</td>
<td>Eagle Pitcher</td>
<td>150</td>
<td></td>
<td></td>
<td>100</td>
<td>$1.50</td>
<td>$150.00</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>10 L</td>
<td>Collapsible Carboy LDPE Cubitainers 12/case</td>
<td>VWR</td>
<td>189</td>
<td>EP 160-2-5</td>
<td></td>
<td>9</td>
<td>$58.74</td>
<td>$528.66</td>
</tr>
<tr>
<td>4</td>
<td>200</td>
<td>pair</td>
<td>Vinyl gloves (disposable) Large 1000/case</td>
<td>VWR</td>
<td>746</td>
<td>PH2D7852</td>
<td></td>
<td>1</td>
<td>$177.41</td>
<td>$177.41</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>each</td>
<td>Moldex Type N95 particulate respirator 20/pk</td>
<td>Fischer Scientific</td>
<td>1544</td>
<td>1501</td>
<td>19-003-245A</td>
<td>5</td>
<td>$21.07</td>
<td>$105.35</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>each</td>
<td>Disposable Lab Jacket Kimberly Clark &quot;Kleen Guard&quot; Size XL 15/case</td>
<td>Fischer Scientific</td>
<td>35</td>
<td>36544</td>
<td>17-981-41H</td>
<td>7</td>
<td>$80.00</td>
<td>$560.00</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>each</td>
<td>Bouton Softsides Goggle</td>
<td>Central Stores</td>
<td>45-132-12500</td>
<td></td>
<td>100</td>
<td>$1.89</td>
<td>$189.00</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>600</td>
<td>feet</td>
<td>50' Coil 3/8-in I.D. 1/2 -in O.D. Tygon Laboratory tubing R-3606</td>
<td>VWR</td>
<td>1807</td>
<td>AJC00027</td>
<td>63010-122</td>
<td>4</td>
<td>$73.05</td>
<td>$292.20</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>each</td>
<td>Connector Clamps with thumbscrew 10/pack</td>
<td>Fischer Scientific</td>
<td>410</td>
<td>14-198A</td>
<td></td>
<td>10</td>
<td>$14.18</td>
<td>$141.80</td>
</tr>
<tr>
<td>Quantity Per Kit</td>
<td>Total Quantity Needed (50 Kits)</td>
<td>Size</td>
<td>Description</td>
<td>Supplier</td>
<td>Page No.</td>
<td>MFG Number</td>
<td>Catalog No.</td>
<td>Quantity to Order</td>
<td>Unit Price</td>
<td>Extended Price</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------</td>
<td>--------</td>
<td>-----------------------------------------</td>
<td>------------</td>
<td>----------</td>
<td>------------</td>
<td>--------------</td>
<td>------------------</td>
<td>------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>10</td>
<td>500</td>
<td>9 x 18</td>
<td>Zip-lock LDPE Sample Bags Nalgene 250/case</td>
<td>VWR</td>
<td>55</td>
<td>6255-0918</td>
<td>56766-130</td>
<td>2</td>
<td>$139.45</td>
<td>$278.90</td>
</tr>
<tr>
<td>1</td>
<td>50</td>
<td>roll</td>
<td>Lab grade marker tape 1&quot; (12/case)</td>
<td>VWR</td>
<td>926</td>
<td>36425-067</td>
<td>11215-898</td>
<td>4</td>
<td>$50.04</td>
<td>$200.16</td>
</tr>
<tr>
<td>1</td>
<td>50</td>
<td>each</td>
<td>Biohazard Bags 12 x 24 (200/case)</td>
<td>VWR</td>
<td>52</td>
<td>11215-898</td>
<td>11215-898</td>
<td>1</td>
<td>$119.16</td>
<td>$119.16</td>
</tr>
<tr>
<td>4</td>
<td>200</td>
<td>each</td>
<td>Anticeptic wipes (pads) 200/case</td>
<td>VWR</td>
<td>1945</td>
<td>21899-553</td>
<td>21899-553</td>
<td>1</td>
<td>$123.80</td>
<td>$123.80</td>
</tr>
<tr>
<td>10</td>
<td>500</td>
<td>grams</td>
<td>Sodium Thiosulfate granules Mallinckrodt 500 grams</td>
<td>VWR</td>
<td>2320</td>
<td>2320</td>
<td>MK809612</td>
<td>1</td>
<td>$37.95</td>
<td>$37.95</td>
</tr>
<tr>
<td>40</td>
<td>2000</td>
<td>each</td>
<td>Adhesive labels 500/roll</td>
<td>Stock</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>$5.00</td>
<td>$20.00</td>
</tr>
<tr>
<td>2</td>
<td>100</td>
<td>30.8 Qt</td>
<td>Collapsible Cooler (Igloo Softmate 48)</td>
<td>Igloo</td>
<td></td>
<td></td>
<td>Softmate 48</td>
<td>100</td>
<td>$32.36</td>
<td>$3,236.00</td>
</tr>
<tr>
<td>1</td>
<td>50</td>
<td>30 Gal</td>
<td>Plastic Storage Bin (Sterilite Ultra)</td>
<td>Sterilite Corp.</td>
<td>17454204</td>
<td>Ultra 30 Gal</td>
<td>17454204</td>
<td>54</td>
<td>$11.49</td>
<td>$620.46</td>
</tr>
</tbody>
</table>

**Total** | **$9,831.03**                  | **Price per Kit** | **$196.62**
Appendix C
Emergency Phone Lists
TABLE C-1

<table>
<thead>
<tr>
<th>911 Area</th>
<th>530.275.7400</th>
</tr>
</thead>
</table>

The individual(s) who discover the threat or emergency situation will immediately notify City of Shasta Lake’s 24-hour Call Center. The **Dispatcher at the Call Center** will then notify the Water Utility Emergency Response Manager or WUERM (pg. 6-1). The remainder of the City of Shasta Lake staff will be notified according to the table below.

TABLE C-2

<table>
<thead>
<tr>
<th>Name and Title</th>
<th>Responsibilities during an Emergency</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Treatment Superintendent</td>
<td>On Call Personnel</td>
<td>Tony Thomasy 530.227.0022</td>
</tr>
<tr>
<td>Water Treatment Plant Operator</td>
<td>On Call Personnel</td>
<td>Chris Carr 530.515.0741</td>
</tr>
<tr>
<td>Water Distribution Manager</td>
<td>On Call Personnel</td>
<td>Jose Castro 530.275.2832</td>
</tr>
<tr>
<td>Safety Officer</td>
<td>On Call Personnel</td>
<td>Kevin Estabrook 530.243.8518</td>
</tr>
<tr>
<td>Chief Water Utility Engineer</td>
<td>On Call Personnel</td>
<td>Paul Reuter 530.244.0202</td>
</tr>
<tr>
<td>Security Director</td>
<td>PACE Civil</td>
<td>530.245.6080 or 911</td>
</tr>
<tr>
<td>Public Works Foreman</td>
<td>John Horisk</td>
<td>530.275.2219</td>
</tr>
<tr>
<td>Laboratory Director</td>
<td>Basic Lab</td>
<td>530.243.7234</td>
</tr>
<tr>
<td>Water Source Manager</td>
<td>Tony Thomasy</td>
<td>Shasta Dam 530.276.2188</td>
</tr>
<tr>
<td>General Manager</td>
<td>John Duckett</td>
<td>530.347.5946</td>
</tr>
</tbody>
</table>
## TABLE C-3

<table>
<thead>
<tr>
<th>Local Agencies</th>
<th>Name</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Police</td>
<td>Forrest Bartell</td>
<td>530.245.6080 or 911</td>
</tr>
<tr>
<td>Fire Department</td>
<td>Adrian Rogers</td>
<td>530.275.7474 or 911</td>
</tr>
<tr>
<td>HAZMAT Team</td>
<td>SCHMERT or Shasta Lake Fire Protection District</td>
<td>530.275.7474</td>
</tr>
<tr>
<td>Hospital / Critical Care Facility</td>
<td>Mercy Medical Center</td>
<td>530.225.6000 or 911</td>
</tr>
<tr>
<td></td>
<td>Shasta Regional Medical Center</td>
<td>530.224.5400 or 911</td>
</tr>
<tr>
<td>Power Company</td>
<td>City of Shasta Lake</td>
<td>530.275.7457</td>
</tr>
<tr>
<td>Elected Official</td>
<td>Mayor Pamela Morgan</td>
<td>530.275.1788</td>
</tr>
</tbody>
</table>

## TABLE C-4

<table>
<thead>
<tr>
<th>County Agencies</th>
<th>Name</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Public Health</td>
<td>Ask for Health Officer or Emergency Preparedness Unit</td>
<td>530.225.5591</td>
</tr>
<tr>
<td></td>
<td>After hours, Nurse on call</td>
<td>530.225.3767</td>
</tr>
<tr>
<td>HAZMAT Team</td>
<td>SCHMERT or Shasta Lake Fire Department</td>
<td>530.275.7474</td>
</tr>
<tr>
<td>County Director of Environmental Health Department</td>
<td>Calif. EPA pollution center</td>
<td>707.565.2527</td>
</tr>
</tbody>
</table>
### TABLE C-5

<table>
<thead>
<tr>
<th>State Agencies</th>
<th>Name</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDHS District Engineer</td>
<td>Kim Hanagan</td>
<td>530.224.2413</td>
</tr>
<tr>
<td></td>
<td></td>
<td>home 530.227.8018</td>
</tr>
<tr>
<td></td>
<td>Mike McNamara</td>
<td>530.224.4873</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home 530.339.2669</td>
</tr>
<tr>
<td>Department of Water Resources</td>
<td></td>
<td>530.529.7300</td>
</tr>
<tr>
<td>Department of Fish and Game</td>
<td></td>
<td>530.225.2300</td>
</tr>
<tr>
<td>Department of Toxic Substances Control</td>
<td></td>
<td>1.800.728.6942</td>
</tr>
<tr>
<td>Regional Water Quality Control Board</td>
<td>Stacy Gotham</td>
<td>530.244.4845</td>
</tr>
<tr>
<td>CA OES (State OES)</td>
<td>Warning Center</td>
<td>(916) 845-8911 24/7</td>
</tr>
<tr>
<td></td>
<td>(Ask for CDHS Duty Officer-Drinking Water Program)</td>
<td>(916) 845-8510 24/7</td>
</tr>
</tbody>
</table>

### TABLE C-6

<table>
<thead>
<tr>
<th>Federal Agencies</th>
<th>Name</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBI</td>
<td>Peter Jackson</td>
<td>530.223.6473 24 hr 916.481.9110</td>
</tr>
<tr>
<td></td>
<td>Denise Farmer</td>
<td>530.223.6473</td>
</tr>
<tr>
<td>EPA</td>
<td></td>
<td>202.564.4700</td>
</tr>
<tr>
<td>Department of Homeland Security (DHS)</td>
<td></td>
<td>202.282.8000</td>
</tr>
<tr>
<td></td>
<td>OES Warning Center</td>
<td>916.845.8911</td>
</tr>
<tr>
<td>Health and Human Services (HHS)</td>
<td></td>
<td>877.696.6775</td>
</tr>
<tr>
<td>Center for Disease Control (CDC)</td>
<td></td>
<td>800.232.4636</td>
</tr>
<tr>
<td>ATF, San Francisco Division</td>
<td></td>
<td>925.557.2800</td>
</tr>
</tbody>
</table>
### TABLE C-7

<table>
<thead>
<tr>
<th>Vendors / Contractors</th>
<th>Name</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Service Provider</td>
<td>Hughes Net</td>
<td>530.224.6866</td>
</tr>
<tr>
<td>Computer Equipment Vendor</td>
<td>Apex technologies</td>
<td>530.268-1000</td>
</tr>
<tr>
<td>Fuel Supplier (backup generator)</td>
<td>Unit 4</td>
<td>530.275.7455</td>
</tr>
</tbody>
</table>

### TABLE C-8

<table>
<thead>
<tr>
<th>Customer Name</th>
<th>Critical Care Customers</th>
<th>Large Water Users</th>
<th>Primary Contact Information</th>
<th>Secondary Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knauf Fiberglass</td>
<td>Yes – water to cool fiberglass</td>
<td>Yes</td>
<td>Randy Turner 530.275.9665 ext. 5551</td>
<td>Randall Peterson 530.275.9665 ext. 5512</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cell: 530.941.7417</td>
<td>Cell: 530.917.9720</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Randall Peterson</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knauf Fiberglass</td>
<td>Yes – water to cool fiberglass</td>
<td>Yes</td>
<td>Kurt Pilkington 530.275.9665 ext. 5542</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cell: 530.276.5245</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>John Lyons, Plant Mngr 530.275.9665 ext. 5501</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cell: 530.215.0736</td>
<td></td>
</tr>
<tr>
<td>SIERRA PACIFIC</td>
<td>Yes - Boilers</td>
<td>Yes</td>
<td>John Phillips 530.275.8851 cell: 530.440.4350</td>
<td></td>
</tr>
<tr>
<td>PREMEIR MEATS</td>
<td>No</td>
<td>No</td>
<td>Roger Lawson 530.275.4500 530.941.4012</td>
<td>Nicole Lawson 530.275.4500 530.209.2191</td>
</tr>
</tbody>
</table>

### Firefighting Water Source

<table>
<thead>
<tr>
<th>Name</th>
<th>Contact Information</th>
<th>Quantity Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bella Vista Water District</td>
<td>Name: David Coxey 530.241.1085 Home: 530. On Call Pager: 530.223.8303</td>
<td>900 GPM</td>
</tr>
<tr>
<td>City of Redding</td>
<td>Name: John McClain 530.224.6068 Pager: Mobile:</td>
<td>350 GPM</td>
</tr>
</tbody>
</table>
### TABLE C-10

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Contact Information</th>
</tr>
</thead>
</table>
| Bureau of Reclamation  | Contact Person: Brian Person  
Office phone: 530.275.1554  
Contact: Shasta Control Room  
Phone: 530.276.2188         |

### TABLE C-11

<table>
<thead>
<tr>
<th>Media Type</th>
<th>Contact Information</th>
</tr>
</thead>
</table>
| Redding Record Searchlight| General News  
phone: 530.225.8211  
Contact Person: Carol Ferguson  
Phone: 530.225.8232  
Contact Person: Silas Lyons  
Phone: 530.225.8210         |
| KHS1 TV                  | Phone: 530.343.1212                                                                |
| KRCR TV                  | Phone: 530.243.7777                                                                |
| KCVU TV                  | Phone: 530.243.7777                                                                |
| KQMS RADIO               | Phone: 530.221.1400                                                                |
| KNCQ RADIO               | Phone: 530.244.9700                                                                |
| KRRX RADIO               | Phone: 530.226.9500                                                                |

### TABLE C-12

<table>
<thead>
<tr>
<th>County Agency</th>
<th>Name</th>
<th>Contact Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Health Department</td>
<td>Public Health Emergency Reporting</td>
<td>Phone: 530.225.5591</td>
</tr>
</tbody>
</table>
| County Health Department | Disaster Coordinator: Ask for Emergency Preparedness Unit  
On-call Nurse          | Phone: 530.225.5591  
Night Phone: 225.3767 |
Appendix D
Public Notices and Press Releases
PUBLIC NOTICE

CONSUMER ALERT DURING WATER OUTAGES OR PERIODS OF LOW PRESSURE

1. If you are experiencing water outages or low water pressure, immediately discontinue any non-essential water usage. This includes all outdoor irrigation and car washing. Minimizing usage will reduce the potential for the water system to lose pressure or completely run out of water. Please notify your water system of the outage or low pressure.

2. If the water looks cloudy or dirty, you should not drink it. Upon return of normal water service, you should flush the hot and cold water lines until the water appears clear and the water quality returns to normal.

3. If you are concerned about the water quality or are uncertain of its safety, you may add eight drops of household bleach to one gallon of water and let it sit for 30 minutes or alternatively, if you are able, water can be boiled for one minute at a rolling boil to ensure its safety.

4. Use of home treatment devices does not guarantee the water supply is safe after low pressure situations.

5. Do not be alarmed if you experience higher than normal chlorine concentrations in your water supply since the California Department of Health Services is advising public water utilities to increase chlorine residuals in areas subject to low pressure or outages.

6. The California Department of Health Services has also advised public water systems to increase the bacteriological water quality monitoring of the distribution system in areas subject to low pressure. They may be collecting samples in your area to confirm that the water remains safe. You will be advised if the sampling reveals a water quality problem.

7. Your water system is committed to make certain that an adequate quantity of clean, wholesome, and potable water is delivered to you. We recommend that you discuss the information in this notice with members of your family to ensure that all family members are prepared should water outages or low water pressure occur.
ORDEN DE HERVIR EL AGUA
Hierva su Agua antes de Usarla
Falta de seguir este aviso podría tener resultados estómago o enfermedad intestinal

Debido a la [falta de agua (water outage), falta de electricidad (power outage), inundacion (flood), incendio (fire), temblor (earthquake) or other emergency], durante [date, month, etc.], el Departamento de California de Servicios de Salud en conjunción con la [City, water system name] y el Condado de [County name] esta aconsejando a todos usuarios de el sistema de [water system name] que hiervan el agua de canilla o usen agua embotellada para beber y cocinar como medida de seguridad.

Que debo hacer?

NO BEBA EL AGUA SIN ANTES HERVIRLA. Hierva toda el agua, déjela hervir por un minuto, y déjela reposar antes de usarla, o utilice agua embotellada. Agua hervida o embotellada debe ser usada para beber y para preparar la comida hasta el próximo aviso. Hierviendo morta a bacteria y otros organismos en el agua. [or Este es el metodo preferido para asegurar que el agua esta segura para beber.]

Optional alternative to include for prolonged situations where it fits.

- Otro método de purificación del agua para los residentes que no tengan gas o electricidad disponibles es utilizar blanqueador líquido de uso doméstico (Clorox®, Purex®, etc.). Para hacerlo, añada 8 gotas (o 1/4 cucharadita) de blanqueador por galón de agua clara, o 16 gotas (o media cucharadita) por galón de agua turbia, mézclelo bien y déjelo descansar 30 minutos antes de utilizarlo. Este procedimiento de purificación causa que el agua huela y tenga sabor a cloro, lo que indica que ha sido desinfectada de manera adecuada.
- También se puede utilizar tabletas de purificación del agua siguiendo las instrucciones del fabricante.
- Optativo: Hay agua potable disponible en los siguientes sitios: [List locations]

Traiga un recipiente limpio para el agua (con una capacidad máxima de 5 galones).

Le informaremos cuando las pruebas demuestren que no hay bacterias y que usted ya no necesita hervir su agua. Anticipamos que resolveremos el problema el [date of expected resolution in Spanish day-month-year].

Para mas información, por favor póngase en contacto con:
Contacto del sistema de agua: [contact name] al [phone number] o escribiendo a [mailing address].
Departamento de Salud de California: XXX-XXXX.
Condado de [county name]: [XXXXXX County at (XXX) XXX-XXXX].

Por favor comparta esta información con otros que pueden tomar de esta agua, colocando este aviso en lugares visibles, o remitiéndolo por correo, o entregándolo manualmente. Es de particular interés distribuir este aviso ampliamente si usted lo recibe representando un negocio, un hospital u hogar de infantes u hogar de ancianos o comunidad residencial.
UNSAFE WATER ALERT
[Insert one-liner language other than Spanish here, otherwise delete.]

[City of Shasta Lake] water is possibly contaminated with [an unknown substance]

DO NOT DRINK YOUR WATER
Failure to follow this advisory could result in illness.

An unknown substance has been added to the drinking water supplied by the City of Shasta Lake due to a recent [intrusion; break-in] at [one of the wells; our treatment plant; storage tank; specific facility]. The California Department of Health Services, Shasta County Health Department, and City of Shasta Lake Water System are advising residents of the City of Shasta Lake to NOT USE THE TAP WATER FOR DRINKING AND COOKING UNTIL FURTHER NOTICE.

What should I do?

- **DO NOT DRINK YOUR TAP WATER---USE ONLY BOTTLED WATER.** Bottled water should be used for all drinking (including baby formula and juice), brushing teeth, washing dishes, making ice and food preparation **until further notice**.

- **DO NOT TRY AND TREAT THE WATER YOURSELF.** Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting water stand will not make the water safe.

OPTIONS

- Optional: Potable water is available at the following locations: [List locations] Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that the water is safe again. We expect to resolve the problem within [estimated time frame].

For more information call:
Water Utility contact: Tony Thomasy, Water Treatment Superintendent, 530.275.7450
California Department of Health Services at: 364 Knollcrest, Suite 101, DE Sandi Tenney, 530.224.4876
Local County Environmental Health Department: 530.225.5789

_This notice is being sent to you by City of Shasta Lake California Public Water System ID # 4510006 Date Distributed: [date]._

Please share this information with all other people who receive this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand.
UNSAFE WATER ALERT

[Insert one-liner language other than Spanish here, otherwise delete.]  

[System Name] water is possibly contaminated with [an unknown substance]

DO NOT USE YOUR WATER

Failure to follow this advisory could result in illness.

An unknown substance has been added to the drinking water supplied by the City of Shasta Lake due to a recent [intrusion; break-in] at [one of the wells; our treatment plant; storage tank; specific facility]. The California Department of Health Services, Shasta County Health Department, and City of Shasta Lake Water System are advising residents of the City of Shasta Lake to NOT USE THE TAP WATER FOR DRINKING AND COOKING UNTIL FURTHER NOTICE.

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OPTIONS

- Optional: Potable water is available at the following locations: [List locations]  
  Please bring a clean water container (5 gallons maximum capacity).

We will inform you when tests show that the water is safe again. We expect to resolve the problem within [estimated time frame].

For more information call:
Water Utility contact: Tony Thomasy, Water Treatment Superintendent, 530.275.7450.
California Department of Health Services at: 364 Knollcrest, Suite 101, DE Sandi Tenney, 530.224.4876
Local County Environmental Health Department: 530.225.5789

This notice is being sent to you by City of Shasta Lake California Public Water System ID # 4510006
Date Distributed: [date].

Please share this information with all other people who receive this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand.

LAST UPDATED – 01/27/04
BOIL WATER ORDER
Este informe contiene información muy importante sobre su agua potable.
Tradúzcalo o hable con alguien que lo entienda bien.

BOIL YOUR WATER BEFORE USING
Failure to follow this advisory could result in stomach or intestinal illness.

An unknown substance has been added to the drinking water supplied by the City of Shasta Lake due to a recent [intrusion; break-in] at [one of the wells; our treatment plant; storage tank; specific facility]. The California Department of Health Services, Shasta County Health Department, and City of Shasta Lake Water System are advising residents of the City of Shasta Lake to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution.

DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST. Bring all water to a boil, let it boil for one (1) minute, and let it cool before using, or use bottled water. Boiled or bottled water should be used for drinking and food preparation until further notice. Boiling kills bacteria and other organisms in the water. [or This is the preferred method to assure that the water is safe to drink.]

Optional alternative to include for prolonged situations where it fits.

- An alternative method of purification for residents that do not have gas or electricity available is to use fresh liquid household bleach (Clorox®, Purex®, etc.). To do so, add 8 drops (or 1/4 teaspoon) of bleach per gallon of clear water or 16 drops (or 1/2 teaspoon) per gallon of cloudy water, mix thoroughly, and allow to stand for 30 minutes before using. A chlorine-like taste and odor will result from this purification procedure and is an indication that adequate disinfection has taken place.
- Water purification tablets may also be used by following the manufacturer’s instructions.
- Optional: Potable water is available at the following locations: [List locations]

We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within [estimated time frame].

For more information call:
Local County Environmental Health Department: 530.225.5789

This notice is being sent to you by City of Shasta Lake California Public Water System ID # 4510006
Date Distributed: [date].

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.
PLAN I (Medium Community)

During regular working hours our people will contact the news media at television station KRCR to broadcast the necessary warning. The local radio stations will also be contacted. The television and radio personnel are available at all hours. As a follow-up measure, we will also contact the Record Searchlight, which serves both Redding and Shasta Lake.

Warnings will be issued in both English and Spanish to cover all members of the community. Outlying areas of the water service area will also be notified by sound truck and/or handbill distributed to their respective areas. Both of these areas are very small and this can be done quite quickly.

A special telephone answering service can also be quickly set up at the utility headquarters (using the regular company numbers) to answer questions that will come in from consumers.

It is anticipated that the time for notification to the television and radio audiences will be very short. The areas served by handbill and sound truck will also be notified within an hour. For notification to be issued in other than normal hours, the same media will be contacted and an announcement will be scheduled for as long as is necessary. A sound truck(s) will be used in the early morning hours to quickly alert the people not listening to their radio or television.

PLAN II (Small Community)

Our community is very small and the most efficient means of notification will be both sound truck and handbill. It is estimated that the entire service area can be covered in less than three hours.

PLAN III (Large Community)

The same plan as implemented in Plan I should be used here with the exceptions noted. All the news media will be contacted in the entire metropolitan area. This includes all television and radio stations and all local and general area newspapers. Maps have been prepared to be distributed to the media to locate the boundaries of the water company. This system is large enough that it may only be necessary to notify some of the water users. This information will be transmitted to the media and an answering service at the water company will respond to consumers’ calls. Unless the problems are limited to isolated areas it is unreasonable to assume that contact can be made through sound truck or handbill.
Written Threat Report Form

INSTRUCTIONS
The purpose of this form is to summarize significant information from a written threat received by a drinking water utility. This form should be completed by the WUERM or an individual designated by incident command to evaluate the written threat. The summary information provided in this form is intended to support the threat evaluation process; however, the completed form is not a substitute for the complete written threat, which may contain additional, significant details.
The written threat itself (e.g., the note, letter, e-mail message, etc.) may be considered evidence and thus should be minimally handled (or not handled at all) and placed into a clean plastic bag to preserve any forensic evidence.

Remember, tampering with a drinking water system is a crime under the SDWA Amendments!

SAFETY
A suspicious letter or package could pose a threat in and of itself, so caution should be exercised if such packages are received. The US Postal Service has issued guidance when dealing with suspicious packages (http://www.usps.com/news/2001/press/pr01_1022gsa.htm).

THREAT NOTIFICATION
Name of person receiving the written threat:

Person(s) to whom threat was addressed:

Date threat received: __________  Time threat received: __________

How was the written threat received?
☐ US Postal service  ☐ Delivery service  ☐ Courier
☐ Fax  ☐ E-mail  ☐ Hand delivered
☐ Other

If mailed, is the return address listed? ☐ Yes  ☐ No

If mailed, what is the date and location of the postmark? __________
If delivered, what was the service used (list any tracking numbers)? __________
If Faxed, what is the number of the sending fax? __________
If E-mailed, what is the e-mail address of sender? __________
If hand-delivered, who delivered the message? __________

DETAILS OF THREAT
Has the water already been contaminated? ☐ Yes  ☐ No

Date and time of contaminant introduction known? ☐ Yes  ☐ No

Date and time if known: __________

Location of contaminant introduction known? ☐ Yes  ☐ No

Site Name:
☐ Source water  ☐ Treatment plant  ☐ Pump station
☐ Ground storage tank  ☐ Elevated storage tank  ☐ Finished water reservoir
☐ Distribution main  ☐ Hydrant  ☐ Service connection
☐ Other __________

Address: __________

Additional Site Information: __________

Name or type of contaminant known? ☐ Yes  ☐ No

Type of contaminant
☐ Chemical  ☐ Biological  ☐ Radiological

Specific contaminant name/description: __________

Mode of contaminant introduction known? ☐ Yes  ☐ No

Method of addition: ☐ Single dose  ☐ Over time  ☐ Other __________

Amount of material: __________

Additional Information: __________
### Motive for contamination known?

- [ ] Yes
- [ ] No

- [ ] Retaliation/revenge
- [ ] Political cause
- [ ] Religious doctrine

**Describe motivation:**

______________________________

### NOTE CHARACTERISTICS

**Perpetrator Information:**

- Stated name: __________________________
- Affiliation: ____________________________
- Phone number: _________________________
- Location/address: ______________________

**Condition of paper/envelope:**

- [ ] Marked personal
- [ ] Marked confidential
- [ ] Properly addressed
- [ ] Neatly typed or written
- [ ] Clean
- [ ] Corrected or marked-up
- [ ] Crumpled or wadded up
- [ ] Soiled/stained
- [ ] Torn/tattered
- [ ] Other: ___________________________

**How was the note prepared?**

- [ ] Handwritten in print
- [ ] Handwritten in script
- [ ] Computer typed
- [ ] Machine typed
- [ ] Spliced (e.g., from other typed material)
- [ ] Other: ___________________________

If handwritten, does writing look familiar?

- [ ] Yes
- [ ] No

**Language:**

- [ ] Clear English
- [ ] Poor English
- [ ] Another language: ______________________
- [ ] Mixed languages: ______________________

**Writing Style**

- [ ] Educated
- [ ] Proper grammar
- [ ] Logical
- [ ] Uneducated
- [ ] Poor grammar/spelling
- [ ] Incoherent
- [ ] Use of slang
- [ ] Obscene
- [ ] Other: ___________________________

**Writing Tone**

- [ ] Clear
- [ ] Direct
- [ ] Sincere
- [ ] Condescending
- [ ] Accusatory
- [ ] Angry
- [ ] Agitated
- [ ] Nervous
- [ ] Irrational
- [ ] Other: ___________________________

### SIGNOFF

**Name of individual who received the threat:**

Print name ____________________________

Signature ____________________________ Date/Time: __________

**Name of person completing form (if different from written threat recipient):**

Print name ____________________________

Signature ____________________________ Date/Time: __________

Source: EPA Response Protocol Toolbox Module 2, Section 8.6 – Interim Final December 2003
IT Incident Response and Reporting Checklist

Date _____________________________ Time _____________________________

Status:

☐ Site Under Attack
☐ Past Incident
☐ Repeated Incidents
☐ Unresolved

Contact Information:

Name ___________________________________________________________
Title ___________________________________________________________
Utility ___________________________________________________________
Direct-dial phone _________________________________________________
E-mail __________________________________________________________
Location / Site involved ___________________________________________
Street Address ___________________________________________________
City _____________________________ State/ZIP _______________________

1. What is the nature of the emergency? (Check all that apply)
   - ☐ Denial of Service attack
   - ☐ Unauthorized electronic monitoring
   - ☐ Network intrusion
   - ☐ Insider attack
   - ☐ Probe/scan
   - ☐ Malicious code (virus, Trojan horse, worm)
   - ☐ Website defacement
   - ☐ Other (explain)

2. Is there just one, or more than one, incident involved simultaneously?

3. Is this a single or multi-site incident?

4. What is the extent of penetration / infection?

5. Estimate the duration of attack

6. What is the entry point of the incident (network, the phone line, etc)?

7. What resources will be required to deal with this incident? (A Computer Emergency Response Team with a forensic expert might be needed immediately to analyze a major incident versus simply disconnecting the compromised equipment from the Internet for later analysis)

8. What is the source of the attack?

9. What is the target of the attack?

10. Impact of attack

11. Has there been a loss or compromise of business data?

12. What type of data has already been compromised or is at risk?
13. How critical is this data?

14. Affect on customers (Customers might be sensitive, based on the intensity level of the intellectual property loss. It could be a violation of privacy legislation versus a serious theft of software property, critically affecting a customer’s enterprise-level business)

15. Estimate system downtime

16. Document damage to systems

17. Estimate financial loss

18. Has there been damage to the integrity or delivery of water or services?

19. Describe

20. Other utility systems affected

21. Severity of attack (include financial loss)

□ Low    □ Medium    □ High

22. Did the attacker gain root, administrative or system access?

23. How was the incident detected?

□ Intrusion detection system or audit logs
□ External complaint
□ User report
□ Other

24. What are the known symptoms?

25. What utility areas are affected?

26. What systems are affected?

Gather as much information as possible about the systems, including suspected systems. For example:

□ Operating system
□ Platform
□ Applications
□ IP addresses
□ Associated or suspected user IDs
□ Most recent changes applied
□ Other related items

27. Are the backups of the perceived affected systems available (provide all of the information regarding online, onsite, or offsite backups)?

See www.cert.org/tech_tips/intruder_detection_checklist.html for more information on detecting an intruder.
Maintaining Crime Scene Integrity*

Security breaches and suspicious activity need to be evaluated to determine if the actions are a result of “normal” activity, such as a construction crew working in the area, or the result of activity that could result in an intentional threat to the safety or security of the facility and it operations.

- As soon as you recognize that the threat is/was intentional and particularly if the actions of the threatening individuals are suspected to have been successful, you must notify facility management ([Security Director]/[General manager]).

- The ([SD]/[GM]) should immediately notify the local law enforcement agency responsible for criminal investigation at the facility as soon as they have verified a credible threat.

- **No personnel** from COSL facility should enter the area where any possible criminal activity might have occurred so as not to disturb the area. All signs of inappropriate entrance to the facility and any physical activity of the suspects must be available for evaluation by law enforcement without any disturbance.

- **COSL facility staff** and/or **law enforcement** may collect water samples prior to the collection of physical evidence.

- **COSL facility staff** should collect samples outside of the boundaries of the suspected crime scene, if possible, to avoid concerns about the integrity of the crime scene.

- The **COSL facility [GM]** should pre-designate a qualified laboratory that can assist in analysis, if the sample is suspected to contain water that has been intentionally contaminated, to insure chain of evidence custody. Law enforcement may require the collection of an additional sample set to be analyzed by their designated lab.

- **COSL facility staff** should be aware of possible physical evidence of contamination that might include discarded PPE, equipment (such as pumps and hoses), or containers with residual material. Special care should be taken by facility personnel to avoid moving or disturbing any potential physical evidence.

- **COSL facility staff** should notify [SD]/[GM] of any obvious physical evidence of contamination.

  COSL facility staff should not handle any physical evidence except at the direction of the appropriate law enforcement agency.

  Any photographs or videos taken by COSL facility staff should be reported to law enforcement for proper handling to ensure integrity of the evidence.

  The **City of Shasta Lake [SD]/[GM]** if appropriate, should clearly designate the area of suspected criminal activity to assure that facility personnel do not inadvertently enter the area and disturb evidence.

  The **COSL [SD]/[GM]** can instruct security personnel to stand by and/or lock doors/gates, and/or string tape or rope to restrict entrance, as appropriate.

  The [SD]/[GM] should balance the needs of both the public health concerns and the concerns of possible criminal activity in their decisions to protect the crime scene.

* Adapted from EPA Response Protocol Toolbox: Planning for and Responding to Drinking Water Contamination Threats and Incidents Module 3: Site Characterization and Sampling Guide Section 3.6.
Phone Threat Report Form

INSTRUCTIONS
This form is intended to be used by utility staff that regularly answer phone calls from the public (e.g., call center operators). The purpose of this form is to help the staff capture as much information from a threatening phone call while the caller is on the line. It is important that the operator keep the caller on the line as long as possible in order to collect additional information. Since this form will be used during the call, it is important that operators become familiar with the content of the form. The sections of the form are organized with the information that should be collected during the call at the front of the form (i.e., Basic Call Information and Details of Threat) and information that can be completed immediately following the call at the end of the form (i.e., the description of the caller). The information collected on this form will be critical to the threat evaluation process.

Remember, tampering with a drinking water system is a crime under the SDWA Amendments

<table>
<thead>
<tr>
<th>THREAT NOTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person receiving the call: ____________________________</td>
</tr>
<tr>
<td>Date phone call received: ________ Time phone call received: ________</td>
</tr>
<tr>
<td>Time phone call ended: ________ Duration of phone call: ________</td>
</tr>
<tr>
<td>Originating number: ________ Originating name: ____________________</td>
</tr>
<tr>
<td>If the number/name is not displayed on the caller ID, press *57 (or call trace) at the end of the call and inform law enforcement that the phone company may have trace information.</td>
</tr>
<tr>
<td>Is the connection clear? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>Could call be from a wireless phone? ☐ Yes ☐ No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DETAILS OF THREAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has the water already been contaminated? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>Date and time of contaminant introduction known? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>Date and time if known: ____________________</td>
</tr>
<tr>
<td>Location of contaminant introduction known? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>Site Name: ____________________</td>
</tr>
<tr>
<td>Type of facility</td>
</tr>
<tr>
<td>☐ Source water ☐ Treatment plant ☐ Pump station</td>
</tr>
<tr>
<td>☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir</td>
</tr>
<tr>
<td>☐ Distribution main ☐ Hydrant ☐ Service connection</td>
</tr>
<tr>
<td>☐ Other</td>
</tr>
<tr>
<td>Address: ____________________</td>
</tr>
<tr>
<td>Additional Site Information: ____________________</td>
</tr>
<tr>
<td>Name or type of contaminant known? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>Type of contaminant</td>
</tr>
<tr>
<td>☐ Chemical ☐ Biological ☐ Radiological</td>
</tr>
<tr>
<td>Specific contaminant name/description: ____________________</td>
</tr>
<tr>
<td>Mode of contaminant introduction known? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>Method of addition: ☐ Single dose ☐ Over time ☐ Other ________</td>
</tr>
<tr>
<td>Amount of material: ____________________</td>
</tr>
<tr>
<td>Additional Information: ____________________</td>
</tr>
<tr>
<td>Motive for contamination known? ☐ Yes ☐ No</td>
</tr>
<tr>
<td>☐ Retaliation/revenge ☐ Political cause ☐ Religious doctrine</td>
</tr>
<tr>
<td>☐ Other</td>
</tr>
<tr>
<td>Describe motivation: ____________________</td>
</tr>
</tbody>
</table>
CALLER INFORMATION

Basic Information:
- Stated name: 
- Affiliation: 
- Phone number: 
- Location/address: 

Caller’s Voice:
- Did the voice sound disguised or altered? [ ] Yes [ ] No
- Did the call sound like a recording? [ ] Yes [ ] No
- Did the voice sound? [ ] Male / [ ] Female [ ] Young / [ ] Old
- Did the voice sound familiar? [ ] Yes [ ] No
  - If ‘Yes,’ who did it sound like?
- Did the caller have an accent? [ ] Yes [ ] No
  - If ‘Yes,’ what nationality?

How did the caller sound or speak?
- Educated [ ] Well spoken [ ] Illiterate
- Irrational [ ] Obscene [ ] Incoherent
- Reading a script [ ] Other

What was the caller’s tone of voice?
- Calm [ ] Angry [ ] Lisping [ ] Stuttering/broken
- Excited [ ] Nervous [ ] Sincere [ ] Insincere
- Slow [ ] Rapid [ ] Normal [ ] Slurred
- Soft [ ] Loud [ ] Nasal [ ] Clearing throat
- Laughing [ ] Crying [ ] Clear [ ] Deep breathing
- Deep [ ] High [ ] Raspy [ ] Cracking
- Other

Were there background noises coming from the caller’s end?
- Silence
- Voices describe
- Children describe
- Animals describe
- Factory sounds describe
- Office sounds describe
- Music describe
- Traffic/street sounds describe
- Airplanes describe
- Trains describe
- Ships or large boats describe
- Other:

SIGNOFF

Name of call recipient:
- Print name 
- Signature Date/Time: 

Name of person completing form (if different from call recipient):
- Print name 
- Signature Date/Time: 

Source: EPA Response Protocol Toolbox Module 2, Section 8.5 – Interim Final December 2003
Public Health Information Report Form Instructions

The purpose of this form is to summarize significant information about a public health episode that could be linked to contaminated water. This form should be completed by the WUERM (pg. 6-1) or an individual designated by incident command. The information compiled in this form is intended to support the threat evaluation process.

In the case of a threat warning due to a report from public health, it is likely that the public health agency will assume incident command during the investigation. The drinking water utility will likely play a support role during the investigation, specifically to help determine whether or not water might be the cause.

PUBLIC HEALTH NOTIFICATION

Date and Time of notification: __________________________

Name of person who received the notification: __________________________

Contact information for individual providing the notification

Full Name: __________________________

Title: __________________________

Organization: __________________________

Address: __________________________

Day-time phone: __________________________

Evening phone: __________________________

Fax Number: __________________________

E-mail address: __________________________

Why is this person contacting the drinking water utility? __________________________

Has the state or local public health agency been notified?  □ Yes  □ No

If “No,” the appropriate public health official should be immediately notified.

DESCRIPTION OF PUBLIC HEALTH EPISODE

Nature of public health episode:

□ Unusual disease (mild)  □ Unusual disease (severe)  □ Death

□ Other: __________________________

Symptoms:

□ Diarrhea  □ Vomiting/nausea  □ Flu-like symptoms

□ Fever  □ Headache  □ Breathing difficulty

□ Other: __________________________

Describe symptoms: __________________________

Causative Agent:  □ Known  □ Suspected  □ Unknown

If known or suspected, provide additional detail below

□ Chemical  □ Biological  □ Radiological

Describe __________________________
APPENDIX F – INCIDENT REPORTS AND FORMS

Estimate of time between exposure and onset of symptoms: ______________

**Exposed Individuals:**

Location where exposure is thought to have occurred
- [ ] Residence
- [ ] Work
- [ ] School
- [ ] Restaurant
- [ ] Shopping mall
- [ ] Social gathering
- [ ] Other: __________________________________________________________

Additional notes on location of exposure: _______________________________

Collect addresses for specific locations where exposure is thought to have occurred.

Is the pattern of exposure clustered in a specific area? [ ] Yes [ ] No

Extent of area
- [ ] Single building
- [ ] Complex (several buildings)
- [ ] City block
- [ ] Neighborhood
- [ ] Cluster of neighborhoods
- [ ] Large section of city
- [ ] Other: __________________________________________________________

Additional notes on extent of area: _______________________________

Do the exposed individuals represent a disproportionate number of:
- [ ] Immune compromised
- [ ] Elderly
- [ ] Children
- [ ] Infants
- [ ] Pregnant women
- [ ] Women
- [ ] Other: __________________________________________________________
- [ ] None, no specific groups dominate the makeup of exposed individuals

**EVALUATION OF LINK TO WATER**

Are the symptoms consistent with typical waterborne diseases, such as gastrointestinal disease, vomiting, or diarrhea? [ ] Yes [ ] No

Does the area of exposure coincide with a specific area of the system, such as a pressure zone or area fed by a specific plant? [ ] Yes [ ] No

Were there any consumer complaints within the affected area? [ ] Yes [ ] No

Were there any unusual water quality data within the affected area? [ ] Yes [ ] No

Were there any process upsets or operational changes? [ ] Yes [ ] No

Was there any construction/maintenance within the affected area? [ ] Yes [ ] No

Were there any security incidents within the affected area? [ ] Yes [ ] No

**SIGNOFF**

Name of person completing form:
Print name ____________________________
Signature ____________________________ Date/Time: ________

Source: EPA Response Protocol Toolbox Module 2, Section 8.8 – Interim Final December 2003
Security Incident Report Form

INSTRUCTIONS
The purpose of this form is to help organize information about a security incident, typically a security breach, which may be related to a water contamination threat. The individual who discovered the security incident, such as a security supervisor, the WUERM, or another designated individual may complete this form. This form is intended to summarize information about a security breach that may be relevant to the threat evaluation process. This form should be completed for each location where a security incident was discovered.

DISCOVERY OF SECURITY INCIDENT
Date/Time security incident discovered: ________________________________
Name of person who discovered security incident: ________________________________
Mode of discovery:

☐ Alarm (building)  ☐ Alarm (gate/fence)  ☐ Alarm (access hatch)
☐ Video surveillance  ☐ Utility staff discovery  ☐ Citizen discovery
☐ Suspect confession  ☐ Law enforcement discovery
☐ Other

Did anyone observe the security incident as it occurred?  ☐ Yes  ☐ No
If “Yes”, complete the ‘Witness Account Report Form’

SITE DESCRIPTION
Site Name: ________________________________
Type of facility
☐ Source water  ☐ Treatment plant  ☐ Pump station
☐ Ground storage tank  ☐ Elevated storage tank  ☐ Finished water reservoir
☐ Distribution main  ☐ Hydrant  ☐ Service connection
☐ Other
Address: ________________________________
Additional Site Information: ________________________________

BACKGROUND INFORMATION
Have the following “normal activities” been investigated as potential causes of the security incident?

☐ Alarms with known and harmless causes  ☐ Utility staff inspections
☐ Routine water quality sampling  ☐ Construction or maintenance
☐ Contractor activity  ☐ Other

Was this site recently visited prior to the security incident?  ☐ Yes  ☐ No
If “Yes,” provide additional detail below
Date and time of previous visit: ________________________________
Name of individual who visited the site: ________________________________
Additional Information: ________________________________

Has this location been the site of previous security incidents?  ☐ Yes  ☐ No
If “Yes,” provide additional detail below
Date and time of most recent security incident: ________________________________
Description of incident: ________________________________

What were the results of the threat evaluation for this incident?
☐ ‘Possible’  ☐ ‘Credible’  ☐ ‘Confirmed’

Have security incidents occurred at other locations recently?  ☐ Yes  ☐ No
If “Yes”, complete additional ‘Security Incident Reports’ (Appendix 8.3) for each site
Name of 1st additional site: ________________________________
Name of 2nd additional site: ________________________________
Name of 3rd additional site: ________________________________
SECURITY INCIDENT DETAILS

Was there an alarm(s) associated with the security incident?  □ Yes  □ No
If “Yes,” provide additional detail below
Are there sequential alarms (e.g., alarm on a gate and a hatch)?  □ Yes  □ No
Date and time of alarm(s): ________________________________
Describe alarm(s): ______________________________________

Is video surveillance available from the site of the security incident?  □ Yes  □ No
If “Yes,” provide additional detail below
Date and time of video surveillance: _________________________
Describe surveillance: ____________________________________

Unusual equipment found at the site and time of discovery of the security incident:
□ Discarded PPE (e.g., gloves, masks)  □ Empty containers (e.g., bottles, drums)
□ Tools (e.g., wrenches, bolt cutters)  □ Hardware (e.g., valves, pipe)
□ Lab equipment (e.g., beakers, tubing)  □ Pumps or hoses
□ None  □ Other __________________________
Describe equipment: _____________________________________

Unusual vehicles found at the site and time of discovery of the security incident:
□ Car/sedan  □ SUV  □ Pickup truck
□ Flatbed truck  □ Construction vehicle  □ None
□ Other ________________________________
Describe vehicles (including make/model/year/color, license plate #, and logos or markings): _____
____________________________________________________________________________________

Signs of tampering at the site and time of discovery of the security incident:
□ Cut locks/fences  □ Open/damaged gates, doors, or windows
□ Open/damaged access hatches  □ Missing/damaged equipment
□ Facility in disarray  □ None
□ Other ________________________________
Are there signs of sequential intrusion (e.g., locks removed from a gate and hatch)?  □ Yes  □ No
Describe signs of tampering: _____________________________________________

Signs of hazard at the site and time of discovery of the security incident:
□ Unexplained or unusual odors  □ Unexplained dead animals
□ Unexplained dead or stressed vegetation  □ Unexplained liquids
□ Unexplained clouds or vapors  □ None
□ Other ________________________________
Describe signs of hazard: _________________________________________________

SIGNOFF
Name of person responsible for documenting the security incident:
Print name ________________________________ Date/Time: ______
Signature ____________________________________________
# SUSPECT DESCRIPTION FORM

## GENERAL APPEARANCE

<table>
<thead>
<tr>
<th>Gender:</th>
<th>Color/Type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>Layered Shirts/Blouse</td>
</tr>
<tr>
<td>Female</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Race:</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
</tr>
<tr>
<td>Black</td>
</tr>
<tr>
<td>Middle Eastern</td>
</tr>
<tr>
<td>Hispanic</td>
</tr>
<tr>
<td>Asian</td>
</tr>
<tr>
<td>Native American</td>
</tr>
</tbody>
</table>

Other:_________________________

<table>
<thead>
<tr>
<th>Hair:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
</tr>
<tr>
<td>Style</td>
</tr>
<tr>
<td>Texture</td>
</tr>
<tr>
<td>Sideburns</td>
</tr>
<tr>
<td>Tie</td>
</tr>
<tr>
<td>Pants</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Eyes:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
</tr>
<tr>
<td>Shape</td>
</tr>
<tr>
<td>Glasses (type)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Physical Characteristics:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Height</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Build</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
<tr>
<td>Jewelry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Distinguishing Marks (describe):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scars</td>
</tr>
<tr>
<td>Tattoos</td>
</tr>
<tr>
<td>Gang Insignia</td>
</tr>
<tr>
<td>Bag/Backpack</td>
</tr>
<tr>
<td>Purse/Briefcase</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Handed / Right Handed</td>
</tr>
</tbody>
</table>
APPENDIX F – INCIDENT REPORTS AND FORMS

SUSPECT DEMEANOR
☐ Apologetic
☐ Calm
☐ Belligerent
☐ Angry
☐ Threatening
☐ Nervous
☐ Confused

FACIAL CHARACTERISTICS
Skin:
☐ Color
☐ Texture

DISTINGUISHING TRAITS
Speech
☐ Accent
☐ Gait / Limp

Describe shape of:
☐ Mouth
☐ Lips
☐ Ears
☐ Cheeks
☐ (full or sunken)
☐ Nose
☐ Neck
☐ Eyes
☐ Eyebrows

Presence of:
☐ Adam’s Apple
☐ Chin clefts
☐ Wrinkles

Hair:
☐ Mustache
☐ Beard
☐ Other

Describe any:
☐ Facial piercing
☐ Ear piercing

WEAPON (describe if any)
☐ Handgun
☐ Long gun
☐ Knife

VEHICLE
☐ Color
☐ Make
☐ Model
☐ Body Style
☐ Damage / Rust
☐ Antenna
☐ Bumper Sticker
☐ Wheel Covers

License Number ____________________________

Direction of Escape

What did the suspect say?
BOMB THREAT CHECKLIST

Be Calm and Courteous

Give a co-worker a signal to “listen in”

Date: ____________________________

Time call started: ____________________________

Time call ended: ____________________________

Check call display for phone number (if available)

EXACT WORDING OF BOMB THREAT:

What can you tell me?

When is the bomb going to explode?

What kind of bomb is it?

Where is the bomb right now?

What does the bomb look like?

What will cause the bomb to explode?

Did you place the bomb?

Why?

What is your name?

REMARKS:

CALLER’S VOICE

☐ Male
☐ Female

☐ Old (Age?)___
☐ Young (Age?)___

☐ Calm
☐ Excited

☐ Soft
☐ Loud

☐ Angry
☐ Cracking Voice

☐ Laughter
☐ Crying

☐ Normal
☐ Disguised

☐ High pitched
☐ Deep
□ Nasal
□ Slurred

□ Distinct
□ Ragged

□ Rapid
□ Slow

□ Raspy
□ Stutter

□ Lisp
□ Heavy Breather

□ Clearing Throat
□ Intoxicated

□ Pleasant
□ Whisper

□ Familiar (who?)___________________

□ Accent (type?) __________________

FAMILIARITY WITH FACILITY
□ Much
□ Some
□ None

BACKGROUND SOUNDS
□ Street
□ Party Sounds

□ Office Noises
□ Train

□ Voices
□ Airplane

□ PA System
□ Animals

□ Local Music
□ Static on line

□ Long Distance
□ Motors

□ Bells
□ Whistles

□ Factory Machinery
□ Crockery

□ Household sounds
□ Bedlam

___Chanting
___Other
Inform the caller that the building is occupied and the detonation of a bomb could result in death or serious injury to many innocent people.

BOMB THREAT LANGUAGE

- Well Spoken
- Incoherent
- Foul
- Irrational
- Taped
- Deliberate
- Abusive
- Righteous

- Message read by threat maker
**Threat Evaluation Worksheet**

**INSTRUCTIONS**
The purpose of this worksheet is to help organize information about a contamination threat warning that would be used during the Threat Evaluation Process. The individual responsible for conducting the Threat Evaluation (e.g., the WUERM) should complete this worksheet. The worksheet is generic to accommodate information from different types of threat warnings; thus, there will likely be information that is unavailable or not immediately available. Other forms in the Appendices are provided to augment the information in this worksheet.

**THREAT WARNING INFORMATION**

<table>
<thead>
<tr>
<th>Date/Time threat warning discovered:</th>
<th>__________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of person who discovered threat warning:</td>
<td>__________________________</td>
</tr>
</tbody>
</table>

**Type of threat warning:**
- [ ] Security breach
- [ ] Witness account
- [ ] Phone threat
- [ ] Written threat
- [ ] Law enforcement
- [ ] Unusual water quality
- [ ] News media
- [ ] Consumer complaints
- [ ] Public health notification
- [ ] Other

**Identity of the contaminant:**
- [ ] Known
- [ ] Suspected
- [ ] Unknown

*If known or suspected, provide additional detail below*

- [ ] Chemical
- [ ] Biological
- [ ] Radiological

Describe: ____________________________________________

**Time of contamination:**
- [ ] Known
- [ ] Estimated
- [ ] Unknown

*If known or estimated, provide additional detail below*

- Date and time of contamination: ________________________

Additional Information: __________________________________

**Mode of contamination:**
- [ ] Known
- [ ] Suspected
- [ ] Unknown

*If known or suspected, provide additional detail below*

- Method of addition:  
  - [ ] Single dose
  - [ ] Over time
  - [ ] Other ________

- Amount of material: __________________________________

Additional Information: __________________________________

**Site of contamination:**
- [ ] Known
- [ ] Suspected
- [ ] Unknown

*If known or suspected, provide additional detail below*

- Number of sites: ________________________

Provide the following information for each site.

**Site #1**

**Site Name:** _________________________________________

**Type of facility**

- [ ] Source water
- [ ] Treatment plant
- [ ] Pump station
- [ ] Ground storage tank
- [ ] Elevated storage tank
- [ ] Finished water reservoir
- [ ] Distribution main
- [ ] Hydrant
- [ ] Service connection
- [ ] Other

Address: ____________________________________________

Additional Site Information: ____________________________

**Site #2**

**Site Name:** _________________________________________

**Type of facility**

- [ ] Source water
- [ ] Treatment plant
- [ ] Pump station
- [ ] Ground storage tank
- [ ] Elevated storage tank
- [ ] Finished water reservoir
- [ ] Distribution main
- [ ] Hydrant
- [ ] Service connection
- [ ] Other

Address: ____________________________________________
Additional Site Information: __________________________________________________________

**Site #3**

Site Name: ____________________________________________________________

Type of facility

- [ ] Source water
- [ ] Treatment plant
- [ ] Pump station
- [ ] Ground storage tank
- [ ] Elevated storage tank
- [ ] Finished water reservoir
- [ ] Distribution main
- [ ] Hydrant
- [ ] Service connection
- [ ] Other

Address: _____________________________________________________________

Additional Site Information: ____________________________________________

**ADDITIONAL INFORMATION**

Has there been a breach of security at the suspected site?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Security Incident Report’*

Are there any witness accounts of the suspected incident?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Witness Account Report’*

Was the threat made verbally over the phone?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Phone Threat Report’*

Was a written threat received?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Written Threat Report’*

Are there unusual water quality data or consumer complaints?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Water Quality/Consumer Complaint Report’*

Are there unusual symptoms or disease in the population?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Public Health Report’*

Is a ‘Site Characterization Report’ available?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Site Characterization Report’*

Are results of sample analysis available?  [ ] Yes  [ ] No

*If “Yes”, review the analytical results report, including appropriate QA/QC data*

Is a ‘Contaminant Identification Report’ available?  [ ] Yes  [ ] No

*If “Yes”, review the completed ‘Sample Analysis Report’*

Is there relevant information available from external sources?  [ ] Yes  [ ] No

Check all that apply

- [ ] Local law enforcement
- [ ] FBI
- [ ] DW primacy agency
- [ ] Public health agency
- [ ] Hospitals / 911 call centers
- [ ] US EPA / Water ISAC
- [ ] Media reports
- [ ] Homeland security alerts
- [ ] Neighboring utilities
- [ ] Other

Point of Contact: ________________________________________________________

Summary of key information from external sources (provide detail in attachments as necessary):

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

**THREAT EVALUATION**

Has normal activity been investigated as the cause of the threat warning?  [ ] Yes  [ ] No

Normal activities to consider

- [ ] Utility staff inspections
- [ ] Routine water quality sampling
- [ ] Construction or maintenance
- [ ] Contractor activity
- [ ] Operational changes
- [ ] Water quality changes with a known cause
- [ ] Other

Is the threat ‘possible’?  [ ] Yes  [ ] No

Summarize the basis for this determination: ____________________________________________
Response to a ‘possible’ threat:
☐ None   ☐ Site characterization   ☐ Isolation/containment
☐ Increased monitoring/security   ☐ Other

Is the threat ‘credible’?
☐ Yes   ☐ No
Summarize the basis for this determination:

Response to a ‘credible’ threat:
☐ Sample analysis   ☐ Site characterization   ☐ Isolation/containment
☐ Partial EOC activation   ☐ Public notification   ☐ Provide alternate water supply
☐ Other

Has a contamination incident been confirmed?
☐ Yes   ☐ No
Summarize the basis for this determination:

Response to a confirmed incident:
☐ Sample analysis   ☐ Site characterization   ☐ Isolation/containment
☐ Full EOC activation   ☐ Public notification   ☐ Provide alternate water supply
☐ Initiate remediation and recovery
☐ Other

How do other organizations characterize the threat?

<table>
<thead>
<tr>
<th>Organization</th>
<th>Evaluation</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Local Law Enforcement</td>
<td>☐ Possible</td>
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</tr>
<tr>
<td></td>
<td>☐ Credible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Confirmed</td>
<td></td>
</tr>
<tr>
<td>☐ FBI</td>
<td>☐ Possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Credible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Confirmed</td>
<td></td>
</tr>
<tr>
<td>☐ Public Health Agency</td>
<td>☐ Possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Credible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Confirmed</td>
<td></td>
</tr>
<tr>
<td>☐ Drinking Water Primacy Agency</td>
<td>☐ Possible</td>
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</tr>
<tr>
<td></td>
<td>☐ Credible</td>
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<td></td>
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</tr>
<tr>
<td>☐ Other</td>
<td>☐ Possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Credible</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td>☐ Credible</td>
<td></td>
</tr>
<tr>
<td></td>
<td>☐ Confirmed</td>
<td></td>
</tr>
</tbody>
</table>

SIGNOFF

Name of person responsible for threat evaluation:
Print name
Signature ____________________________ Date/Time: _____

Source: EPA Response Protocol Toolbox Module 2, Section 8.2 – Interim Final December 2003
APPENDIX F – INCIDENT REPORTS AND FORMS

Water Quality/Consumer Complaint Report Form

INSTRUCTIONS - This form is provided to guide the individual responsible for evaluating unusual water quality data or consumer complaints. It is designed to prompt the analyst to consider various factors or information when evaluating the unusual data. The actual data used in this analysis should be compiled separately and appended to this form. The form can be used to support the threat evaluation due to a threat warning from unusual water quality or consumer complaints, or another type of threat warning in which water quality data or consumer complaints are used to support the evaluation. Note that in this form, water quality refers to both specific water quality parameters and the general aesthetic characteristics of the water that might result in consumer complaints.

Threat warning is based on:  ☐ Water quality  ☐ Consumer complaints  ☐ Other

What is the water quality parameter or complaint under consideration?

Are unusual consumer complaints corroborated by unusual water quality data?

Is the unusual water quality indicative of a particular contaminant of concern? For example, is the color, order, or taste associated with a particular contaminant?

Are consumers in the affected area experiencing any unusual health symptoms?

What is ‘typical’ for consumer complaints for the current season and water quality?

- Number of complaints.
- Nature of complaints.
- Clustering of complaints

What is considered to be ‘normal’ water quality (i.e., what is the baseline water quality data or level of consumer complaints)?

What is reliability of the method or instrumentation used for the water quality analysis?

- Are standards and reagents OK?
- Is the method/instrument functioning properly?

Based on recent data, does the unusual water quality appear to be part of a gradual trend (i.e., occurring over several days or longer)?

Are the unusual water quality observations sporadic over a wide area, or are they clustered in a particular area?


If the unusual condition isolated to a specific area:

- Is this area being supplied by a particular plant or source water?
- Have there been any operational changes at the plant or in the affected area of the system?
- Has there been any flushing or distribution system maintenance in the affected area?
- Has there been any repair or construction in the area that could impact water quality?

SIGNOFF

Name of person completing form:

Print name ___________________________ Date/Time: ________

Signature ___________________________ Date/Time: ________

Source: EPA Response Protocol Toolbox Module 2, Section 8.7 – Interim Final December 2003
Witness Account Report Form

INSTRUCTIONS
The purpose of this form is to document the observations of a witness to activities that might be considered an incident warning. The individual interviewing the witness, or potentially the witness, should complete this form. This may be the WUERM (pg. 6-1) or an individual designated by incident command to perform the interview. If law enforcement is conducting the interview (which may often be the case), then this form may serve as a prompt for “utility relevant information” that should be pursued during the interview. This form is intended to consolidate the details of the witness account that may be relevant to the threat evaluation process. This form should be completed for each witness that is interviewed.

BASIC INFORMATION
Date/Time of interview: ____________________________
Name of person interviewing the witness: ____________________________
Witness contact information
Full Name: ____________________________
Address: ____________________________
Day-time phone: ____________________________
Evening phone: ____________________________
E-mail address: ____________________________
Reason the witness was in the vicinity of the suspicious activity: ____________________________

WITNESS ACCOUNT
Date/Time of activity: ____________________________
Location of activity:
Site Name: ____________________________
Type of facility
☐ Source water ☐ Treatment plant ☐ Pump station
☐ Ground storage tank ☐ Elevated storage tank ☐ Finished water reservoir
☐ Distribution main ☐ Hydrant ☐ Service connection
☐ Other ____________________________
Address: ____________________________
Additional Site Information: ____________________________

Type of activity
☐ Trespassing ☐ Vandalism ☐ Breaking and entering
☐ Theft ☐ Tampering ☐ Surveillance
☐ Other ____________________________
Additional description of the activity ____________________________

Description of suspects
Were suspects present at the site? ☐ Yes ☐ No
How many suspects were present? ____________________________
Describe each suspect’s appearance:

<table>
<thead>
<tr>
<th>Suspect #</th>
<th>Sex</th>
<th>Race</th>
<th>Hair color</th>
<th>Clothing</th>
<th>Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
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<td>3</td>
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<td>5</td>
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</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where any of the suspects wearing uniforms? ☐ Yes ☐ No
If “Yes,” describe the uniform(s): ____________________________
Describe any other unusual characteristics of the suspects: ____________________________

Did any of the suspects notice the witness?  ☐ Yes  ☐ No
If “Yes,” how did they respond: __________________________________________________

Vehicles at the site
Were vehicles present at the site?  ☐ Yes  ☐ No
Did the vehicles appear to belong to the suspects?  ☐ Yes  ☐ No
How many vehicles were present? _________________

Describe each vehicle:

<table>
<thead>
<tr>
<th>Vehicle #</th>
<th>Type</th>
<th>Color</th>
<th>Make</th>
<th>Model</th>
<th>License plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td></td>
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<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Where were any logos or distinguishing markings on the vehicles?  ☐ Yes  ☐ No
If “Yes,” describe: _____________________________________________________________

Provide any additional detail about the vehicles and how they were used (if at all): ______

Equipment at the site
 Was any unusual equipment present at the site?  ☐ Yes  ☐ No
☐ Explosive or incendiary devices  ☐ Firearms
☐ PPE (e.g., gloves, masks)  ☐ Containers (e.g., bottles, drums)
☐ Tools (e.g., wrenches, bolt cutters)  ☐ Hardware (e.g., valves, pipe, hoses)
☐ Lab equipment (e.g., beakers, tubing)  ☐ Pumps and related equipment
☐ Other ____________________________

Describe the equipment and how it was being used by the suspects (if at all): ____________________________

Unusual conditions at the site
 Were there any unusual conditions at the site?  ☐ Yes  ☐ No
☐ Explosions or fires  ☐ Fogs or vapors  ☐ Unusual odors
☐ Dead/stressed vegetation  ☐ Dead animals  ☐ Unusual noises
☐ Other ____________________________

Describe the site conditions: __________________________________________________________

Additional observations
Describe any additional details from the witness account: ____________________________

SIGNOFF
Name of interviewer:
Print name ____________________________ Date/Time: _______
Signature ____________________________
Name of witness:
Print name ____________________________ Date/Time: _______
Signature ____________________________

Source: EPA Response Protocol Toolbox Module 2, Section 8.4 – Interim Final December 2003
<table>
<thead>
<tr>
<th>SITE ID</th>
<th>LOCATION (Use map location, address, etc.)</th>
<th>DESCRIPTION OF DAMAGE</th>
<th>IMPACT</th>
<th>COST ESTIMATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAME OF INSPECTOR</td>
<td>DEPARTMENT</td>
<td>PHONE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Damage Assessment Form**

**INITIAL DAMAGE ASSESSMENT**

**DATE**

**PAGE OF**
Appendix G
ERP Certification Form
CERTIFICATION OF COMPLETION
OF AN EMERGENCY RESPONSE PLAN
Public Water System ID number:  4510006
System Name:  City of Shasta Lake
City where system is located:  Shasta Lake
State :  California, 96019
Printed Name of Person Authorized to Sign this Certification on Behalf of the System:
Tony Thomasy
Title:  Water Superintendent
Address :  P.O.Box 777,  1650 Stanton Dr
City:  Shasta Lake
State and ZIP Code:  CA 96019
Phone:  530.275.7450   Fax:  530.275.7462   Email:  tthomasy@cityofshastalake.org

I certify to the Administrator of the U.S. Environmental Protection Agency that this community water system has completed an Emergency Response Plan that complies with Section 1433(b) of the Safe Drinking Water Act as amended by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (Public Law 107-188,Title IV — Drinking Water Security and Safety). I further certify that this document was prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information (Safe Drinking Water Act (42 U.S.C.300f et seq.)).

The emergency response plan that this community water system completed incorporates the results of the vulnerability assessment completed for the system and includes “plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack ” on this community water system. The emergency response plan also includes “actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals.”

This CWS has coordinated, to the extent possible, with existing Local Emergency Planning Committees established under the Emergency Planning and Community Right-to- Know Act (42 U.S.C.11001 et seq.) when preparing this emergency response plan.

Signed:_____________________________________Date:_____________________
Primary contact person that EPA can call if there are questions about this Certification:
Name:  Tony Thomasy
Address:  Same
Phone:  530.275.7450
Email Address:  Same
Alternate Contact Person:
Name:  Chris Carr
Address:  Same
Phone:  530.275.7450

Source:  EPA Small-Medium ERP Guidance 2004
WATER QUALITY EMERGENCY NOTIFICATION PLAN

Name of Utility: City of Shasta Lake
System No. 4510006

Mailing Address: PO Box 777, Shasta Lake, CA 96019
FAX No: 530-275-7462
Street Address: (if different than mailing address)
16349 Lake Blvd, Shasta Lake, CA 96019
E-mail address: tthomasy@cityofshastalake.org

The following persons have been designated to implement the plan upon notification by the State Department of Public Health, Division of Drinking Water, that an imminent danger to the health of water users exists:

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>DAY PHONE</th>
<th>CELL PHONE</th>
<th>EVENING PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tony Thomasy</td>
<td>Chief Operator</td>
<td>(530) 275-7450</td>
<td>(530) 227-0022</td>
<td>(530) 223-5323</td>
</tr>
<tr>
<td>Chris Carr</td>
<td>Shift Operator</td>
<td>(530) 275-7450</td>
<td>(530) 515-0741</td>
<td>(530) 515-0741</td>
</tr>
<tr>
<td>Jeff Tedder</td>
<td>City Engineer</td>
<td>(530) 275-7423</td>
<td>(530) 339-0904</td>
<td>(530) 275-1952</td>
</tr>
<tr>
<td>Tom Miller</td>
<td>Ass. City Manager</td>
<td>(530) 275-7457</td>
<td>(530) 917-9711</td>
<td>(530) 255-8587</td>
</tr>
</tbody>
</table>

The implementation of the plan will be carried out with the following State Public Health Department Personnel

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>DAY PHONE</th>
<th>EVENING PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim Hanagan</td>
<td>Associate Engineer</td>
<td>(530) 224-2413</td>
<td>(530) 227-8018</td>
</tr>
<tr>
<td>Michael J. McNamara</td>
<td>Senior Engineer</td>
<td>(530) 224-4873</td>
<td>(530) 339-2669</td>
</tr>
<tr>
<td>Steve Watson</td>
<td>Drinking Water Engineer</td>
<td>(530) 224-4828</td>
<td>(530) 515-6156</td>
</tr>
<tr>
<td>Sandi Tenney</td>
<td>Associate Engineer</td>
<td>(530) 224-4876</td>
<td>(530) 336-5608</td>
</tr>
<tr>
<td>Michael T. Burgess</td>
<td>Drinking Water Engineer</td>
<td>(530) 224-6506</td>
<td>(530) 222-5651</td>
</tr>
</tbody>
</table>

If the above personnel cannot be reached, contact:
Office of Emergency Services Warning Center (24 hrs) (800) 852-7550 or (916) 845-8911
When reporting a water quality emergency to the Warning Center, please ask for the California Department of Public Health-Drinking Water Program Duty Officer

NOTIFICATION PLAN

Describe methods or combinations of methods to be used (radio, television, door-to-door, sound truck, etc.). For each section of your plan give an estimate of the time required, necessary personnel, estimated coverage, etc. Consideration must be given to special organizations, particularly non-English speaking groups, and outlying water users. (Use the other side of this form or attach a written description, if necessary).

City manager, local authorities, and department of public health will be immediately contacted. SHASCOM 9-1-1 will be notified for assistance in notifying the public. Staff will contact the news media at television station KRCR to broadcast the necessary warning. The local radio Stations KQMS, KNQ, KRRX will also be contacted. The television and radio personnel are available at all hours. As a follow-up measure, we will also contact the Redding Searchlight, a local news paper that serves Redding, Shasta Lake and the surrounding areas. The warnings will be issued in both English and Spanish to cover all the members of the community. Shasta Lake also has a small population of Mien residence; they would be contacted directly by a translator from the Health Department as they have no written language.

Plan Prepared by: Tony Thomasy
Print Name: Senior Plant Operator
Signature: Date: 4/21/2014

SHASTA (45) COUNTY
Appendix G

WATER CONSERVATION PLAN AND
WATER SHORTAGE CONTINGENCY PLAN
CITY OF SHASTA LAKE
WATER CONSERVATION PLAN

JULY 2000

Prepared for:

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF RECLAMATION
SHASTA DAM, CALIFORNIA

AND THE

CALIFORNIA DEPARTMENT OF WATER RESOURCES
RED BLUFF, CALIFORNIA

Prepared by:

Dennis M. Daily, Public Works Supervisor
City of Shasta Lake
P.O. Box 777
Shasta Lake, California 96019
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- 1 - Section 1. Description of the City

A. History

Date City formed: 1944  Original Size  100 people

The population in the City of Shasta Lake area increased from about 100 people in 1938 to about 2,600 people in 1945 due to the construction of Shasta Dam.

The City of Shasta Lake water system was, in essence, created in 1945 by the establishment of the Shasta Dam Public Utility City (SDAPUD) that was organized to serve the unincorporated communities of Central Valley, Project City, and Pine Grove. The initial water system improvements were financed by private loans and bonds in 1947 and by the purchase agreement with Central Valley Water Company to lease purchase their existing distribution facilities. A long-term (40 years) water contract was signed in 1948 with the USBR. In 1954, the United States Bureau of Reclamation replaced the 10-inch spiral steel line constructed in 1947 with 9,470 feet of 16-inch and 4,830 feet of 14-inch steel line. This also included increasing pump capacity and storage at the Reclamation Dam facilities. At the same time, a 6-inch line was also extended to serve the area then known as Buckeye County Water District (City of Redding).

In 1966 SDAPUD constructed a 2.0 MGD filtration plant approximately one mile northwest of Central Valley, just above the Toyon Government Camp. Capacity improvements to this plant occurred over the next 24 years until 1990 when the new treatment plant at Fisherman's Point replaced the old facility. In 1978, the SDAPUD annexed the Summit City PUD, and acquired its 1.0 MGD water filtration plant, transmission, and distribution facilities. Additional improvements to the distribution and storage facilities were implemented by the SDAPUD until 1993 when the City of Shasta Lake was created and acquired control of the water system.

<table>
<thead>
<tr>
<th>Size &amp; Population</th>
<th>Date of first USBR contract</th>
<th>1986</th>
<th>Last Plan</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td>size (sq. miles)</td>
<td>1948</td>
<td>7.45</td>
<td>7.45</td>
<td>7.45</td>
</tr>
<tr>
<td>population served</td>
<td>2,600</td>
<td>6,900</td>
<td>8,300</td>
<td>9,700</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Supplies Received</th>
<th>1986 AF</th>
<th>Last Plan AF</th>
<th>1998 AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR Urban water</td>
<td>4,000</td>
<td>4,000</td>
<td>2,750</td>
</tr>
<tr>
<td>State project water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other imported water</td>
<td></td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Local surface water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>City groundwater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>transferred water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>recycled wastewater</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,000</td>
<td>4,000</td>
<td>2,800</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Annual entitlement under each right and/or contract</th>
<th>AFY</th>
<th>contract #</th>
<th>contract restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>USBR (interim)</td>
<td>2,750</td>
<td>4-07-20-W1134-IR4</td>
<td>one-year renewal interim</td>
</tr>
<tr>
<td>Shasta CWA</td>
<td>50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

City of Shasta Lake
Anticipated land use changes (i.e., agricultural to municipal, etc.)

NONE

B. Location and Facilities

See attachment item A (City Service Area Map)

The City of Shasta Lake’s water supply is surface water conveyed from Shasta Lake. The diversion point is at the face of Shasta Dam, where there are two intakes at elevation 754 and 960 feet above sea level. The coordinates are (T33N, R5W – Section 15). Raw water is pumped from the Dam to the City’s Water Treatment Facilities via the USBR. Raw Water Pumping Station located at the base of Shasta Dam.

The distribution system contains approximately 42 miles of pipelines. The system consists 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 in diameter) being installed prior to 1950. There is approximately 124,000 feet of undersized steel pipe over 45 years old that is in need of replacement.

<table>
<thead>
<tr>
<th>1998 distribution system</th>
</tr>
</thead>
<tbody>
<tr>
<td>miles AC pipe</td>
</tr>
<tr>
<td>18.5</td>
</tr>
</tbody>
</table>

Storage

See attachment B (Map of existing distribution, wastewater treatment, reservoirs, pump stations, and water treatment facilities)

The storage system consists of eight treated water storage tanks and one raw-water storage tank, ranging in size from 200,000 gallons to 1,000,000 gallons. The total treated water storage is 3,250,000 gallons.

1 – 220,000 Gallon steel reservoir. (Raw Water) 16349 Lake Blvd. W.T.P.
1 – 330,000 Gallon steel reservoir 16349 Lake Blvd. W.T.P.
1 – 200,000 Gallon steel reservoir. West end of Pickard Street.
1 – 200,000 Gallon steel reservoir. 1009 Rouge Road.
1 – 200,000 Gallon steel reservoir. North end of Shasta Way.
1 – 470,000 Gallon steel reservoir. North end of Shasta Way.
1 – 250,000 Gallon steel reservoir. South end of Montana Avenue.
1 – 1 Million Gallon steel reservoir. South end of Montana Avenue.
1 – 600,000 Gallon steel reservoir. West end of Holly Street.

Delivery System Operation

The City of Shasta Lake water system is an on demand system, which includes 11 pressure zones fed by gravity storage tanks, with pressure reducing valves to regulate pressures. Pressures range from 12 psi at the highest elevation to 135 psi at the lowest elevation.
### Restrictions on the City's water source(s).

<table>
<thead>
<tr>
<th>Restriction</th>
<th>cause of restriction</th>
<th>effect on City operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water can be delivered only within the USBR service area</td>
<td>Service area identified in USBR contract</td>
<td>Could delay future commercial and industrial growth.</td>
</tr>
</tbody>
</table>

#### Proposed changes or Additions to City’s Facilities and Operations for the next five years.

(For more detail refer to 1998 Master Water Plan prepared by PACE CIVIL, INC.).

**1999-2000**
- Treatment Plant Particle Study (Projected Completion July 2000)
- Southeast Water Main Construction (Completed October 1999)
- Replace Regulating Tank at Old Central Valley Treatment Plant with PRV Station and abandon existing storage tank.

**2000-2001**
- Intertie with City of Redding (8-inch Emergency Intertie and Booster Pump Station)
- Install Storage Tank Telemetry System
- Install Raw Water Surge Tank at Treatment Plant
- Replace Electrical Transformer at Treatment Plant Pumping Station
- Add two Backwash Ponds for Treatment Plant

**2001-2005**
- Add Additional 350 HP Raw Water Pump with variable speed at USBR Pumping Station
- Add Third Treatment Unit at Treatment Plant
- Add Third Effluent Pump at Treatment Plant
- Parallel 20-inch Main from Treatment Plant to Centimudi
- Install 10-inch Water Main on Front Street
- Install 12-inch Water Main on Meade Street
- Install 12-inch Water Main on Cabello Avenue

### C. Topography and Soils

#### Topography of the City

The City of Shasta Lake lies within the upper Churn Creek and Stillwater Creek watersheds that slope to the south from the hilly ridge forming the southern containment of Shasta Lake (W.A. Gelonek & Affiliates, Inc., 1981). The City lies at the northerly end of California’s Sacramento Valley and boarders Interstate 5 and the Union Pacific Railroad. Developed areas are gently rolling with numerous small creeks tributary to the two major waterways. The southern portion of the City tends to be flatter; the northern boundary becomes hilly with steep slopes and generally undeveloped land (W.A. Gelonek & Affiliates, Inc., 1981).

Elevations in the City range from a high of 1,280 feet above sea level at the northern boundary to a low of about 670 feet at the southern boundary. The majority of the developed community lies between 800 and 900 feet.

#### Soils

*City soil associations that impact water use decisions*

NONE

City of Shasta Lake
D. Climate

General climate of the City

The City of Shasta Lake has hot dry summers and cool rainy winters. Temperatures range from below freezing to 115 F, with most of the rain coming from November to May. Winds are from the North and West.

National Weather Service  Shasta Dam, California Station: (048135)

<table>
<thead>
<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>avg precip</td>
<td>12.2</td>
<td>9.9</td>
<td>9.1</td>
<td>4.2</td>
<td>2.4</td>
<td>1.2</td>
<td>0.2</td>
<td>0.5</td>
<td>1.3</td>
<td>3.0</td>
<td>8.4</td>
<td>10.3</td>
<td>62.81</td>
</tr>
<tr>
<td>avg temp</td>
<td>45.3</td>
<td>48.8</td>
<td>51.8</td>
<td>58.1</td>
<td>65.9</td>
<td>74.1</td>
<td>81.5</td>
<td>80.0</td>
<td>74.5</td>
<td>64.8</td>
<td>53.0</td>
<td>46.3</td>
<td>62.0</td>
</tr>
<tr>
<td>max temp</td>
<td>75</td>
<td>81</td>
<td>85</td>
<td>95</td>
<td>107</td>
<td>111</td>
<td>115</td>
<td>115</td>
<td>114</td>
<td>103</td>
<td>90</td>
<td>76</td>
<td>115</td>
</tr>
<tr>
<td>min temp</td>
<td>7</td>
<td>21</td>
<td>29</td>
<td>29</td>
<td>35</td>
<td>41</td>
<td>50</td>
<td>44</td>
<td>43</td>
<td>34</td>
<td>30</td>
<td>14</td>
<td>7</td>
</tr>
</tbody>
</table>

average wind velocity: 7.05  predominant wind direction: NW

Impact of any microclimates on water management within the City

NONE

E. Natural and Cultural Resources

Natural Resources within the City

<table>
<thead>
<tr>
<th>Name</th>
<th>est. acres</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Management of these resources in the past or present by the City

NA

Recreational and/or Cultural Resources

<table>
<thead>
<tr>
<th>Name</th>
<th>acres</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Margaret Polf Park</td>
<td>25.3</td>
<td>Soccer, softball, football, bicycle-motocross and walking/jogging trail</td>
</tr>
<tr>
<td>Harold T. &quot;Bizz&quot; Johnson Park</td>
<td>5.91</td>
<td>Little League Baseball</td>
</tr>
<tr>
<td>Wynne Price Field</td>
<td>5.00</td>
<td>High School and summer baseball</td>
</tr>
<tr>
<td>Clair Engle Park</td>
<td>2.75</td>
<td>Senior Community Center, outdoor stage, playground, picnic facilities, barbecues and future site of a skateboard park</td>
</tr>
<tr>
<td>Akard Park</td>
<td>2.99</td>
<td>Outdoor basketball court, playground, picnic area and small baseball field</td>
</tr>
<tr>
<td>Shasta Park</td>
<td>0.50</td>
<td>Playground and picnic area</td>
</tr>
<tr>
<td>Blue Canyon Park</td>
<td>1.50</td>
<td>Playground and picnic area</td>
</tr>
<tr>
<td>Churn Creek</td>
<td>60.0</td>
<td>Future hiking, bicycling and walking/jogging trails</td>
</tr>
</tbody>
</table>

See Attachment C  (Map of locations listed above)
F. Operating Rules and Regulations

See Attachment D (City of Shasta Lake’s water related Rules and Regulations)

City's policies on water transfers by the City

The City of Shasta Lake has an emergency intertie with the Bella Vista Water City; water is transferred during emergency situations only and only on availability.

G. Water Measurement, Pricing and Billing

<table>
<thead>
<tr>
<th>Meter Size &amp; Type</th>
<th>Number</th>
<th>Accuracy (percentage)</th>
<th>Reading frequency (days)</th>
<th>Calibration frequency (months)</th>
<th>Maintenance frequency (months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8-3/4&quot;</td>
<td>3,648</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>1&quot;</td>
<td>70</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>12</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>2&quot;</td>
<td>30</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>3&quot;</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4&quot;</td>
<td>4</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>6&quot;</td>
<td>6</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>8&quot;</td>
<td>1</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>10&quot;</td>
<td>2</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>Compound</td>
<td>9</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>Turbo</td>
<td>8</td>
<td>± 1.5%</td>
<td>Monthly</td>
<td>replaced as needed</td>
<td>replaced as needed</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3,773</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

City's current year water charges

Billing is done on a monthly basis.

Charges are based on operation and maintenance. Commodity charge for consumption varies with the amount used. All meters have a fixed monthly service charge of $7.20. All meters one-inch and larger have a fixed monthly surcharge as listed below.

Rates as of January 1, 2000

Service charge: $7.20 per unit, per month
Safe Drinking Water Loan: $0.80 per unit, per month

Consumption charge

| Lifeline: 0-1,000 cubic feet | $0.57 per 100 cubic feet |
| All others: 0-1,000 cubic feet | $0.74 per 100 cubic feet |
| Excess: 0-1,000 cubic feet | $0.85 per 100 cubic feet |

City of Shasta Lake
Surcharge:

<table>
<thead>
<tr>
<th>Meter Size</th>
<th>Surcharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot; x 3/4&quot;</td>
<td>$0.00</td>
</tr>
<tr>
<td>1&quot;</td>
<td>$2.00</td>
</tr>
<tr>
<td>1&quot;</td>
<td>$6.00</td>
</tr>
<tr>
<td>2&quot;</td>
<td>$11.00</td>
</tr>
<tr>
<td>3&quot;</td>
<td>$21.00</td>
</tr>
<tr>
<td>4&quot;</td>
<td>$36.00</td>
</tr>
<tr>
<td>6&quot;</td>
<td>$56.00</td>
</tr>
<tr>
<td>8&quot;</td>
<td>$76.00</td>
</tr>
<tr>
<td>10&quot;</td>
<td>$96.00</td>
</tr>
<tr>
<td>12&quot;</td>
<td>$116.00</td>
</tr>
</tbody>
</table>

City's water-use data accounting procedures

Records are available on-line for customer review for seven years. Hard copies are kept for ten years in a vault, then placed in storage. The City is currently considering the purchase of an electronic data storage system.

H. Water Shortage Allocation Policies

City's current year water shortage policies

The City of Shasta Lake's current water shortage policies were prepared in 1994. This plan is under review. (Attached is the 1994 Plan).

See attachment E (Water Conservation/Rationing Plan)

City's current year policies that address wasteful use of water

See attachment E (Water Conservation/Rationing Plan)
Section 2. Inventory Water Resources

A. Surface Water Supply

_Acre-foot amounts of surface water delivered to the City by each of the City’s sources_
See Tables
_Amount of water received under each right and/or contract for the last 10 years_
See Tables

B. Ground Water Supply

_Acre-foot amounts of ground water pumped and delivered by the City._
See Tables

_Ground water basin(s) that underlie the City_

<table>
<thead>
<tr>
<th>Name</th>
<th>size (sq. mi.)</th>
<th>usable capacity (AF)</th>
<th>safe yield (AFY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The City is located outside of the Redding ground-water basin, which contains the main water-bearing geologic units in the northern Sacramento Valley.

The geology underlying the City is characterized mainly by dense, relatively unfractured metavolcanic rock. The Copley greenstone. Wells completed in the Copley greenstone generally have very low yields (less than 10 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.

_City operated wells, and managed ground water recharge areas_

Most wells of record within the City have very low yields (less than 10 gpm). The highest yielding wells in the vicinity of the City are those of the Mt. Gate Community Services District (CSD). The Mt. Gate CSD has two wells that average about 200 gpm each. The Mt. Gate CSD wells are completed in highly fractured Kennett formation, and are down gradient of a drainage area 1,200 acres that supplies recharge to the formation.

The area with the best potential ground-water 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 Mt. Gate CSD 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 Mt. Gate area, however, and it cannot be stated with certainty that yields similar to those at Mt. Gate can be obtained.
C. **Other Water Supplies**

*Acre-foot amounts of “Other” water used as part of the City’s water supply*

See Tables

The City of Shasta Lake has recently entered into an agreement with Bella Vista Water City to receive 250-acre feet/year of groundwater for the next five years. A contract with the City of Redding is being negotiated at this time for up to 225-acre feet/year of non-Reclamation water. The City is also a member of the Redding Area Water Council, which is a collaboration of public and private agencies that are interested in our water resources and their plan and managed use. This collaborative is in the process of preparing a countywide water resource master plan, which will look at the groundwater resources within the Redding basin and Shasta County. This study should be completed by July 2000.

D. **Source Water Quality Monitoring Practices**

*Water quality problems*

NONE See Attachment F (1999 Water Quality Report)

E. **Water Uses within the City**

1. **Agricultural**

2. **Urban:**

<table>
<thead>
<tr>
<th>Customer type</th>
<th># of Connections</th>
<th>1998 use (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>3,123</td>
<td>1,370</td>
</tr>
<tr>
<td>Multifamily</td>
<td>340</td>
<td>84</td>
</tr>
<tr>
<td>Commercial</td>
<td>199</td>
<td>90</td>
</tr>
<tr>
<td>Industrial</td>
<td>5</td>
<td>98</td>
</tr>
<tr>
<td>Institutional</td>
<td>96</td>
<td>184.75</td>
</tr>
<tr>
<td>Landscape Irrigation</td>
<td>10</td>
<td>19.25</td>
</tr>
<tr>
<td>Wholesale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reclaimed</td>
<td>1</td>
<td>54</td>
</tr>
<tr>
<td>Other (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unaccounted for</td>
<td></td>
<td>373</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3,774</strong></td>
<td><strong>2,273</strong></td>
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*Urban wastewater Collection & Treatment Systems serving the entire City service area*

<table>
<thead>
<tr>
<th>Treatment plant</th>
<th>Treatment level (1, 2, 3)</th>
<th>1998 (AF)</th>
<th>Disposal to:</th>
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</thead>
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<tr>
<td>City of Shasta Lake Plant</td>
<td>Full Secondary</td>
<td>1,438</td>
<td>Sacramento River</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>TOTAL</strong></td>
<td><strong>1,438</strong></td>
<td></td>
</tr>
<tr>
<td>Total discharged to ocean</td>
<td>saline sink</td>
<td>0</td>
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City of Shasta Lake
### Urban Recycled Wastewater

<table>
<thead>
<tr>
<th>Treatment plant</th>
<th>Treatment level (2, 3)</th>
<th>1998 (AF)</th>
<th>Types of users</th>
</tr>
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<tr>
<td>City of Shasta Lake Plant</td>
<td>Full Secondary</td>
<td>54</td>
<td>Log Deck Irrigation, Landscape</td>
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<td></td>
<td>TOTAL</td>
<td>54</td>
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3. **Ground Water Recharge**

City operated ground water recharge areas (as identified in Section 2 - B).

<table>
<thead>
<tr>
<th>Recharge Area</th>
<th>Method of recharge</th>
<th>1998 (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
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</tbody>
</table>

4. **Transfers and Exchanges**

NONE

<table>
<thead>
<tr>
<th>Transfers into or out of the City</th>
<th>from whom</th>
<th>to whom</th>
<th>1998 (AF)</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>NA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Trades, wheeling or other transactions

NONE

5. **Other**

Any other uses of water

<table>
<thead>
<tr>
<th>Other uses</th>
<th>1998 (AF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrant testing &amp; system flushing; Main line, service line leaks &amp; meter error</td>
<td>373</td>
</tr>
<tr>
<td>TOTAL</td>
<td>373</td>
</tr>
</tbody>
</table>
G. Water Accounting (Inventory)
   
   1. City Water Supplies Quantified

   See Tables

   2. Water Uses Quantified

   See Tables

   3. Overall Water Inventory

   See Tables

Section A. Best Management Practices for Agricultural Water Suppliers

A. Best Management Practices for Urban Water Supplies

1. Water Survey Programs for Single-Family and Multi-Family Residential Customers

The program includes the following components:
1. Contact via letter or telephone single-family and multi-family residential customers.
2. Provide surveys to 23 single-family and 8 multi-family units residential customers
3. Instruct customers in meter reading
4. Check for leaks, including toilets/faucets and, if necessary, provide toilet flappers/faucet washers.
5. Check showerhead and aerator flow-rates, and provide low-flow models, as necessary
6. Check toilet flow-rates and, when appropriate, recommend a ULFT replacement.
7. Check irrigation system for leaks / overlap and determine timer functioning and current schedule.
8. Measure landscaped area and develop irrigation schedule
9. Provide customer with evaluation results, water saving recommendations and other information

The City will annually collect and submit the following information.
- Number of single-family and multi-family residential accounts in service area.
- Number of single-family residential surveys offered during reporting period.
- Number of single-family residential surveys completed during reporting period.
- Number of multi-family residential surveys offered during reporting period.
- Number of multi-family residential surveys completed during reporting period.
- Monitor annual water-use changes in consumption at surveyed accounts, individually and as a group.

The City program will start in mid-October 2000. The program will target new customers and customers with unusually high-bills. New customers will be asked to schedule an audit when they sign-up for service. High-bill customers who complain will be offered an audit. High-bill customers who do not complain will be contacted and offered an audit.

Audit will include items 3 through 9 (above). Materials used in the audit (dye tablets, showerheads, flapper valves, etc.) will be supplied by the City. The City will provide a copy of the audit report to participants. The City will monitor participants' water use for one year and compare with the previous year.

The City will evaluate the program effectiveness, cost-benefit, and customer satisfaction and determine program design and targets for 2001 by January 2001.

2. Residential Plumbing Retrofit

The program includes the following components:
1. Retrofit kits will consist of 2.5 gpm or less showerheads and 2.2 gpm or less faucet aerators
2. Distribution to not less than 10% of single-family and 10% of multi-family units each year, until 75% of single-family and 75% of multi-family units are retrofitted.
3. Track the location, type and number of retrofits completed, devices distributed, and program costs.

The City will annually collect and submit the following information.
- The total number of non-retrofitted pre-1992 single-family residences and multi-family units.
- The number of retrofit kits distributed and installed during previous reporting period.
- The estimated percentage of pre-1992 single-family residences and multi-family units in service area.

City of Shasta Lake
fitted with low flow showerheads and faucet aerators.

The City will purchase sufficient Retrofit Kits to meet the annual target. These kits will be provided to residences receiving audits, to high-water use homes, and to interested City customers at public events.

3. System water audits, Leak Detection and Repair

The program includes the following components:
   a) Annually complete a prescreening system audit to determine the need for a full-scale system audit. The prescreening system audit is calculated as follows:
      i) Determine metered sales;
      ii) Determine other system verifiable uses;
      iii) Determine total supply into system;
      iv) Divide metered sales plus other verifiable uses by total supply into the system. If this quantity is less than 0.9, a full-scale system audit is indicated.
   b) When indicated, the City will complete a water audit of its distribution system using methodology consistent with that described in AWWA's "Water Audit and Leak Detection Guidebook"
   c) The City also: advises customers whenever it appears possible that leaks exist on the customer’s side of the meter; performs distribution system leak detection when warranted and cost-effective; and repairs leaks when found.

The City will annually collect and submit the following information.
   - Prescreening audit results and supporting documentation;
   - Maintain in-house records of audit results or the completed AWWA Audit Worksheets for each completed audit period.

The City will conduct a pre-screening audit to determine what percentage of the most recent years losses are unaccounted for. If the unaccounted for water is determined to be 10% or greater, the City will conduct an audit. The pre-screening audit will also determine areas of missing or imprecise data (fire fighting, line flushing, unmetered construction uses, etc.) and recommend needed changes.

4. Metering with Commodity Rates, for all New Connections and Retrofit of Existing Connections

The program includes the following components:
   Conduct a study to identify any barriers or disincentives to retrofitting mixed-use CII accounts with dedicated landscape meters and will assess the merits of a program to provide incentives to switch mixed use CII accounts to dedicated landscape meters.

The City will annually collect and submit the following information.
   - All new and existing water connections within the City are or will be metered.
   - Number of CII accounts with mixed-use meters.
   - Number of CII accounts with mixed-use meters retrofitted with dedicated irrigation meters during reporting period.

All water is billed by quantity. The City will identify CII mixed-use meters and rank them by percentage of irrigation use (difference between February and July use). The City will consider the benefits and costs of installing dedicated landscape meters at CII accounts and develop an implementation program if appropriate.
5. Large Landscape Conservation Programs and Incentives

The program includes the following components:

This program will provide:

Accounts with Dedicated Irrigation Meters
1. The landscaped area at accounts with dedicated irrigation meters will be measured and ETa-based water use budgets equal to no more than 100% of reference evapotranspiration per square foot of landscape area will be assigned to each account.
2. Notices will be provided each billing cycle to accounts with water use budgets showing the relationship between the budget and actual consumption.

Mixed-Use Meters
3. Mixed use CII accounts with landscaping will be identified.
4. A strategy targeting and marketing large landscape water use surveys to accounts with mixed-use meters will be developed.

5. Cost-effective measures will be identified and offered such as:
   - landscape water use analysis/survey;
   - Voluntary water use budgets;
   - Installation of dedicated landscape meters;
   - financial incentives to improve irrigation system efficiency;
   - follow-up water use analyses/surveys with a letter; phone call, or site visit where appropriate.

6. Survey elements will include: measurement of landscape area; measurement of total irrigable area; irrigation system check and distribution uniformity analysis; develop irrigation schedules, as appropriate; provision of a customer survey report and information packet.

The City will annually collect and submit the following information.

Dedicated Landscape Irrigation Accounts
- Number of dedicated irrigation meter accounts.
- Number of dedicated irrigation meter accounts with water budgets.
- Aggregate water use and budgets for dedicated landscape accounts with budgets.

Mixed Use Accounts
- Number of mixed use accounts
- Number, type, and dollar value of incentives offered to, and received by, customers.
- Number of surveys offered / Number of surveys accepted
- Estimated annual water savings by customers receiving surveys and implementing recommendations.

City will audit & prepare water budgets for one CII mixed-use meter in 2001; and provide monthly scheduling reminders to these accounts.

6. High-Efficiency Washing Machine Rebate Programs

The program includes the following components:

1. Determination of whether local energy providers have a high-efficiency washing machine rebate program. Determination of cost-effective rebate amount
2. If cost-effective rebate is $50 or more, establishment of a cooperative rebate program with energy providers.
3. If cost-effective rebates is less than $50, or local energy providers do not have an high-efficiency
washington machine rebate program, information on high-efficiency washing machines (and, if appropriate, local energy provider rebate program) will be provided to customers.

4. Support for local, state, and federal legislation to improve efficiency standards for washing machines.

The City will annually collect and submit the following information.

The City of Shasta Lake Electrical Utility does not have a High-Efficiency Washing Machine Rebate Program. However the City newsletter will provide customers with information on High-Efficiency Washing Machines.

7. Public Information Programs

The program includes the following components:

Providing speakers to employees, community groups and the media; using paid and public service advertising; using bill inserts; providing information on customers' bills showing use in gallons per day for the last billing period compared to the same period the year before; providing public information to promote water conservation practices; and coordinating with other government agencies, industry groups, public interest groups, and the media.

The City will annually collect and submit the following information.

- Number of public speaking events relating to conservation during reporting period
- Number of media events relating to conservation during reporting period
- Number of paid or public service announcements relating to conservation produced or sponsored during reporting period
- Types of information relating to conservation provided to customers.
- Annual budget for public information programs directly related to conservation.

The City has an on-going Public Information Program. The two main activities are Water Awareness Week and a quarterly Newsletter. During 2001 the Program will be expanded to include a speaker's bureau; regular newspaper, radio and TV PSA spots; and other public events.

8. School Education Programs

The program includes the following components:

Working with public and private schools in the water suppliers' service area to provide instructional assistance, educational materials, and classroom presentations that identify urban, agricultural, and environmental issues and conditions in the local watershed. Education materials shall meet the state education framework requirements, and grade appropriate materials shall be distributed to grade levels K-3, 4-6, 7-8, and high school. (See Attachment G for sample materials)

The City will annually collect and submit the following information.

- Number of school presentations made during reporting period.
- Number and type of curriculum materials developed and/or provided by water supplier, including confirmation that curriculum materials meet state education framework requirements and are grade-level appropriate.
- Number of students reached
- Number of in-service presentations or teacher's workshops conducted during reporting period
- Annual budget for school education programs related to conservation.

The City has an on-going School Education Program. Each year classroom materials are provided to City of Shasta Lake
elementary and secondary school science instructors. Project WET training is offered to local teachers.

9. Conservation Programs for Commercial, Industrial and Institutional Accounts

The program includes the following components:
1. Identify commercial, industrial, and institutional customers by SIC codes.
2. Rank commercial, industrial, and institutional customers according to annual water use.
3. Provide audits to the targeted number of Commercial, Industrial and Institutional accounts
4. Replace the targeted number of high-water-using toilets with ULFTs.
5. Monitor the effectiveness of implemented audit recommendations
6. Identify incentives programs, which would encourage the implementation of cost-effective audit recommendations that were not implemented.

The City will annually collect and submit the following information.
- The number of customers and amount of water use within the CII customer classes.
- Number of CII customers offered a survey the year
- Number of CII surveys completed the year
- Number of follow-up audits completed the year
- The type and number of water saving recommendations implemented.
- Incentive program budget and customer outlays.

During 2000 the City will review all CII accounts to verify the correct customer-type classification. The City will then categorize CII customers by general SIC code, to provide efficient targeting of customers for specific conservation programs. The City will provide audits to high-conservation potential CII customers.

10. Wholesale Agency Assistance Programs

NOT a Wholesale Agency

11. Conservation Pricing

The program includes the following components:
1. Eliminating nonconserving pricing
2. Adopting conserving pricing.
3. If City supplies both water and sewer service, this BMP applies to pricing of both water and sewer service.
4. If City does not provide sewer service, it shall make good faith efforts to work with sewer agencies so that those sewer agencies adopt conservation pricing for sewer service.
5. The City's next rate study will include consideration of incentive rate structures for all customer types: seasonal rates; increasing block rates; connection fee discounts; grant or loan programs to help finance conservation projects; financial incentives to change landscapes; variable hookup fees tied to landscaping; and interruptible water service to large industrial, commercial or public customers.

The City will annually collect and submit the following information.
- Report annual revenue generated by customer class for the reporting period.
- Report annual revenue derived from commodity charges by customer class for the reporting period
- Report rate structure by customer class for water service and sewer service if provided

Complete - the City has an increasing-tier water rate schedule.
City of Shasta Lake
12. Conservation Coordinator

The program includes the following components:
Designation of a water conservation coordinator and support staff (if necessary), whose duties shall include the following:
   i) Coordination and oversight of conservation programs and BMP implementation;
   ii) Preparation & submittal of the USBR Annual Update (CUWCC BMP Implementation Report);
   iii) Communication and promotion of water conservation issues to agency senior management;
       coordination of agency conservation programs with operations and planning staff; preparation of annual conservation budget.

Water Conservation Coordinator:

Dennis M. Daily, Public Works Supervisor
Phone: (530) 275-7491
Fax: (530) 275-7462
E-mail: dennis.daily@ci.shasta-lake.ca.us
PO Box 777 Shasta Lake, CA 96019

The City will annually collect and submit the following information.
• Conservation Coordinator name, staff position, and years on job;
• Number of Conservation Coordinator staff
• Duties of Conservation Coordinator and staff

The City's designated Water Conservation Coordinator will supervise BMP implementation, coordinate Plan development and submittal, evaluate BMP effectiveness and communicate Program goals and details to the community.

13. Water Waste Prohibition

The program includes the following components:
Enactment and enforcement of a Water Waste Ordinance prohibiting gutter flooding, single pass cooling systems in new connections, nonrecirculating systems in all new conveyer car wash and commercial laundry systems, and nonrecycling decorative water fountains.

The City will annually collect and submit the following information.
• Number of customers contacted about water waste violations
• Number of customers cited for repeat water waste violations

Attached is a sample Water Waste Ordinance that includes the items listed above. Field staff will be trained to make 'positive' customer contacts – educating and helping customers to reduce waste. All water waste customer contacts will be tracked by computer. Repeat offenders will be fined and/or have their water disconnected.
14. Residential Ultra Low Flow Toilet Replacement Programs

The program includes the following components:
1. Implementation of programs for replacing existing high-water-using toilets with ultra-low-flush (1.6 gallons or less) toilets in single-family and multi-family residences.
2. Programs shall be at least as effective as requiring toilet replacement at time of resale.

The City will annually collect and submit the following information:
- The average number of toilets per single-family and multi-family unit.
- The average persons per household for single-family residences and for multi-family residences.
- The housing resale rate for single-family and multi-family residences in service area.
- The number of ULFT installations credited to the agency's replacement program, by year.
- Estimated cost per ULFT replacement
- Estimated water savings per ULFT replacement

The City will investigate the possibility of adopting a Retrofit at Time of Resale ordinance. The City is currently preparing a Cost-Benefit Exemption to this BMP.

**PLANNED YEAR 2000 BUDGET AND STAFF TIME SUMMARY**

<table>
<thead>
<tr>
<th>YEAR 2000</th>
<th>BMP #</th>
<th>BMP Name</th>
<th>Est. Budget</th>
<th>Est. Staff time (hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Residential Water Audits</td>
<td>$1,284</td>
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<td>3</td>
<td>System Water Audit &amp; Leak Detection</td>
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</tr>
<tr>
<td>4</td>
<td>Metering w/ Commodity Rates</td>
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<tr>
<td>5</td>
<td>Landscape Water Audits</td>
<td>$721</td>
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<tr>
<td>6</td>
<td>Washing Machine Rebates</td>
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<tr>
<td>7</td>
<td>Public Information</td>
<td>$1,555</td>
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<td>8</td>
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<td>9</td>
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<td>10</td>
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<td>11</td>
<td>Conservation Pricing</td>
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<tr>
<td>12</td>
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<td>14</td>
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<td><strong>TOTAL</strong></td>
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**PROJECTED YEAR 2001 BUDGET AND STAFF TIME SUMMARY**

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<th>Est. Budget</th>
<th>Est. Staff time (hrs)</th>
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<td>Residential Water Audits</td>
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<td>2</td>
<td>Residential Retrofit</td>
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<td>System Water Audit &amp; Leak Detection</td>
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<tr>
<td>4</td>
<td>Metering w/ Commodity Rates</td>
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<tr>
<td>5</td>
<td>Landscape Water Audits</td>
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<td>Washing Machine Rebates</td>
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<td>7</td>
<td>Public Information</td>
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City of Shasta Lake
<table>
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<td>8</td>
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<td>9</td>
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<td>10</td>
<td>Wholesale Agency Programs</td>
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<tr>
<td>11</td>
<td>Conservation Pricing</td>
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<td>12</td>
<td>Conservation Coordinator</td>
<td>$500</td>
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<td>13</td>
<td>Water Waste Prohibition</td>
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<tr>
<td>14</td>
<td>ULFT Program</td>
<td>$0</td>
<td>0</td>
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**TOTAL** $11,940  346
CITY OF SHASTA LAKE
WATER SHORTAGE CONTINGENCY PLAN

March 1994

Prepared for:

UNITED STATES DEPARTMENT OF INTERIOR
BUREAU OF RECLAMATION
SHASTA DAM, CALIFORNIA

AND THE

CALIFORNIA DEPARTMENT OF WATER RESOURCES
RED BLUFF, CALIFORNIA

Prepared by:

John E. Pedri, City Engineer
City of Shasta Lake
P.O. Box 777
Shasta Lake, California 96019
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APPENDICES

Appendix I  Domestic Water Emergency Response Plan
Appendix II  Schedule or Rates
Appendix III  Water Conservation Rationing Plan
Appendix IV  Drought Revenue Losses
Appendix V  Resolution to Declare a Water Shortage Emergency
Section 1  Coordinated Planning

California Water Code Section 10620. (d) (2) Each urban water supplier shall coordinate the preparation of its urban water shortage contingency plan with other urban water suppliers and public agencies in the area, to the extent practicable. Copies of the plan will be supplied to the USBR and Shasta County and other surrounding agencies. The City will develop and approve coordinated emergency supply agreements.

SURFACE WATER
Shasta Reservoir is owned and operated by the USBR as part of the Central Valley Project. Water is distributed by contract and the contract has a water shortage provision contained within it.

DISASTER PLANNING
Water shortage disaster response has been coordinated with the State Office of Drinking Water. The City and County Emergency Plans include the coordination an acquisition of standby generators, water purification supplies, emergency drinking water storage, and water trucks.

PUBLIC MEETINGS
A public meeting will be held in June of 1994, to receive public comments on the proposed Water Shortage Contingency Plan. The public comments and Council's input will be incorporated in the final plan to be adopted in June, 1994. City Staff proposed an allotment method for each customer type. A Water Shortage Contingency Plan will be reviewed and adopted by the City Council as part of our Water Conservation Plan.

Section 2  Past, Current, and Projected Water Use (1992-95)

California Water Code Section 10631. (e) (1) Past, current and projected water use and, to the extent records are available, a breakdown of those uses on the basis of residential single family, residential multifamily, industrial, commercial, governmental, and agricultural use.

The City has about 9,720 residents, and a non-significant amount of commercial and industrial customers. Highest current water demand is 2036 AFY. New connections only increased at a rate of 1.0 percent during the year 1991. New water demand is increasing at a rate of 1.0 percent a year per percent population increases. Unaccounted-for water averages 13 percent and is apportioned to all account types. Single family connections average 2.8 residents with approximately 164 gallons per person day use (gpcd). The City's total non-agricultural water use is 460 gpd connections.

TABLE 1

City of Shasta Lake
### CUSTOMER TYPES, NORMAL DEMAND AND DEMAND INCLUDING GROWTH

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family</td>
<td>2,763</td>
<td>1,580.3</td>
<td>1,590</td>
<td>1,638</td>
<td>1,688</td>
<td>1,737</td>
</tr>
<tr>
<td>Multi-Family</td>
<td>142</td>
<td>106.0</td>
<td>108</td>
<td>111</td>
<td>114</td>
<td>117</td>
</tr>
<tr>
<td>Commercial</td>
<td>128</td>
<td>122.2</td>
<td>124</td>
<td>128</td>
<td>132</td>
<td>136</td>
</tr>
<tr>
<td>Industrial</td>
<td>5</td>
<td>160.9</td>
<td>163</td>
<td>168</td>
<td>173</td>
<td>178</td>
</tr>
<tr>
<td>Governmental &amp; Recreational</td>
<td>30</td>
<td>67.2</td>
<td>68</td>
<td>70</td>
<td>72</td>
<td>74</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>(1) 3,068</strong></td>
<td><strong>(2) 2,036.6</strong></td>
<td><strong>(3) 2,053</strong></td>
<td><strong>(3) 2,115</strong></td>
<td><strong>(3) 2,179</strong></td>
<td><strong>(3) 2,244</strong></td>
</tr>
</tbody>
</table>

*See Above Totals

(1) These are physical connections and do not reflect actual number of single family residences.
(2) This amount includes unaccounted for water (water losses).
(3) Based upon 1993 usage with 3% growth rates.

SINGLE FAMILY and MULTI-FAMILY connections are projected to increase 3.0 percent a year starting in 1995. Existing single-family and multi-family connections use 460 GPD per connection (1992) and approximately 164 GPCD.

COMMERCIAL, INDUSTRIAL, and GOVERNMENTAL demand is projected to increase 3 percent a year, but this amount could increase if the City’s Industrial Park recruits a large industrial company, which uses a significant amount of water.

RECREATIONAL demand is expected to remain constant. Increased efficiency and landscape conversions at existing parks, golf courses, and cemeteries will provide sufficient water savings to supply new recreational projects contained in the general plan.

### Section 3 Worst Case Water Supply Availability for 12, 24, & 36 Months

California Water Code Section 10631. (e) (2) An estimate of the minimum water supply available at the end of 12, 24, & 36 months, assuming the worst case water supply shortages.
The City of Shasta Lake has the water sources listed below. Average water supply by source and projected worst case supply by source is provided in Table 2.

**TABLE 2**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shasta Dam Scheduled Contract</td>
<td>2,750</td>
<td>2,009</td>
<td>1,994</td>
<td>2,053.5</td>
<td>2,115</td>
<td>2,179.5</td>
<td>2,244</td>
</tr>
<tr>
<td>50% Cutback (Worst Case)</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td>1,026.5</td>
<td>1,058</td>
<td>1,089.5</td>
<td>1,122</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25% Cutback In Scheduled Contract</td>
<td>N/A</td>
<td>2,009</td>
<td>1,994</td>
<td>1,551.5</td>
<td>1,613</td>
<td>1,677.5</td>
<td>1,742</td>
</tr>
<tr>
<td>% Of Available Water</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>78%</td>
<td>81%</td>
<td>84%</td>
<td>87%</td>
</tr>
</tbody>
</table>

The above table indicates that under worst case contract cutbacks, the City will be required to acquire through purchase agreements, water from other entities with pre-1914 water rights (paper transfer). Cost of the acquired water could range from $30.00 per acre foot to $60.00 per acre foot.

**SHASTA DAM/USBR CENTRAL VALLEY PROJECT (CVP) CONTRACTS**

The CVP is owned and operated by the United States Bureau of Reclamation. The CVP project capacity of 7 million AFY is designed to provide annual deliveries of 2 million AFY during a seven year dry period. Under the contracts, CVP customers and water rights holders will receive varying percent reductions in deliveries. The City contract with the USBR has a total entitlement of 2,750 AFY. The water quality is good and costs the City $28.00 per acre foot. Reductions in deliveries are triggered by "Critical Year" determination by the USBR with maximum shortage being 25 percent of historical use.

**NEIGHBORING WATER DISTRICTS**

The City of Shasta Lake has two inter-ties with neighboring water districts. The neighboring water districts water supply is also from the USBR CVP. Any reductions to City of Shasta Lake Contracts would mean the other districts would have reductions.
also, and water would probably not be available for transfer. The inter-ties have been used in the past for short term emergency transfer. Long term transfers have not been made and only "paper transfers" are possible with pre-1914 water right holders. (i.e. Anderson Cottonwood Irrigation District)

WATER QUALITY AND EMERGENCY SUPPLIES
The City's water source is of excellent quality, and no problems resulting from industrial or agricultural containment are foreseen. Extended multi-week supply shortages due to natural disasters or accidents which damage all local surface sources are unlikely, due to the size of Shasta Lake. The City's storage reservoirs hold sufficient treated water to meet the health and safety requirements (50 gpcd) for City residents for a period of nineteen days.

Section 4  Stages of Action

California water Code Section 10631. (e) (3) 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.

The City has developed a four stage drought management plan. The City's plan includes voluntary and mandatory stages.

**TABLE 3**

<table>
<thead>
<tr>
<th>SHORTAGE</th>
<th>STAGE</th>
<th>DEMAND REDUCTION GOAL</th>
<th>TYPE PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 15%</td>
<td>Stage 1</td>
<td>15% Reduction</td>
<td>Voluntary</td>
</tr>
<tr>
<td>15 - 25%</td>
<td>Stage 2</td>
<td>25% Reduction</td>
<td>Mandatory</td>
</tr>
<tr>
<td>25 - 35%</td>
<td>Stage 3</td>
<td>35% Reduction</td>
<td>Mandatory</td>
</tr>
<tr>
<td>35 - 50%</td>
<td>Stage 4</td>
<td>50% Reduction</td>
<td>Mandatory</td>
</tr>
</tbody>
</table>

Mandatory reduction amounts are based on the amount used above the customer base amount. The customer base amount is calculated on their previous two year winter water usage, the months of January and February. Once the base average is determined. The allotment is then calculated based on the base amount plus 15% above the base average. For Stage 3, the customer would be allotted the base average. For Stage 4, 20% below the base average. This program treats all customer types the same. The plan has provisions for exception, variances, and appeals.
New connections are limited to 1500 cubic feet per month in Stages 2 and 3 and reduced to 1000 cubic feet in Stage 4. Penalties are assessed for use over the allotments; $2.00 per 100 cubic feet in Stage 2, $4.00 per 100 cubic feet in Stage 3 and $6.00 per 100 feet in Stage 4. The penalties are to discourage overuse.

SUPPLY SHORTAGE TRIGGERING LEVELS
The City of Shasta Lake has a legal responsibility to provide for the health and safety water needs of the community. In order to minimize the social and economic impact of water shortages, the City will manage water supplies prudently. This Plan is designed to provide a minimum of 50 percent of normal supply during a severe or extended water shortage. The following rationing program triggering levels are established to ensure that these policy statements are implemented.

The City’s water source is surface water (Shasta Lake). Rationing stages may be triggered by a shortage in Shasta Lake, but not limited to (1) reservoir drops (2) contract cut-backs. Stages may be triggered based upon shortages as noted above. The specific criteria for triggering the City’s rationing stages are listed in Table 4.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percent shortage</th>
<th>Water shortage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Up To 15% Supply Reduction</td>
<td>Combined Supply Reductions Totaling Up To 300 AFY</td>
</tr>
<tr>
<td>Stage 2</td>
<td>15 to 25% Supply Reduction</td>
<td>Combined Supply Reductions Totaling Between 300 and 500 AFY</td>
</tr>
<tr>
<td>Stage 3</td>
<td>25 to 35% Supply Reduction</td>
<td>Combined Supply Reductions Totaling Between 500 and 700 AFY</td>
</tr>
<tr>
<td>Stage 4</td>
<td>35 to 50+% Supply Reduction</td>
<td>Combined Supply Reductions Totaling 700 AFY and 1000 AFY</td>
</tr>
</tbody>
</table>

**TABLE 4**
WATER SUPPLY TRIGGERING LEVELS
(1985 – 1989 AVERAGE ALLOTMENT)

Section 5  Mandatory Prohibitions on Water Use

California Water Code Section 10631. (e) (4) Mandatory provisions to reduce water use which include prohibitions against specific wasteful practices, such as gutter flooding. The City has an existing Water Conservation Rationing Plan and attached Water Use Ordinance (see Appendix III).
Section 6  Consumption Limits

California Water Code Section 10631. (e) (5) Consumption limits in the most restrictive stages. Each urban water supplier may use any type of consumption limit in its water shortage contingency plan that would reduce water use and is appropriate for its area. Examples of consumption limits that may be used include, but are not limited to, percentage reductions in water allotments, per capita allocations, an increasing block rate schedule for high usage of water with incentives for conservation or restrictions on specific uses.

The City will establish individual customer allotments and consumption limits based on a three year base period. This gives the City a more accurate view of the usual water needs of each account and provides additional flexibility in determining allotments and reviewing appeals. However, no monthly base allotment may be greater than the three year average use for that month.

The City shall calculate each customer's allotment according to the methods described in Section 4. Each customer shall be notified of their allotment by mail before the effective date of the Water Shortage Emergency. New customers and connections will be notified at the time service commences. In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. Any customer may appeal the allotment on the basis of incorrect calculation. Appeals shall be processed and submitted to the Council through the City Engineer.

Section 7  Penalties or Charges for Excessive Use.

California Water Code Section 10631. (e) (6) allows penalties or charges for excessive use.

The City of Shasta Lake's current rate structure is provided in Appendix II, the penalties for exceeding the allotment are shown in the following table:

<table>
<thead>
<tr>
<th>Stage</th>
<th>Price per 100 cubic feet over the allotment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 2</td>
<td>$2.00</td>
</tr>
<tr>
<td>Stage 3</td>
<td>$4.00</td>
</tr>
<tr>
<td>Stage 4</td>
<td>$6.00</td>
</tr>
</tbody>
</table>

Service may be terminated to any customer who knowingly and willfully violates any provision of the Water Shortage Plan. As used herein, "excess water" means the amount of water delivered in excess of the account's established allotment during any billing period.
Section 8  Analysis of Revenue and Expenditure Impact

California Water Code Section 10631. (e) (7) An analysis of the impacts of the plan on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments. The City adopted drought surcharges in 1991-1992 to overcome revenue losses due to water sales. The revenue losses are estimated per Appendix IV.

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.

Section 9  Implementation of the Plan

California Water Code Section 10631 (e) (8) A draft water shortage contingency resolution or ordinance to carry out the urban Water Shortage Contingency Plan.

The Water Shortage Contingency Plan will require the City to approve a resolution similar to the sample in Appendix V.

Section 10  Water Use Monitoring Procedures

California Water Code Section 10631 (e) (9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency plan.

NORMAL MONITORING PROCEDURE
In normal water supply conditions, production figures are reported to the Senior Water Plant Operator. Totals are reported monthly to the City Engineer and incorporated into the water supply report.

STAGE 1 AND 2 WATER SHORTAGES
During a Stage 1 or 2 water shortage, daily production figures are reported to the Senior Water Plant Operator. The Senior Water Plant Operator compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the City Engineer and the City Manager. Monthly reports are sent to the City Council. If reduction goals are not met, the City Engineer will notify the City Council so that corrective action can be taken.

STAGE 3 AND 4 WATER SHORTAGES
During a disaster shortage, production figures will be reported to the Senior Water Plant Operator hourly, and to the City Manager. Reports will also be provided to the City Council.
Section 11 Plan Adoption Standards

California Water Code Section 10621 (a) Each urban water supplier shall, not later than January 31, 1992, prepare, adopt, and submit to the department an amendment to it Urban Water Management Plan which meets the requirements of Subdivision (e) of Section 10631.

California Water Code Section 10642. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier, pursuant to California Water Code Section 6066 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

The City of Shasta Lake will follow the appropriate California Water Code Section and conduct the necessary public hearings in May of 1994, and will approve plan no later than June 15, 1994.

California Water Code Section 10656. An urban water supplier that does not submit an amendment to its Urban Water Management Plan pursuant to Subdivision (a) of Section 10621 to the department by January 31, 1992, is eligible to receive drought assistance from the State until the Urban Water Management Plan is submitted, pursuant to Article 3, (commencing with Section 10640) of Chapter 3.
CITY OF SHASTA LAKE
WATER CONSERVATION/RATIONING PLAN

March 1994

The purpose of the Water Conservation/Rationing Plan is to establish a drought management plan to equitably distribute the available water to City customers, and to insure an adequate supply for human consumption, sanitation, fire protection, commercial, industrial, and medical needs.

STAGE ONE – VOLUNTARY CONSERVATION

The City's 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. Some restrictions do apply in an effort to reduce water consumption. Water conservation is encouraged through public education.

STAGE TWO – WATER ALERT

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. Additional restrictions apply in an effort to increase the conservation by 10% above Stage One.

STAGE THREE – WATER EMERGENCY

The City’s supply (treatment) or distribution system will not be able to meet all demands of City customers.

All indicated water reductions are to be based upon 1999 monthly acre-feet usage of the City.
STAGE ONE – VOLUNTARY CONSERVATION USE
(0 – 15% expected conservation of City acre feet monthly use.)

1. Water shall be used for beneficial uses only; all unnecessary and wasteful uses of water shall be prohibited.

2. Water 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, i.e. landscape irrigation, beyond the point of saturation.

3. Free-flowing hoses for any use shall be prohibited. Customers shall be encouraged to use automatic shutoff devices on any hose or filling apparatus, including evaporative coolers.

4. Leaking consumer pipes or faulty sprinklers shall be repaired immediately.

5. All pools, spas, and ornamental fountains/ponds shall be equipped with a recirculating pump, and shall be constructed to be leak-proof.

6. All industries and large water users, such as schools, supermarkets, civic buildings, etc., are encouraged to develop a water conservation plan indicating a 15% reduction in water usage, and submit to the City of Shasta Lake for approval within thirty (30) days of this declaration.

7. Parks and school grounds shall be watered at night only.

8. Water for golf courses may be restricted to use of reclaimed water when available (wastewater treatment plant) for irrigation purposes.

9. City of Shasta Lake shall encourage water reclamation for any agricultural, commercial, or industrial facility, as long as health and safety requirements can be met.

10. All new developments (homes) shall be required to install low flow devices (i.e., toilets and shower heads). All devices must meet City of Shasta Lake standard specifications prior to construction.

11. Restaurant customers shall receive water only upon request.

12. City of Shasta Lake shall conduct an extensive water conservation program which will include handouts, mailers, newspaper notices, along with radio and TV advertisement. City of Shasta Lake shall have available to all customers, water conservation retrofit kits.
STAGE TWO – WATER ALERT
(15% - 25% Expected Conservation of City Monthly Acre Feet Use)

NOTE: STAGE TWO CONSISTS OF STAGE ONE PLUS ADDITIONS AND AMENDMENTS SPECIFIED BELOW

1. All pools and spas shall be equipped with a recirculating pump and shall be constructed to be leak-proof. Water use for ornamental ponds and fountains shall be prohibited.

2. All industries and large commercial potable water users, such as schools, supermarkets, civic buildings, etc., shall update their Water Conservation Plans to indicate a 25% reduction in water use, and submit to City of Shasta Lake for approval within thirty (30) days of this declaration.

3. Parks and school grounds shall be watered at night only, three nights per week, and shall update their Water Conservation Plan to indicate a 25% reduction in water use, and submit to City of Shasta Lake for approval within thirty (30) days of this declaration.

4. All new developments (homes) shall be required to install low flow devices, i.e., toilets and shower heads, and to pay a $300 fee to City of Shasta Lake prior to construction, for purchase of water conservation retrofit kits.

5. Upon Stage Two declaration, no new landscaping shall be installed.

6. All residential and commercial customers shall be required to water at night and for only three (3) days per week. They shall also be encouraged to use low flow sprinkler heads and/or drip systems.

7. Washing of driveways and parking lots, except as necessary for health and safety, shall be prohibited.

8. All City of Shasta Lake residential and commercial water customers using excessive quantities of water shall be required to install retrofit kits. (City of Shasta Lake will have water conservation retrofit kits available.)

9. City of Shasta Lake may tier water rates to discourage excessive use of water and penalize water customers who fail to meet the 15% - 25% reduction.
STAGE THREE – WATER EMERGENCY
(25% - 40% Expected Conservation of City Monthly Acre Feet Use)

NOTE: STAGE ONE & STAGE TWO PLUS THE AMENDMENTS AND ADDITIONS LISTED BELOW SHALL BE ESTABLISHED FOR STAGE THREE WATER EMERGENCY REGULATIONS

1. Domestic 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 for public/community health and safety, i.e., fire suppression, medical, veterinarian, and educational institutions.

2. Residential and commercial landscaping and/or lawn irrigation with potable water shall be prohibited.

3. Swimming pools that have been filled prior to Stage Three shall not be emptied and refilled upon the declaration of Stage Three.

4. All industries and large commercial potable water users, such as schools, supermarkets, civic buildings, etc., shall update their Water Conservation Plan to indicate a 40% reduction in water use and submit to City of Shasta Lake for approval within 15 days of this declaration.

5. Parks, schools, and public grounds shall receive watering from reclaimed water only, such as water treatment plant backwash water, when available.

6. City of Shasta Lake shall require water reclamation for any agricultural, commercial, or industrial facility, as long as health and safety requirements can be met.

7. All new developments (homes) shall be required to install low flow devices, i.e., toilets and shower heads, and to pay a $500 fee to City of Shasta Lake prior to construction, for purchase of water conservation retrofit kits.

8. No new development (homes) shall be permitted unless the developer has paid connection fees prior to Stage Three declaration.

9. Flushing of sewers and fire hydrants shall be prohibited except in cases of emergency.

10. No potable water from the City system shall be used for construction purposes, such as dust control, compaction, or trench jetting.

11. City of Shasta Lake may tier water rates to discourage excessive use of water and penalize water customers who fail to meet a minimum 25% - 40% reduction.
EXCEPTIONS, VARIANCES, AND APPEALS

For hardship cases only, variances may be granted for any of the above regulations upon application in writing, stating, in detail, the circumstances warranting special consideration. Appeals of decisions made by the City Manager may be taken to the City Council by written request. It must be recognized that due to the water shortage emergency, the City has very limited ability to grant exceptions and/or variances to this water conservation/rationing plan, especially in Stage Two and Three.
ATTACHMENT F

1999 Water Quality Monitoring Report
To:

City of Shasta Lake
#4510006 Class (C)
Attn: Dennis Daily
P O Box 777
Shasta Lake, CA 96019

1999 ANNUAL REPORT TO THE DRINKING WATER PROGRAM
FOR MEDIUM AND LARGE WATER SYSTEMS
(For Year Ending December 31, 1999)

I. CHANGE OF NAME OR ADDRESS
(If Applicable)

II. ORGANIZATION

A. Manager/Superintendent (Specify) Jim Cain, City Manager
B. Primary Contact Person (If different) Dennis M. Daily, Public Works Supervisor
   Address P.O. Box 777 Shasta Lake, CA 96019
   Telephone / Fax Numbers. (530) 275-7419 (530) 275-7462
   E-mail Address dennis.daily@shasta-lake.ca.us

III. REPORT SUBMITTED BY:

A. Name/Title Dennis M. Daily, Public Works Supervisor
B. Date: April 19, 2000

IV. POPULATION SERVED

A. Permanent (Latest U.S. Census Bureau or Department of Finance data) 9,800
B. Seasonal Daily Maximum (If applicable)
V. DOMESTIC WATER SOURCES IN SYSTEM (As of December 31, 1999)

<table>
<thead>
<tr>
<th>Type</th>
<th>Total Approved</th>
<th>New/Added in 1999</th>
<th>Inactivated in 1999</th>
<th>Abandoned in 1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groundwater</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Surface Water</td>
<td>Shasta Lake</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Purchased Water</td>
<td>Shasta County Water Agency</td>
<td>None</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Standby*</td>
<td>Bella Vista Interie</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Inactive</td>
<td>None</td>
<td>N/A</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

* If standby source(s) were used in 1999, identify number of days in operation: 0

VI. WATER PRODUCED, PURCHASED AND SOLD

<table>
<thead>
<tr>
<th></th>
<th>Water Produced</th>
<th>Water Purchased</th>
<th>Water Sold (MG)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MG</td>
<td>MG</td>
<td>Other PWS</td>
</tr>
<tr>
<td>Maximum Day</td>
<td>5.331</td>
<td>0</td>
<td>Bella Vista NA City of Redding NA</td>
</tr>
<tr>
<td>Maximum Month Mo. July</td>
<td>136.337</td>
<td>0</td>
<td>Bella Vista .5 City of Redding Aug. 3.1</td>
</tr>
<tr>
<td>Annual Total</td>
<td>915.5091</td>
<td>0</td>
<td>Bella vista 1.2 City of Redding 16.7</td>
</tr>
</tbody>
</table>

Please submit a list of the other public water systems (PWS) that your water system sold water to, or purchased water from, in 1999.

VII. NUMBER OF SERVICE CONNECTIONS

<table>
<thead>
<tr>
<th>Type/Category</th>
<th>Metered</th>
<th>Flat Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>General &amp; residential (except commercial &amp; Industrial)</td>
<td>3,648</td>
<td>NA</td>
<td>3,648</td>
</tr>
<tr>
<td>Commercial</td>
<td>199</td>
<td>NA</td>
<td>199</td>
</tr>
<tr>
<td>Industrial</td>
<td>6</td>
<td>NA</td>
<td>6</td>
</tr>
<tr>
<td>Agricultural (irigation)</td>
<td>0</td>
<td>NA</td>
<td>0</td>
</tr>
<tr>
<td>Other Water Systems</td>
<td>0</td>
<td>NA</td>
<td>0</td>
</tr>
<tr>
<td>Total Active Connections</td>
<td>3,853</td>
<td>NA</td>
<td>3,853</td>
</tr>
</tbody>
</table>

Number of Inactive Connections (all types) Not Available
Number of Fire Hydrants 324
VIII. SYSTEM PROBLEMS

<table>
<thead>
<tr>
<th>Type of Problem</th>
<th>Number of Complaints Reported</th>
<th>Number of Complaints Investigated</th>
<th>DHS Notified (YN)</th>
<th>Cause/Corrections Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaks/Leaks</td>
<td>27 Main 131 Service</td>
<td>27</td>
<td>N</td>
<td>All repaired or replaced</td>
</tr>
<tr>
<td>Water Outages</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>NA</td>
</tr>
<tr>
<td>Boil Water Orders</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td>NA</td>
</tr>
<tr>
<td>Total</td>
<td>158</td>
<td>158</td>
<td>N</td>
<td>NA</td>
</tr>
</tbody>
</table>

Please provide a brief description of the cause and the corrective action taken for each problem identified.

IX. COMPLAINTS (Reported -Written or Verbal)

<table>
<thead>
<tr>
<th>Type of Complaint</th>
<th>Number of Complaints Reported</th>
<th>Number of Complaints Investigated</th>
<th>DHS Notified (YN)</th>
<th>Cause/Corrections Made</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste and Odor</td>
<td>2</td>
<td>2</td>
<td>N</td>
<td>High Cl2</td>
</tr>
<tr>
<td>Color</td>
<td>1</td>
<td>1</td>
<td>N</td>
<td>Caused by Flushing</td>
</tr>
<tr>
<td>Turbidity</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Worms and other Visible Organisms</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Pressure (High or Low)</td>
<td>7</td>
<td>7</td>
<td>N</td>
<td>Various causes—normally leaks in system</td>
</tr>
<tr>
<td>Illnesses (Waterborne)</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Other (Specify)</td>
<td>0</td>
<td>0</td>
<td>N</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>10</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

Please provide a brief description of the cause and the corrective actions taken for each reported complaint.

X. FLUORIDATION

Do you currently provide fluoridation treatment of your water supply? Yes    No    X
If Yes, please complete the Annual Fluoridation Report Form attached as Appendix A.

XI. METHYL TERTIARY-BUTYL ETHER (MTBE) MONITORING

Has your water system initiated MTBE monitoring of water sources? Yes    X    No
If Yes, provide copies of the monitoring results unless they have been previously submitted.

XII. EMERGENCY NOTIFICATION PLANS

Please review your Emergency Notification Plan and submit a revised plan if any changes are required to update the plan (Section 116460 of the Health and Safety Code). Please remove Roy Cahill from plan.
XII. OPERATIONS PLAN (Applicable to systems using surface water)

Please submit a copy of your current operations plan if changes were made to the plan in 1999. Date of Current Operations Plan: In Progress

XIV. LEAD AND COPPER

Please complete the following tables. Indicate Not Completed (NC) or Not Required (NR), if

<table>
<thead>
<tr>
<th>Category</th>
<th>Date Completed</th>
<th>Number of Samples</th>
<th>90th Percentile Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Round Initial Tap Monitoring</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Second Round Initial Tap Monitoring</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Tap Monitoring</td>
<td>NR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Date Started (month/year)</th>
<th>Date Completed (month/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source Water Monitoring</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Water Quality Parameters Monitoring</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Public Education Program</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Corrosion Control Studies</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Corrosion Control Treatment Installation</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Source Water Treatment Installation</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Lead Line Replacement</td>
<td>NR</td>
<td>NR</td>
</tr>
</tbody>
</table>

XV. WATER SYSTEM IMPROVEMENTS

Identify any major changes, additions, or improvements in the water system facilities and/or operation that were completed during 1999 or that are planned for 2000. (Water systems are required to submit an amended permit application for any addition or modification to water sources or treatment facilities pursuant to Section 116550 of the Health and Safety Code).

Painted exterior of Raw & Finished Water Tanks at Fisherman’s Point Treatment Plant.
Installation of Southeast Water Main
Plan to abandon tank at old Toyon Treatment Plant and install Pressure Regulating Valve.

XVI. BACTERIOLOGICAL SAMPLE SITING PLAN

The revised coliform monitoring regulations require that each system submit a sample siting plan. (Please submit a copy of this siting plan if it has been changed in 1999). Date of current siting plan: No change February 1992
XVII. DISASTER PREPAREDNESS/EMERGENCY RESPONSE PLANS

Do you have a Disaster Response Plan which addresses the procedures for the restoration of water services for your water system? Yes X No - If Yes, date of plan: 1999

Public water systems with 10,000 or more service connections are required to review and revise their disaster preparedness plans to ensure that the plans are sufficient to address possible disaster scenarios (Government Code, Section 8607.2). Date of last review/revision:

Please submit a copy of your current plan with this annual report.

XVIII. BACKFLOW PREVENTION ASSEMBLIES ON SERVICE CONNECTIONS

<table>
<thead>
<tr>
<th>Backflow Prevention Assemblies</th>
<th>Total Number in System</th>
<th>Number Installed in 1999</th>
<th>Number Tested in 1999</th>
<th>Number Failed in 1999</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33</td>
<td>5</td>
<td>30</td>
<td>0</td>
</tr>
</tbody>
</table>

Designated Cross Connection Control Program Coordinator:

Name Chuck Robinson

Telephone number (530) 275-7450

XIX. RECYCLED WATER PROJECTS IN SERVICE AREA (As of December 31, 1999).

<table>
<thead>
<tr>
<th>Recycled Water Use Sites</th>
<th>Number Approved</th>
<th>Number Proposed for 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irrigation</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sierra Pacific, McDonalds</td>
<td></td>
<td>Sierra Pacific</td>
</tr>
<tr>
<td>Industrial</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Dual-Plumbed (in-building)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Please attach a list of the specific recycled water use site(s).

XX. OPERATOR CERTIFICATION

Please list the State certified water treatment plant operators employed by your water system.

<table>
<thead>
<tr>
<th>NAME</th>
<th>OPERATOR NUMBER</th>
<th>GRADE OF OPERATOR</th>
<th>RENEWAL/EXPIRATION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chuck Robinson</td>
<td>09579</td>
<td>III</td>
<td>3-1-01</td>
</tr>
<tr>
<td>Tom Chism</td>
<td>15480</td>
<td>II</td>
<td>10-1-01</td>
</tr>
<tr>
<td>Art Gordon</td>
<td>11929</td>
<td>II</td>
<td>6-1-01</td>
</tr>
<tr>
<td>Dennis Daily</td>
<td>09574</td>
<td>II</td>
<td>2-1-01</td>
</tr>
</tbody>
</table>
ATTACHMENT G

Samples of Educational Materials
Water Conservation At Home

Easy ways to SAVE WATER MONEY & ENERGY at home
TIPS TO SAVE WATER AND ENERGY AT HOME

Every gallon of water you save helps conserve energy and cuts your water and energy bills.

USE APPLIANCES AFTER 7 P.M.
Use large appliances, such as washing machines and dishwashers, after peak hours. And make sure your dishwasher or clothes washer is full before running a load.

SAVE WATER OUTDOORS.
Lower the amount of water you use when you wash the car by turning off the hose, using a bucket for the wash, and doing a quick rinse. Save electricity and water by watering your garden or lawn during the nighttime or early morning hours. Also, use automated sprinklers and drip systems, set them to accommodate the weather, and consider plants that do not require lots of water.

TURN OFF YOUR TAP.
Hot water uses lots of energy. Take a shower instead of a bath (a bath uses about 42 gallons of water, while a 5-minute shower uses only about 16 gallons); turn off the tap when you shave (saves up to 12 gallons); and don’t forget to turn off the tap when you brush your teeth (saves up to 5 gallons of water).

REPAIR LEAKY TOILETS AND FAUCETS.
In one year, a leaky toilet wastes over 22,000 gallons of water. A leak in the sink of just a single drop per second wastes an additional 2,400 gallons each year. Repairing leaks is an easy, do-it-yourself way to save thousands of gallons of water and lower your water bill.

INSTALL WATER-EFFICIENT FIXTURES.
Put in water-efficient toilets and for each toilet fixture replaced you can save an average of $130 per year on your water and sewer bills. By installing a water-efficient showerhead, you can save even more!

REPLACE YOUR OLD APPLIANCES.
Send your old clothes washer and dishwasher into early retirement. New ENERGY STAR® labeled appliances use 50% less energy and 40% less water than standard models. Efficient clothes washers alone use less than half the energy of older models and save 20-30 gallons of water per load. Check your local stores or call your energy or water utilities for great rebates that can also save you money when you buy one of these newer models. Visit the Flex Your Power web site (www.flexyourpower.ca.gov) or call, toll-free, 1-866-YOURPWR (966-7797) for more information on financial incentives.

OTHER EASY ACTIONS YOU CAN TAKE TO SAVE ENERGY NOW

USE ONE REFRIGERATOR INSTEAD OF TWO.
You can save $150 a year just by unplugging your second refrigerator and recycling it.

ADJUST YOUR THERMOSTAT DIAL AND TURN UP ENERGY SAVINGS.
Set your thermostat to keep air conditioning at 78°F when it's hot outside, and your heating system at 68°F when it's cold. This simple step can help save up to 20% in heating and cooling costs.

DON'T LIGHT AN EMPTY ROOM.
Compact fluorescent bulbs save a lot. Turning out the lights saves even more. Turn off computers and other electronic equipment like ceiling fans and stereos when you're not using them.
WHEREAS, on March 4, 2014, City Council adopted Resolution CC 14-12 declaring a Water Shortage Emergency and imposing mandatory water use restrictions on all City customers; and

WHEREAS, on August 5, 2014, City Council adopted Resolution CC 14-54 enacting additional mandatory water use restrictions for compliance with the Department of Water Resources (DWR) Emergency Regulations for Statewide Urban Water Conservation which became effective on July 28, 2014; and

WHEREAS, on August 19, 2014, City Council conducted a duly noticed public hearing and adopted the 2010 Urban Water Management Plan; and

WHEREAS, the Urban Water Management Plan includes a Water Shortage Contingency Plan, which is an update to the Plan originally adopted in 1994; and

WHEREAS, City Council desires to update the Shasta Lake Municipal Code to incorporate the updated Water Shortage Contingency Plan, which includes a five-stage rationing plan that corresponds to the City's available water supply for any given year; and

WHEREAS, the proposed Ordinance would replace the current water use restrictions enacted by City Council Resolution CC 14-54 and would become effective thirty (30) days following its final adoption; and

WHEREAS, the proposed Ordinance is consistent with DWR's Emergency Regulations for Statewide Urban Water Conservation; and

WHEREAS, on September 2, 2014, City Council conducted a duly noticed public hearing to obtain testimony regarding the proposed Ordinance.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF SHASTA LAKE DOES HEREBY ORDAIN AS FOLLOWS:

SECTION I: The Shasta Lake Municipal Code is hereby amended as follows:

1. Sections 13.12.400 (Water-Shortage Emergency); Section 13.12.401 (Enforcement); Section 13.12.402 (Penalty for Violations); Section 13.12.403 (Appeals); and Section 13.12.404 (Remedies/Cumulative) are hereby rescinded in their entirety.

2. Chapter 13.14 (Water Conservation Plan) is hereby added as follows:
Chapter 13.14
Water Conservation and Drought Contingency Plan

13.14.010 Purpose
13.14.020 Definitions
13.14.030 Declaration of Water Shortage Emergency
13.14.040 Stage 1: Water Shortage Alert
13.14.050 Stage 2: Moderate Water Shortage
13.14.070 Stage 4: Severe Water Shortage
13.14.090 Enforcement
13.14.100 Penalties and Violations
13.14.110 Hardship Variances and Appeals

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.

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 (1") meter or larger, or more than one meter serving a property or facility, and single-family residential users with a water use of over 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.

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.
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. 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. Free-flowing hoses for any use shall be prohibited. Customers shall use automatic shutoff devices on any hose or filling apparatus.

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 10 percent reduction in water usage and submit the Plan to the City’s Water Conservation Coordinator for approval within thirty 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. All new development shall be required to install low flow devices (i.e., toilets and shower heads) pursuant to California Building Code standards.

12. Restaurant customers shall receive water only upon request.
13.14.050 STAGE 2: MODERATE WATER SHORTAGE

In Stage 2, there is an 11 - 20 % 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 10 percent above Stage 1.

### Stage 2: Moderate Water Shortage

All Measures from Stage 1 become Mandatory in Stage 2 unless noted as more restrictive

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Water use for ornamental ponds and fountains shall be prohibited.</td>
</tr>
<tr>
<td>2.</td>
<td>All large water users, such as industrial uses, schools, supermarkets, civic/government buildings, 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 20 percent reduction in water usage; Stage 3: Demonstrate a 30 percent reduction in water usage; Stage 4 Demonstrate a 40 percent reduction in water usage; Stage 5: Demonstrate a 50 percent reduction in water usage.</td>
</tr>
<tr>
<td>3.</td>
<td>Parks and 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 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 previous year.</td>
</tr>
<tr>
<td>4.</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>a. Drip, bubbler, or soaker irrigation hardware or emitters;</td>
</tr>
<tr>
<td></td>
<td>b. Use of an irrigation system for the express purposes of repairing or completing routine maintenance.</td>
</tr>
<tr>
<td></td>
<td>c. Watering by use of a hand-held bucket or similar container or a hand-held hose equipped with shut-off nozzle.</td>
</tr>
<tr>
<td></td>
<td>d. Watering by use of a hose-end sprinkler with a radius of not more than ten (10) feet if such sprinkler causes no overspray or runoff to adjoining property or to the roadside ditch or gutter.</td>
</tr>
<tr>
<td>5.</td>
<td>All City water customers who do not comply with the reduced consumption amount shall be required to install retrofit kits.</td>
</tr>
<tr>
<td>6.</td>
<td>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.</td>
</tr>
</tbody>
</table>
13.14.060 STAGE 3: EMERGENCY WATER SHORTAGE

In Stage 3, there is a 21 - 30% 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 10 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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Parks and 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 30 percent reduction in water use.</td>
</tr>
</tbody>
</table>
| 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 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 (10) 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 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. |
13.14.070 STAGE 4: SEVERE WATER SHORTAGE

In Stage 4, there is a 31 - 40% 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 10 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. Filling of new swimming pools is prohibited 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. No potable water from the City system shall be used for construction purposes, such as dust control, compaction, or trench jetting.

13.14.080 STAGE 5: CRITICAL WATER SHORTAGE EMERGENCY

In Stage 5, there is a 41 - 50% 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 10 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 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.
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.

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 $100.00 (one hundred dollars). 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 $200.00 (two hundred dollars). 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 $500.00 (five hundred dollars). 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 ordinance 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 (10) 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.

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 (10) 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 (10) 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.

SECTION 2: Severability: If any provision of this ordinance or the applications thereof to any person or circumstances is held invalid, the remainder of the ordinance and the applications of such provision will remain in effect to the extent permitted by law.

SECTION 3: This ordinance shall be effective thirty (30) days following its second reading and posting as provided for by City Code.

I HEREBY CERTIFY that the foregoing Ordinance was introduced and read at a regular meeting of the City Council of the City of Shasta Lake held on the 2nd day of September 2014 and was passed upon second reading at a regular meeting of the City Council of the City of Shasta Lake held on the 16th day of September 2014.

PASSED, APPROVED, AND ADOPTED this 16th day of September 2014 by the following vote:

AYES: CHAPMAN-SIFERS, FARR, KERN, WATKINS, MORGAN
NOES: NONE
ABSENT: NONE

ATTEST:

TONI M. COATES, CMC, City Clerk

PAMELYN ANNE MORGAN, Mayor
### Base Year Data

**Agency name:** City of Shasta Lake  
**Reporting unit number:** 91  
**Base Year:** 2008  

**BMP 1.3 Metering**
- Number of unmetered accounts in Base Year: 1.00

**BMP 3.1 & BMP 3.2 & BMP 3.3 Residential Programs**
- Number of Single Family Customers: 3,351
- Number of Multi Family Customers: 99

**BMP 3.4 WaterSense Specification (WSS) Toilets**
- Number of Single Family Units: 2,486
- Number of Multi Family Units: 76
  - Average number of toilets per Single Family household: 1.70
  - Average number of toilets per Multi Family household: 1.40
  - Average number of persons per Single Family household: 2.53
  - Average number of persons per Multi Family household: 2.70

**BMP 4.0 & BMP 5.0 CII & Landscape**
- Total water use (in Acre Feet) by CII accounts: 555.47
- Number of accounts with dedicated irrigation meters: 0.00
- Number of CII accounts without meters or with Mixed Use Meters: 0.00
- Number of CII accounts: 203.00

**Comments**
There is only one irrigation meter (Caltrans) and it uses 100% reuse water from the wastewater treatment plant.
Conservation Coordinator: Yes

**Contact Information**

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Title</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tony</td>
<td>Thomasy</td>
<td>Water Superintendent</td>
<td>530-275-7450</td>
<td><a href="mailto:tthomasy@cityofshastalake.org">tthomasy@cityofshastalake.org</a></td>
</tr>
</tbody>
</table>

**Water Waste Prevention**

<table>
<thead>
<tr>
<th>WW Document Name</th>
<th>WWP File Name</th>
<th>WW Prevention URL</th>
<th>WW Prevention Ordinance Terms Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option A Describe the ordinances or terms of service adopted by your agency to meet the water waste prevention requirements of this BMP.</td>
<td>Copy_of_Current_Water_Shortage_Emergency_Code_2013.pdf</td>
<td><a href="https://library.municode.com/index.aspx?clientid=16623&amp;stateid=5&amp;stateName=California">https://library.municode.com/index.aspx?clientid=16623&amp;stateid=5&amp;stateName=California</a></td>
<td>Water Shortage Emergency Ordinance: Imposes mandatory water use restrictions on all customers; includes enforcement and penalty provisions.</td>
</tr>
<tr>
<td>Option B Describe any water waste prevention ordinances or requirements adopted by your local jurisdiction or regulatory agencies within your service area.</td>
<td><a href="http://www.ecodes.biz/ecodes_support/Free_Resources/2013California/13Green/13Green_main.html">http://www.ecodes.biz/ecodes_support/Free_Resources/2013California/13Green/13Green_main.html</a></td>
<td></td>
<td>The City adopted and complies with the 2013 California Green Building Standards Code, which includes mandatory measures for water efficiency and conservation.</td>
</tr>
<tr>
<td>Option C Describe any documentation of support for legislation or regulations that prohibit water waste.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option D Describe your agency efforts to cooperate with other entities in the adoption or enforcement of local requirements consistent with this BMP.</td>
<td>Water Conservation Plan July 2000.pdf</td>
<td></td>
<td>The City coordinates water conservation efforts with the U.S. Bureau of Reclamation as shown in the Water Conservation Plan prepared for the Bureau. This document includes a Water Shortage Contingency Plan which will be updated in 2014.</td>
</tr>
<tr>
<td>Option E Describe your agency support positions with respect to adoption of legislation or regulations that are consistent with this BMP.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option F Describe your agency efforts to support local ordinances that establish permits requirements for water efficient design in new development.</td>
<td>Copy1_of_Water_Efficient_Landscape_Ordinance_2010.pdf</td>
<td></td>
<td>Water Efficient Landscaping: Requirements for water efficient landscaping</td>
</tr>
<tr>
<td>At Least As effective As</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>----</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exemption</td>
<td>No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
BMP 1.2 Water Loss Control 2013

Reporting unit name: City of Shasta Lake
Reporting unit number: 91

**AWWA Water Audit**
Agency to complete a Water Audit & Balance Using The AWWA Software Yes

Uploaded filename: 2013 water loss worksheet.xls

Water Audit Validity Score from AWWA spreadsheet: 75

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

**Water Loss Performance**
Agency Repaired All Reported Leaks & Breaks To The Extent Cost Effective Yes

**Recording Keeping Requirements Beginning in Year 2**
Does your agency maintain a record keeping system for the following?

<table>
<thead>
<tr>
<th>Date/Time Leak Reported</th>
<th>Leak Location</th>
<th>Type of Leaking Pipe Segment or Fitting</th>
<th>Leak Running Time From Report to Repair</th>
<th>Cost of Repair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Do you have an infrastructure rehabilitation and renewal program? Yes

Type of Program Activities Used to Detect Unreported Leaks:
Patrol water transmission mains/air reliefs/blow offs in remote areas annually. Yes

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? Yes

Does your agency keeps records of each component analysis performed, and incorporates results into future annual standard water balances? No

**Annual Summary Information**
Complete the following table with annual summary information (required for reporting years 2-5 only)

<table>
<thead>
<tr>
<th>Tota Leaks Repaired</th>
<th>Economic Val Of Real Loss</th>
<th>Economic Val Of App Loss</th>
<th>Miles Of System Surveyed For Leaks</th>
<th>Pressure Red Undertkn For Loss Reduction</th>
<th>Cost Of Interventions</th>
<th>Water Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>49</td>
<td>30</td>
<td>No</td>
<td></td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please describe your infrastructure rehabilitation and renewal activity below

Our infrastructure rehab plan is to prioritize repairs as follows:
Leaks, Transmission lines, Undersized lines, Unserved areas
Increased rates included a Capital component that has allowed us to accomplish our goals.

**AWWA Model**
### Operational Efficiency Indicator

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparent Losses per service connection per day</td>
<td>0.00</td>
</tr>
<tr>
<td>Real Losses per service connection per day</td>
<td>0.00</td>
</tr>
<tr>
<td>Real Losses per length of main per day</td>
<td>0.00</td>
</tr>
<tr>
<td>Real Losses per service connection per day per psi pressure</td>
<td>0.00</td>
</tr>
<tr>
<td>Unavoidable Annual Real Losses (UARL)</td>
<td>0.00</td>
</tr>
<tr>
<td>Above, Real Losses = Current Annual Real Losses (CARL)</td>
<td>0.00</td>
</tr>
<tr>
<td>Infrastructure Leakage Index (ILI) [CARL/UARL]</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**At Least As effective As** 
No

**Exemption** 
No

**Comments:**

---

**BMP 1.2 Water Loss Control 2013**
BMP 1.3 Metering With Commodity  2013

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

<table>
<thead>
<tr>
<th>Account Type</th>
<th>Num Of Metered Accounts</th>
<th>Num Of Metered Accounts Read</th>
<th>Num Of Metered Accounts Billed By Volume</th>
<th>Billing Frequency</th>
<th>Estimated Bills Per Year</th>
<th>Meter Readings Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Family</td>
<td>3377</td>
<td>3377</td>
<td>3377</td>
<td>Monthly</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Multi-Family</td>
<td>101</td>
<td>101</td>
<td>101</td>
<td>Monthly</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Commercial</td>
<td>187</td>
<td>187</td>
<td>187</td>
<td>Monthly</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Industrial</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>Monthly</td>
<td>12</td>
<td>12</td>
</tr>
</tbody>
</table>

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

Describe, upload or provide an electronic link to the Feasibility Study Upload File

N/A

At Least As effective As  No

Exemption  No

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.
### Implementation (Water Rate Structure)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class.

<table>
<thead>
<tr>
<th>Customer Class</th>
<th>Water Rate Type</th>
<th>Total Revenue Commodity Charges</th>
<th>Total Revenue Fixed Charges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Family</td>
<td>Increasing Block</td>
<td>929357.94</td>
<td>741463.72</td>
</tr>
<tr>
<td>Multi-Family</td>
<td>Increasing Block</td>
<td>51752.31</td>
<td>60735.09</td>
</tr>
<tr>
<td>Commercial</td>
<td>Increasing Block</td>
<td>181733.68</td>
<td>126754.72</td>
</tr>
<tr>
<td>Industrial</td>
<td>Increasing Block</td>
<td>164850.62</td>
<td>55018.45</td>
</tr>
<tr>
<td>Other</td>
<td>Increasing Block</td>
<td>86569.93</td>
<td>60917.61</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>1414264.48</strong></td>
<td><strong>1044889.59</strong></td>
</tr>
</tbody>
</table>

### Implementation (Conservation Pricing Option)

Enter the Water Rate Structures that are assigned to the majority of your customers, by customer class.

- Use Annual Revenue As Reported
- Use Canadian Water Wastewater (CWWA) Association Rate Design Model
- Use 3 years average instead of most recent year

If CWWA is selected, please upload spreadsheet here.

**Canadian Water and Wastewater Association**

**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.

<table>
<thead>
<tr>
<th>Sewer Rate Name</th>
<th>Customer Class Name</th>
<th>Sewer Total Revenue Commodity Charges</th>
<th>Sewer Total Revenue Customer Meter/Service (Fixed Charges)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Volumetric Flat Rate</td>
<td>Single-Family</td>
<td>1843999.69</td>
<td>1044889.59</td>
</tr>
<tr>
<td>Non-Volumetric Flat Rate</td>
<td>Multi-Family</td>
<td>222155.46</td>
<td></td>
</tr>
<tr>
<td>Non-Volumetric Flat Rate</td>
<td>Commercial</td>
<td>133369.97</td>
<td></td>
</tr>
<tr>
<td>Non-Volumetric Flat Rate</td>
<td>Industrial</td>
<td>23767.96</td>
<td></td>
</tr>
<tr>
<td>Non-Volumetric Flat Rate</td>
<td>Institutional</td>
<td>76588.21</td>
<td></td>
</tr>
<tr>
<td>Non-Volumetric Flat Rate</td>
<td>Other</td>
<td>162763.64</td>
<td></td>
</tr>
</tbody>
</table>

At Least As effective As: No

Exemption: No

Comments:
BMP 2.1 Public Outreach 2013

Reporting unit name: City of Shasta Lake
Reporting unit # 91

City of Shasta Lake

Does your agency perform Public Outreach programs? Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP
U.S. Bureau of Reclamation

Please provide the name of Agency if not CUWCC Group1 members

Public Information Programs List
Did at least one contact take place during each quarter of the reporting year? No

<table>
<thead>
<tr>
<th>Number of Public Contacts</th>
<th>Public Information Programs Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flyers and/or brochures (total copies), bill stuffers, messages printed on bill, information</td>
</tr>
<tr>
<td>4</td>
<td>Website</td>
</tr>
<tr>
<td>1</td>
<td>General water conservation information</td>
</tr>
</tbody>
</table>

Contact with the Media Yes

The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP
U.S. Bureau of Reclamation

Please provide the name of Agency if not CUWCC Group1 members

Did at least one contact take place during each quarter of the reporting year? No

Wholesale Agency Website Updates
The list of wholesale agencies performing public outreach which can be counted to help the agency comply with the BMP
U.S. Bureau of Reclamation

Please provide the name of Agency if not CUWCC Group1 members

Agency Website Updates
Enter your agency's URL (website address): http://www.cityofshastalake.org

Describe a minimum of four water conservation related updates to your agency's website that took place during the year:

Did at least one Website Update take place during each quarter of the reporting year? No

Public Information Programs Annual Budget
Enter budget for public outreach programs. You may enter total budget in a single line or break the budget into discrete categories by entering many rows. Please indicate if personnel costs are included in the entry.

<table>
<thead>
<tr>
<th>Annual Budget Category</th>
<th>Annual Budget Amount</th>
<th>Personal Cost Included?</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Conservation Program</td>
<td>6000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Public Information Expenses

Enter expenses for public outreach programs. Please include the same kind of expenses you included in the question related to 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.

<table>
<thead>
<tr>
<th>Public Outreach Expense Category</th>
<th>Expense Amount</th>
<th>Personal Cost Included?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CUWCC yearly dues</td>
<td>2510.2</td>
<td></td>
</tr>
</tbody>
</table>

Additional Public Information Program

Please report additional public information contacts. List these additional contacts in order of how your agency views their importance / effectiveness with respect to conserving water, with the most important / effective listed first (where 1 = most important).

Were there additional Public Outreach efforts? Yes

Public Outreach Additional Information

Social Marketing Programs

Branding

Does your agency have a water conservation “brand,” “theme” or mascot? No

Describe the brand, theme or mascot.

Market Research

Have you sponsored or participated in market research to refine your message? No

Market Research Topic

Brand Message

Brand Mission Statement

Community Committees

Do you have a community conservation committee? No

Enter the names of the community committees:

Training

Social Marketing Expenditures

Public Outreach Social Marketing Expenses

Partnering Programs

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:
<table>
<thead>
<tr>
<th>Partnering Programs - Newsletters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of newsletters per year</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Partnering with Other Utilities</strong></td>
</tr>
<tr>
<td>Describe other utilities your agency partners with, including electrical utilities</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Conservation Gardens</strong></td>
</tr>
<tr>
<td>Describe water conservation gardens at your agency or other high traffic areas or new homes</td>
</tr>
<tr>
<td><strong>Landscape contests or awards</strong></td>
</tr>
<tr>
<td>Describe water wise landscape contest or awards program conducted by your agency</td>
</tr>
<tr>
<td>Additional Programs supported by Agency but not mentioned above:</td>
</tr>
<tr>
<td><strong>At Least As effective As</strong></td>
</tr>
<tr>
<td>Exemption</td>
</tr>
<tr>
<td>Comments</td>
</tr>
</tbody>
</table>
### BMP 2.2 School Education Programs 2013

**Reporting unit name**: City of Shasta Lake  
**Reporting unit #**: 91 / Retail

**Does your agency perform Public Outreach programs?**  No

The list of wholesale agencies performing school education programs which can be counted to help the agency comply with the BMP

**Please provide the name of Agency if not CUWCC Group1 members**

- [ ] Materials meet state education framework requirements?  
  **Description**: [ ]

- [ ] Materials distributed to K-6 Students?  
  **Number of students reached**: [ ]

- [ ] Materials distributed to 7-12 Students? (optional)  
  **Annual budget for school education program**: [ ]

**Description of all other water supplier education programs**

### 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**: [ ]  
- **Number of attendees**: [ ]

#### Cooperative efforts with existing science/water education programs (various workshops, science fair awards or 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:
- **Number offered**: [ ]  
- **Total funding**: [ ]

**Teacher training workshops:**
### BMP 2.2 School Education Programs 2013

<table>
<thead>
<tr>
<th>Number of presentation</th>
<th>Number of attendees</th>
</tr>
</thead>
</table>

**Fund and/or staff student field trips to treatment facilities, recycling facilities, water conservation gardens, etc.:**

<table>
<thead>
<tr>
<th>Number of tours or fieldtrips</th>
<th>Number of participants</th>
</tr>
</thead>
</table>

**College internships in water conservation offered:**

<table>
<thead>
<tr>
<th>Number of internship</th>
<th>Total funding</th>
</tr>
</thead>
</table>

**Career Fairs / Workshops:**

<table>
<thead>
<tr>
<th>Number of presentation</th>
<th>Number of attendees</th>
</tr>
</thead>
</table>

**Additional program(s) supported by agency but not mentioned above:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of events</th>
<th>Number of participants</th>
</tr>
</thead>
</table>

**Comments**

<table>
<thead>
<tr>
<th>At Least As effective As</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Exemption</th>
<th></th>
</tr>
</thead>
</table>

**Exemption**

| No | 0 |
BMP 3. Residential

Agency: City of Shasta Lake
Date Agency Signed MOU: 7/1/1996

Coverage Option: GPCD

Total Measured Water Savings (AF/Year)

<table>
<thead>
<tr>
<th>TRADITIONAL</th>
<th>FLEXTRACK</th>
<th>ACTUAL</th>
<th>TARGET</th>
<th>Prior Activities Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.56</td>
<td>0</td>
<td>0.56</td>
<td>5.77</td>
<td></td>
</tr>
</tbody>
</table>

Residential Assistance

<table>
<thead>
<tr>
<th></th>
<th>Single Family Accounts</th>
<th>Single Family Target</th>
<th>Multi Family Units</th>
<th>Multi Family Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number Of Accounts/Units</td>
<td>3377</td>
<td></td>
<td>101</td>
<td></td>
</tr>
<tr>
<td>Total Participants during Reporting</td>
<td>100</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of Leak Detection Surveys or Assistance on Customer Property</td>
<td>0</td>
<td>25.33</td>
<td>0</td>
<td>0.76</td>
</tr>
<tr>
<td>Number of Faucet Aerators Distributed</td>
<td>50</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Number of WSS Showerheads Distributed</td>
<td>50</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Landscape Water Surveys</td>
<td>0</td>
<td>25.33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Has agency reached a 75% market saturation for showerheads? No

High Efficiency Clothes Washers

<table>
<thead>
<tr>
<th></th>
<th>Single Family Accounts</th>
<th>Single Family Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of installations for HECW</td>
<td>14</td>
<td>33.77</td>
</tr>
</tbody>
</table>

Are financial incentives provided for HECWs? Yes

Has agency completed a HECW Market Penetration Study? No

Water Sense Specification Toilets

Retrofit 'On Resale' Ordinance exists No

75% Market Penetration Achieved No

<table>
<thead>
<tr>
<th></th>
<th>Single Family Units</th>
<th>Multi Family Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Five year average Resale Rate</td>
<td>0.02</td>
<td>0.05</td>
</tr>
<tr>
<td>Number Toilets per Household</td>
<td>1.7</td>
<td>1.4</td>
</tr>
<tr>
<td>Number WSS Toilets Installed</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Target Number of WSS Toilets</td>
<td>57.41</td>
<td>3.61</td>
</tr>
</tbody>
</table>

WSS for New Residential Development

Does an Ordinance Exists Requiring WSS Fixtures and Appliances in new SF and MF residences? Single Family Units | Multi Family Units

Yes | Yes

Number of new SF & MF units built

Incentives

6 | 0
Unique Conservation Measures

Residential Assistance / Landscape Water Survey unique water savings
Measured water savings (AF/YR) 0
Uploaded file name:

High Efficiency Clothes Washers unique water savings
Measured water savings (AF/YR) 0
Uploaded file name:

WaterSense Specification toilets unique water savings
SF Measured water savings (AF/YR) 0
MF Measured water savings (AF/YR) 0
Uploaded file name:

WaterSense Specification toilets for New Residential development unique water savings
Measured water savings (AF/YR) 0
Uploaded file name:

High bill contact with single-family and multi-family customers
Measured water savings (AF/YR) 0
Uploaded file name:

Educate residential customers about the behavioral aspects of water conservation
Measured water savings (AF/YR) 0
Uploaded file name:

Notify residential customers of leaks on the customer’s side of the meters
Measured water savings (AF/YR) 0
Uploaded file name: Sample water leak letter.doc

Provide bill or surcharge refunds for customers to repair leaks on the customer’s side of the meters
Measured water savings (AF/YR) 0
Uploaded file name:

Provide unique water savings fixtures that are not included in the BMP list above
Measured water savings (AF/YR) 0
Uploaded file name:

Install residence water use monitors
Measured water savings (AF/YR) 0
Uploaded file name:

Participate in programs that provide residences with school water conservation kits
Measured water savings (AF/YR) 0
Uploaded file name:

Implement in automatic meter reading program for residential customers
Measured water savings (AF/YR) 0
Uploaded file name:

OTHER Types of Measures
Measured water savings (AF/YR)  0

Uploaded file name:

Comments:

There were a total of 14 HECW installations in 2013.

At Least As Effective As  No

Exemption  No
**BMP 4. Commercial Industrial Institutional 2013**

**Agency** City of Shasta Lake  
**Date Agency Signed MOU:** 7/1/1996

**Coverage Option:** GPCD  
**CII Baseline Water Use (AF):** 555.47  
**CII Water Use Reduction (AF):** 55.547

### Total Measured Water Savings (AF/Year)

<table>
<thead>
<tr>
<th>TRADITIONAL</th>
<th>FLEXTRACK</th>
<th>ACTUAL</th>
<th>TARGET</th>
<th>Prior Activities Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Water Efficiency Measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>Quantity Installed</th>
<th>Water Savings</th>
<th>Accept Council's default value</th>
<th>Uploaded backup data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 High Efficiency Toilets (1.2 GPF or less)</td>
<td>0</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2 High Efficiency Urinals (0.5 GPF or less)</td>
<td>0</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3 Ultra Low Flow Urinals</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>4 Zero Consumption Urinals</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>5 Commercial High Efficiency Single Load Clothes Washers</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>6 Cooling Tower Conductivity Controllers</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>7 Cooling Tower pH Controllers</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>8 Connectionless Food Steamers</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>9 Medical Equipment Steam Sterilizers</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>10 Water Efficient Ice Machines</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>11 Pressurized Water Brooms</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>12 Dry Vacuum Pumps</td>
<td>0.00</td>
<td>0.00</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

### Unique Conservation Measures

#### Industrial Process Water Use Reduction

**Measured water savings (AF/YR):** 0  
**Uploaded file name:**

#### Commercial Laundry Retrofits

**Measured water savings (AF/YR):** 0  
**Uploaded file name:**

#### Industrial Laundry Retrofits

**Measured water savings (AF/YR):** 0  
**Uploaded file name:**

#### Filter Upgrades (for pools, spas and fountains)

**Measured water savings (AF/YR):** 0  
**Uploaded file name:**
Car Wash Reclamation Systems
Measured water savings (AF/YR) 0

Wet Cleaning
Measured water savings (AF/YR)

Water Audits (to avoid double counting, do not include device/replacement water savings
Measured water savings (AF/YR) 0

Clean In Place (CIP) Technology (such as bottle sterilization in a beverage processing plant)
Measured water savings (AF/YR) 0

Waterless Wok
Measured water savings (AF/YR) 0

Alternative On-site Water Sources
Measured water savings (AF/YR) 0

Sub-metering
Measured water savings (AF/YR) 0

High Efficiency Showerheads
Measured water savings (AF/YR) 0

Faucet Flow Restrictors
Measured water savings (AF/YR) 0

Water Efficiency Dishwashers
Measured water savings (AF/YR) 0

Hor Water on Demand
Measured water savings (AF/YR) 0

Pre-rinse spray Valves of 1.3 gpm (gallons per minute) or less
Measured water savings (AF/YR) 0

Central Flush Systems
Measured water savings (AF/YR) 0
Uploaded file name:

**Other Measures chosen by the Agency**

Measured water savings (AF/YR) 0
Uploaded file name:

**Comments:**

**At Least As Effective As**

No

**Exemption**

No
### 1) Accounts with Dedicated Irrigation Meters

a) Number of dedicated irrigation meter accounts: 21
b) Number of dedicated irrigation meter accounts with water budgets: 0
c) Aggregate water use for all dedicated non-recreational landscape accounts with water budgets: 0
d) Aggregate acreage assigned water budgets for dedicated non-recreational landscape accounts with budgets: 0

Aggregate acreage of recreational areas assigned water budgets for dedicated recreational landscape accounts with budgets: 0

Preserved water use records and budgets for customers with dedicated landscape irrigation accounts for at least four years: No

Unique measured water Savings (AF/YR) in technical assistance: No

Uploaded the backup data if there are unique measured water savings: No

### Technical Assistance

Number of Accounts 20% over-budget: 0
Number of Accounts 20% over-budget offered technical assistance: 0
Number of Accounts 20% over-budget accepting technical assistance: 0

Unique measured water Savings (AF/YR) in technical assistance: No

Uploaded the backup data if there are unique measured water savings: No

### 2) Commercial / Industrial / Institutional Accounts without Meters or with Mixed-Use Meters

Number of mixed use and un-metered accounts: 0
Number of irrigation water use surveys offered: 0
Number of irrigation water use surveys accepted: 0

Type: Incentives numbers received by customers: 0 $ Value: 0
Type: Rebates numbers received by customers: 0 $ Value: 0
Type No- or low-interest loan offered numbers received by customers: 0 $ Value: 0

Annual water savings by customers receiving irrigation water savings surveys and implementing recommendations: 0

Estimated annual water savings by customers receiving surveys and implementing recommendations: 0
Unique measured water savings (AF/YR) in this measure

Uploaded the backup data if there are unique measured water savings? No

Financial Incentives

Unique measured water savings (AF/YR) in Financial incentives

Uploaded the backup data if there are unique measured water savings? No

Landscape Flex Track Measure Types

1. Monitor and report on landscape water use

1a. Measure landscapes and develop water budgets for customers with dedicated landscape meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Uploaded file name:

1b. Measure landscapes and develop water budgets for customers with Mixed Use meters. Provide timely water use reports with comparisons of water use to budget that provide customers the information they need to adjust irrigation schedules.

Uploaded file name:

1c. Establish agency-wide water budget. (Include in Help notes: ETo based water budget in the MWELO changed in 2010 from .8ETo to .7ETo.)

Uploaded file name:

1d. Establish agency-wide, sector-based irrigation goal to reduce water use, based on season.

Uploaded file name:

2. Provide technical landscape resources and training

2a. Upon customer requests, provide landscape irrigation management and landscape design information and resources: provide assistance, answer customer questions, respond to run-off and high-bill calls.

Uploaded file name:

2b. Perform landscape & irrigation audits: including irrigation scheduling, plant information, and landscape area measurement.

Uploaded file name:

2c. Sponsor, co-sponsor, promote, or support landscape workshops, training, presentations and other technical educational events for homeowners and professionals: design, installation, maintenance, water management.

Uploaded file name:

2d. Establish time-of-day irrigation restrictions.

Uploaded file name:

2e. Establish day-of-week irrigation restrictions.

Uploaded file name:

3. Provide incentives

3a. Establish landscape budget-based rates.

Uploaded file name:

3b. Provide incentives for conversions from mixed-use meters to dedicated landscape meters.

Uploaded file name:
3c. Provide incentives for irrigation equipment upgrades that improve distribution uniformity, irrigation efficiency, or scheduling capabilities.

Uploaded file name:

3d. Provide incentives for the reduction of water use over an irrigated area, or reduction in the size of the irrigated area due to replacement of turf or other high water-using plants with low-water-using plants, artificial turf, or permeable surfaces.

Uploaded file name:

3e. Provide incentives for conversions from potable to recycled water.

Uploaded file name:

3f. Provide incentives for the use of alternative sources of water in the landscape (i.e. gray water, rainwater, cisterns, etc.)

Uploaded file name:

4. Participate in local and regional planning and regulatory activities

4a. Collaborate with planning agencies at the local and regional level, other water suppliers in the area and stakeholders in response to state or federal requirements such as the State Model Water Efficient Landscape Ordinance and AB 1881. Participate in the development, review, implementation, and enforcement of requirements for new developments. Provide water use data to planning agencies.

4b. Establish or participate in a water conservation advisory committee or other community outreach effort to drive market transformation and exchange information about landscape water conservation with developers, community-based organizations, homeowners associations, residential customers, landscape professionals, educators, other water suppliers in region.

4c. Participate in regional efforts: integrated water resource management, watershed management, NPDES permit agencies, etc.

5. Develop a holistic approach to landscape water use efficiency

5a. Develop and implement a comprehensive landscape water conservation program for all customers. Target marketing efforts to those most likely to result in benefits to both customer and Agency.

Uploaded file name:

6. Other Measures

Other Landscape Measures.

Uploaded file name:

Comments:

At Least As Effective As

Exemption

No

No
### 2013 Non Potable Water Sources

Service Area Population: 10100

<table>
<thead>
<tr>
<th>Local Watershed</th>
<th>AF / Year</th>
<th>Water Supply Type</th>
<th>Water Supply Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Shasta Lake</td>
<td>387.69</td>
<td>Recycled Non Potable</td>
<td>Reclaimed Water - City Wastewater Treatment Plant</td>
</tr>
<tr>
<td></td>
<td>387.69</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2013 Potable Water Sources

**Service Area Population:** 10100

<table>
<thead>
<tr>
<th>Imported</th>
<th>AF / Year</th>
<th>Water Supply Type</th>
<th>Water Supply Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bureau of Reclamation</td>
<td>4400.00</td>
<td>Surface</td>
<td>CVP Contract Water</td>
</tr>
<tr>
<td>Shasta County Water Agency</td>
<td>50.00</td>
<td>Surface</td>
<td>Annual Agreement - CVP Contract Water</td>
</tr>
</tbody>
</table>

**Total Imported AF / Year:** 4450.00
# Non Potable Water Uses

## Billed:

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>Metered Accounts</th>
<th>Metered Water Delivered AF/Year</th>
<th>Un-Metered Accounts</th>
<th>Un-Metered Water Delivered AF/Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated Irrigation</td>
<td>1</td>
<td>25.41</td>
<td></td>
<td></td>
<td>Caltrans Landscaping</td>
</tr>
<tr>
<td>Dedicated Irrigation</td>
<td>1</td>
<td>37.07</td>
<td></td>
<td></td>
<td>Knauf Insulation Landscaping</td>
</tr>
<tr>
<td>Industrial</td>
<td>1</td>
<td>73.50</td>
<td></td>
<td></td>
<td>Sierra Pacific Industries</td>
</tr>
</tbody>
</table>

## Un-Billed:

<table>
<thead>
<tr>
<th>Customer Type</th>
<th>Metered Accounts</th>
<th>Metered Water Delivered AF/Year</th>
<th>Un-Metered Accounts</th>
<th>Un-Metered Water Delivered AF/Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dedicated Irrigation</td>
<td>1</td>
<td>251.71</td>
<td></td>
<td></td>
<td>City of Shasta Lake</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>251.71</td>
<td></td>
<td></td>
<td>Spray Fields</td>
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</table>
# 2013 Potable Water Uses

## Billed:

<table>
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<th>CustomerType</th>
<th>Metered Accounts</th>
<th>Metered Water Delivered AF/Year</th>
<th>Un-Metered Accounts</th>
<th>Un-Metered Water Delivered AF/Year</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Family</td>
<td>3377</td>
<td>1744.82</td>
<td>0</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Multi-Family</td>
<td>101</td>
<td>93.06</td>
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<td>0.00</td>
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<tr>
<td>Commercial</td>
<td>187</td>
<td>298.59</td>
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<td>0.00</td>
<td>Includes Institutional</td>
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<tr>
<td>Industrial</td>
<td>10</td>
<td>270.74</td>
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3675 2407.21 0 0.00

## Un-Billed:

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<thead>
<tr>
<th>CustomerType</th>
<th>Metered Accounts</th>
<th>Metered Water Delivered AF/Year</th>
<th>Un-Metered Accounts</th>
<th>Un-Metered Water Delivered AF/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Un-Billed:
### AB 1420 Self-Certification Statement Table 1

**Note:** Table 1 documents Status of Past and Current BMP implementation.

---

**Self-Certification Statement:** The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1, and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1, and Table 2 and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General's Office.

---

**Name of Signatory:** Tony Thomasy  
**Title of Signatory:** Water Treatment Superintendent  
**Signature of signatory:** ______________________________  
**Date:** ____________________

---

**Application Date:** N/A

---

**Proposal Identification Number:**

<table>
<thead>
<tr>
<th>CUWCC Member?</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

---

**Has Urban Water Supplier submitted a 2005 Urban Water Management Plan?**

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

---

**Is the UWM Plan Deemed Complete by DWR?**

<table>
<thead>
<tr>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
</tr>
</tbody>
</table>

---

**Applicant Name:** City of Shasta Lake

---

**Project Title:** N/A

---

**Applicant's Contact Information:**

- **Name:** N/A
- **Phone:** N/A
- **E-mail:** N/A

---

**Participants:**

<table>
<thead>
<tr>
<th>City of Shasta Lake</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

---

**BMPs Implementation Requirements Met**

<table>
<thead>
<tr>
<th>BMPs Implemented by Retailers and/or Wholesalers / BMP</th>
<th>Compliance Options/Alternative Conservation Approaches (1)</th>
<th>BMP Is Exempt (2)</th>
<th>BMP Implementation Requirements Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No Retailer</td>
<td>Yes/No Wholesaler</td>
<td>Yes/No Regional</td>
<td>BMP Checklist</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>✓ BMP 1 Water Survey for Single/Multi-Family Residential Customers</td>
<td>Yes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>✓ BMP 2 Residential Plumbing Retrofit</td>
<td>Yes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>✓ BMP 3 System Water Audits, Leak Detection</td>
<td>Yes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>✓ ✓ BMP 3 Leak Repairs</td>
<td>Yes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>✓ ✓ BMP 4 Metering with Commodity Rates for All New connections</td>
<td>Yes</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>✓ ✓ BMP 4 Retrofit of Existing Connections</td>
<td>Yes</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
### BMPs Required for Wholesale Supplier

<table>
<thead>
<tr>
<th>BMPs</th>
<th>Retailer</th>
<th>Wholesaler</th>
<th>Regional</th>
<th>BMP Implemented by Retailers and/or Wholesalers / BMP</th>
<th>Compliance Options/Alternative Conservation Approaches (1)</th>
<th>BMP Is Exempt (2)</th>
<th>BMP Implementation Requirements Met</th>
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<td>Yes/No</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td>Gallons Per Capita Per Day GPCD</td>
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<td>Yes/No</td>
<td>Yes/No</td>
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</table>

**C6:** Wholesaler may also be a retailer (supplying water to end water users)

**C8, **C9, **C10: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.


(2) BMP is exempt based on cost-effectiveness, lack of funding, and lack of legal authority criteria as detailed in the CUWCC MOU.

(3) Non MOU signatories must submit to DWR reports and supporting documents in the same format as CUWCC.
### AB 1420 Self-Certification Statement Table 2

Provide Schedule, Budget, and Finance Plan to Demonstrate Commitment to Implement All BMP's to Become in Compliance with BMP Implementation - Commencing Within 1st Year of Agreement for Which Applicant Receives Funds.

**Self-Certification Statement:** The Urban Water Supplier and its authorized representative certifies, under penalty of perjury, that all information and claims, stated in this table, regarding compliance and implementation of the BMPs, including alternative conservation approaches, are true and accurate. This signed AB 1420 Self-Certification Statement Table 1 and Table 2 are the basis for granting funds by the Funding Agency. Falsification and/or inaccuracies in AB 1420 Self Certification Statement Table 1 and Table 2, and in any supporting documents substantiating such claims may, at the discretion of the funding agency, result in loss of all State funds to the applicant. Additionally, the Funding Agency, in its sole discretion, may halt disbursement of grant or loan funds, not pay pending invoices, and/or pursue any other applicable legal remedy and refer the matter to the Attorney General’s Office.

Name of Signatory: Tony Thomasy
Title of Signatory: Water Treatment Superintendent
Signature of signatory __________________________ Date ______________________

| Participants: | City of Shasta Lake |
| C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 | C17 | C18 | C19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

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<th>Required for Retail Supplier</th>
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<th>Required for Wholesale Supplier</th>
<th>Required for Retail Supplier</th>
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1. Utility Operations Programs

1.1. BMP 13 Water Waste Prohibitions
1.1.1. BMP 13.1 Wholesale Agency Assistance Programs
1.1.2. BMP 13.2 System Water Audits, Leak Detection/Repair
1.1.3. BMP 13.3 Metering with Commodity Rates for All New/Retrofit of Existing connections
1.2. BMP 14 Metering with Commodity Rates for All New/Retrofit of Existing connections
1.3. BMP 15 Vit Water Survey for Single/Multi-Family Residential Customers
1.4. BMP 15.1 Indoor Water Survey for Single/Multi-Family Residential Customers

2. Educational Programs

2.1. BMP 2 Public Information
2.2. BMP 2 School Education

3. Residential

3.1. BMP 1 Residential Water Survey for Single/Multi-Family Residential Customers

<table>
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<th>Retailer (List Below)</th>
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<tr>
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<td>BMPs Required for Wholesaler</td>
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*C6: Wholesaler may also be a retailer (supplying water to end water users)*

**C9, **C10, and **C11: Agencies choosing an alternative conservation approach are responsible for achieving water savings equal or greater than that which they would have achieved using only BMP list.


(2) BMP is exempt based on cost-effectiveness, lack of funding, or lack of legal authority, as detailed in the CUWCC MOU.
Chapter 15.10 Water Efficient Landscaping

Sections:

15.10.010 Purpose.
15.10.020 Applicability.
15.10.030 Definitions.
15.10.040 Landscape documentation package review and approval required.
15.10.050 Elements of landscape documentation package.
15.10.060 Certificate of completion.
15.10.070 Irrigation scheduling.
15.10.080 Landscape and irrigation maintenance schedule.
15.10.090 Irrigation audit, survey and water use analysis.
15.10.100 Irrigation efficiency.
15.10.110 Recycled water.
15.10.120 Stormwater management.
15.10.130 Model homes/public education.
15.10.140 Environmental review.
15.10.150 Provisions for existing landscapes.
15.10.160 Water waste prevention.
15.10.170 Effective precipitation.
15.10.180 Ongoing monitoring.
15.10.190 Exceptions.
15.10.200 Enforcement.

15.10.010 Purpose.

The purpose of this chapter is to comply with the requirements of the California Water Conservation Landscaping Act of 2006 (AB 1881), codified as Government Code Section 65591 et seq. Furthermore, the specific purposes of this chapter are to:

A. Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible.

B. Ensure the attainment of water-efficient landscape goals by requiring that landscapes not exceed a maximum water demand.

C. Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction and rehabilitated projects.

D. Establish provisions for water management practices and water waste prevention for existing landscapes.
E. Establish the city’s responsibilities for administering programs to ensure compliance with the provisions for this chapter and of the California Water Conservation in Landscaping Act of 2006.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.020 Applicability.

A. This chapter shall apply to all of the following landscape projects submitted to the city on January 1, 2010, or later:

1. New construction and rehabilitated landscapes for public agency projects and private development projects with a landscape area equal to or greater than two thousand five hundred (2,500) square feet requiring a building or grading permit, plan check or design review.

2. New construction and rehabilitated landscapes which are developer-installed in single-family and multifamily projects with a landscape area equal to or greater than two thousand five hundred (2,500) square feet requiring a building or grading permit, plan check, or design review.

3. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multifamily residential projects with a total project landscape area equal to or greater than five thousand (5,000) square feet requiring a building or grading permit, plan check or design review.

4. Existing landscapes over one acre in size installed before January 1, 2010, limited to the provisions of Section 15.10.150 of this chapter.

5. Cemeteries. Recognizing the special landscape management needs of cemeteries, new and rehabilitated cemeteries are limited to the provisions of Sections 15.10.050(B), 15.10.080 and 15.10.090; and existing cemeteries are limited to the provisions of Sections 15.10.150 and 15.10.060 of this chapter.

B. This chapter does not apply to:

1. Registered local, state or federal historical sites;
2. Ecological restoration projects that do not require a permanent irrigation system;
3. Mined-land reclamation projects that do not require a permanent irrigation system;
4. Plant collections, as part of botanical gardens and arboretums open to the public; or
5. Projects which use solely reclaimed water for irrigation.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.030 Definitions.

"Applied water" means the portion of water supplied by the irrigation system to the landscape.

"Automatic irrigation controller" means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers schedule irrigation events using either evapotranspiration (weather-based) or soil moisture data.

"Backflow prevention device" means a safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

"Certificate of completion" means the document required under Section 15.10.060.

"Certified irrigation designer" means a person certified to design irrigation systems by an accredited academic institution, a professional trade organization or other program such as the US Environmental
Protection Agency's WaterSense irrigation designer certification program and Irrigation Association's Certified Irrigation Designer program.

"Certified landscape irrigation auditor" means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other program such as the US Environmental Protection Agency's WaterSense irrigation auditor certification program and Irrigation Association's Certified Landscape Irrigation Auditor program.

"Check valve" or "anti-drain valve" means a valve located under a sprinkler head, or other location in the irrigation system, to hold water in the system to prevent drainage from sprinkler heads when the sprinkler is off.

"Common interest developments" means community apartment projects, condominium projects, planned developments, and stock cooperatives per Civil Code Section 1351.

"Conversion factor (0.62)" means the number that converts acre-inches per acre per year to gallons per square foot per year.

"Drip irrigation" means any nonspray low volume irrigation system utilizing emission devices with a flow rate measured in gallons per hour. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

"Ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

"Effective precipitation" or "usable rainfall" (Eppt) means the portion of total precipitation which becomes available for plant growth.

"Emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.

"Established landscape" means the point at which plants in the landscape have developed significant root growth into the soil. Typically, most plants are established after one or two years of growth.

"Establishment period of the plants" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment. Typically, most plants are established after one or two years of growth.

"Estimated total water use" (ETWU) means the total water used for the landscape as described in Section 15.10.050(B).

"ET adjustment factor" (ETAF) means a factor of 0.7, that, when applied to reference evapotranspiration, adjusts for plant factors and irrigation efficiency, two major influences upon the amount of water that needs to be applied to the landscape. A combined plant mix with a site-wide average of 0.5 is the basis of the plant factor portion of this calculation. For purposes of the ETAF, the average irrigation efficiency is 0.71. Therefore, the ET Adjustment Factor is (0.7)=(0.5/0.71). ETAF for a Special Landscape Area shall not exceed 1.0. ETAF for existing nonrehabilitated landscapes is 0.8.

"Evapotranspiration rate" means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time.

"Flow rate" means the rate at which water flows through pipes, valves and emission devices, measured in gallons per minute, gallons per hour, or cubic feet per second.

"Hardscapes" means any durable material (pervious and nonpervious).

"Homeowner-provided landscaping" means any landscaping either installed by a private individual for a single family residence or installed by a licensed contractor hired by a homeowner. A homeowner, for purposes of this ordinance, is a person who occupies the dwelling he or she owns. This excludes speculative homes, which are not owner-occupied dwellings.
"Hydrozone" means a portion of the landscaped area having plants with similar water needs. A hydrozone may be irrigated or nonirrigated.

"Infiltration rate" means the rate of water entry into the soil expressed as a depth of water per unit of time (e.g., inches per hour).

"Invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can damage environmental or economic resources. Invasive species may be regulated by county agricultural agencies as noxious species. "Noxious weeds" means any weed designated by the Weed Control Regulations in the Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants are maintained at the California Invasive Plant Inventory and USDA invasive and noxious weeds database.

"Irrigation audit" means an in-depth evaluation of the performance of an irrigation system conducted by a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to: inspection, system tune-up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow, and preparation of an irrigation schedule.

"Irrigation efficiency" (IE) means the measurement of the amount of water beneficially used divided by the amount of water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices. The minimum average irrigation efficiency for purposes of this ordinance is 0.71. Greater irrigation efficiency can be expected from well designed and maintained systems.

"Irrigation survey" means an evaluation of an irrigation system that is less detailed than an irrigation audit. An irrigation survey includes, but is not limited to: inspection, system test, and written recommendations to improve performance of the irrigation system.

"Irrigation water use analysis" means an analysis of water use data based on meter readings and billing data.

"Landscape architect" means a person who holds a license to practice landscape architecture in the state of California pursuant to Business and Professions Code, Section 5615.

"Landscape area" means all the planting areas, turf areas, and water features in a landscape design plan subject to the maximum applied water allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or nonpervious hardscapes, and other nonirrigated areas designated for nondevelopment (e.g., open spaces and existing native vegetation).

"Landscape contractor" means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems.

"Landscape documentation package" means the documents required under Section 15.10.050.

"Landscape project" means total area of landscape in a project as defined in "landscape area" for the purposes of this chapter, meeting requirements under Section 15.10.020.

"Lateral line" means the water delivery pipeline that supplies water to the emitters or sprinklers from the valve.

"Local water purveyor" means any entity, including a public agency, city, county, or private water company that provides retail water service.

"Low volume irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters such as drip, drip lines, and bubblers. Low volume irrigation systems are specifically designed to apply small volumes of water slowly at or near the root zone of plants.

"Main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.
Title 15 - BUILDINGS AND CONSTRUCTION

Chapter 15.10 Water Efficient Landscaping

"Maximum applied water allowance" (MAWA) means the upper limit of annual applied water for the established landscaped area as specified in Section 15.10.050(B)(3). It is based upon the area's reference evapotranspiration, the ET adjustment factor, and the size of the landscape area. The estimated total water use shall not exceed the maximum applied water allowance. Special landscape areas, including recreation areas, areas permanently and solely dedicated to edible plants such as orchards and vegetable gardens, and areas of a project irrigated with recycled or reclaimed water are subject to the MAWA with an ETAF not to exceed 1.0.

"Microclimate" means the climate of a small, specific area that may contrast with the climate of the overall landscape area due to factors such as wind, sun exposure, plant density, or proximity to reflective surfaces.

"Mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Mining and Reclamation Act of 1975.

"Mulch" means any organic material such as leaves, bark, straw, compost, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface for the beneficial purposes of reducing evaporation, suppressing weeds, moderating soil temperature, and preventing soil erosion.

"New construction" means, for the purposes of this chapter, a new building with a landscape or other new landscape.

"Operating pressure" means the pressure at which the parts of an irrigation system are designed by the manufacturer to operate.

"Overhead sprinkler irrigation systems" means systems that deliver water through the air (e.g., spray heads and rotors).

"Overspray" means the irrigation water which is delivered beyond the target area.

"Permit" means an authorizing document issued by local agencies for new construction or rehabilitated landscapes.

"Pervious" means any surface or material that allows the passage of water through the material and into the underlying soil.

"Plant factor" or "plant water use factor" is a factor, when multiplied by ETo, estimates the amount of water needed by plants. For purposes of this chapter, the plant factor range for low water use plants is zero to 0.3, the plant factor range for moderate water use plants is 0.4 to 0.6, and the plant factor range for high water use plants is 0.7 to 1.0. Plant factors cited in this ordinance are derived from the Department of Water Resources 2000 publication "Water Use Classification of Landscape Species".

"Precipitation rate" means the rate of application of water measured in inches per hour.

"Project applicant" means the individual or entity submitting a landscape documentation package required under Section 15.10.050 to request a permit, plan check, or design review from the local agency. A project applicant may be the property owner or his or her designee.

"Rain sensor" or "rain sensing shutoff device" means a component which automatically suspends an irrigation event when it rains.

"Reclaimed water" means wastewater treated at the city of Shasta Lake Wastewater Treatment Plant to a quality suitable for nonpotable uses such as landscape irrigation and water features. This water is not intended for human consumption.

"Record drawing" or "as-builts" means a set of reproducible drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor.

"Recreational area" means areas dedicated to active play such as parks, sports fields, and golf courses where turf provides a playing surface.
"Recycled water" means treated or recycled wastewater of a quality suitable for nonpotable uses such as landscape irrigation and water features. This water is not intended for human consumption.

"Reference evapotranspiration" or "ETo" means a standard measurement of environmental parameters which affect the water use of plants. ETo is expressed in inches per day, month, or year as represented in Section 15.10.050(B)(2)(a) and is an estimate of the evapotranspiration of a large field of four- to seven-inch tall, cool-season grass that is well watered. Reference evapotranspiration is used as the basis of determining the maximum applied water allowance so that regional differences in climate can be accommodated.

"Rehabilitated landscape" means any re-landscaping project that requires a permit, plan check, or design review, meets the requirements of Section 15.10.020 and the modified landscape area is equal to or greater than two thousand five hundred (2,500) square feet, is fifty (50) percent of the total landscape area, and the modifications are completed within one year.

"Runoff" means water which is not absorbed by the soil or landscape to which it is applied and flows from the landscape area. For example, runoff may result from water that is applied at too great a rate (application rate exceeds infiltration rate) or when there is a slope.

"Soil moisture sensing device" or "soil moisture sensor" means a device that measures the amount of water in the soil. The device may also suspend or initiate an irrigation event.

"Soil texture" means the classification of soil based on its percentage of sand, silt, and clay.

"Special landscape area" (SLA) means an area of the landscape dedicated solely to edible plants, areas irrigated with recycled water, water features using recycled water and areas dedicated to active play such as parks, sports fields, golf courses, and where turf provides a playing surface.

"Sprinkler head" means a device which delivers water through a nozzle.

"Static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

"Station" means an area served by one valve or by a set of valves that operate simultaneously.

"Swing joint" means an irrigation component that provides a flexible, leak-free connection between the emission device and lateral pipeline to allow movement in any direction and to prevent equipment damage.

"Turf" means a ground cover surface of mowed grass. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore Paspalum, St. Augustinegrass, Zoysiaagrass, and Buffalo grass are warm-season grasses.

"Valve" means a device used to control the flow of water in the irrigation system.

"Water conserving plant species" means a plant species identified as having a low plant factor.

"Water feature" means a design element where open water performs an aesthetic or recreational function. Water features include ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools (where water is artificially supplied). The surface area of water features is included in the high water use hydrozone of the landscape area. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used solely for water treatment or stormwater retention are not water features and, therefore, are not subject to the water budget calculation.

"Watering window" means the time of day irrigation is allowed.

"WUCOLS" means the Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation, 2000.

(Ord. No. 10-206, § 2, 1-5-2010)
15.10.040 Landscape documentation package review and approval required.

A complete landscape documentation package (LDP) must be submitted and found to satisfy the requirements of this chapter prior to authorization for water service, the installation of a new water meter, or a change in water service.

A. The LDP submitted pursuant to this chapter shall be routed for review to the development services director or his/her designee to ensure compliance with this chapter.

B. The project applicant shall be notified in writing if the LDP is found to be incomplete or inconsistent with the standards and indicate where such additions or revisions are necessary.

C. Application Fee. An application fee set by resolution of the city council shall accompany each application.

D. Upon approval of the LDP, the project applicant shall:
   1. Receive a building permit or other applicable permit and record the date of the permit on the certificate of completion.
   2. Provide a copy of the approved LDP to the property owner and/or individual having control of the property.

E. In the event a water-supply emergency is declared, landscape requirements shall be deferred for those projects served within the impacted area until such time as the water-supply emergency has been lifted.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.050 Elements of landscape documentation package.

The landscape documentation package shall contain the following:

A. Water efficient landscape application form.

B. Water efficient landscape worksheet consisting of:
   1. A hydrozone information table and a hydrozone map for the landscape project.
   2. A water-budget calculation for the landscape project adhering to the following:
      a. For the calculation of the maximum applied water allowance and estimated total water use, the following ETo values shall apply:

      | (ETo) TABLE |
      |-------------|
      |------|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|------------|
      | 1.2  | 1.4 | 2.6 | 4.1 | 5.6 | 7.1 | 8.5 | 7.3 | 5.3   | 3.2 | 1.4 | 0.9 | 48.8        |

(Ord. No. 10-206, § 2, 1-5-2010)
Chapter 15.10 Water Efficient Landscaping

b. The plant factors used shall be from water use classification of landscape species (WUCOLS), which are as follows:
   i. Low-water-use plants = 0 to 0.3
   ii. Moderate-water-use plants = 0.4 to 0.6
   iii. High-water-use plants = 0.7 to 1.0

c. All water features shall be included in the high-water-use hydrozone and temporarily irrigated areas shall be included in the low-water-use hydrozone.

d. All special landscape areas shall be identified and their water use calculated; the ETAF for all special landscape areas shall not exceed 1.0.

3. Maximum applied water allowance (MAWA).

   a. A project's maximum applied water allowance shall be calculated using the following formula:

      \[ \text{MAWA} = (\text{ETo}) \times (0.62) \times [(0.7 \times \text{LA}) + (0.3 \times \text{SLA})] \]

      where:

      - MAWA = Maximum applied water allowance (gallons per year).
      - ETo = Reference evapotranspiration (inches per year).
      - 0.62 = Conversion factor (to gallons).
      - 0.7 = ET adjustment factor (ETAF).
      - LA = Landscape area including SLA (square feet).
      - 0.3 = Additional water allowance for SLA.
      - SLA = Special landscape area (square feet).

4. Estimated total water use (ETWU).

   a. The estimated total water use shall not exceed the maximum applied water allowance.

   b. The sum of the estimated total water use calculations for all hydrozones shall not exceed the maximum applied water allowance.

   c. A project's estimated total water use shall be calculated using the following formula:

      \[ \text{ETWU} = (\text{ETo}) \times (0.62) \times [(\text{PF} \times \text{HA}) + \text{IE} + \text{SLA}] \]

      where:

      - ETWU = Estimated total water use (gallons per year).
      - ETo = Reference evapotranspiration (inches per year).
      - PF = Plant factor from WUCOLS.
      - HA = Hydrozone area (square feet).
      - SLA = Special landscape area (square feet).
      - 0.62 = Conversion factor (to gallons).
      - IE = Irrigation efficiency (minimum 0.71).

C. Soil Management Report. In order to reduce runoff and encourage healthy plant growth, a soil management report satisfying the following criteria shall be submitted as part of the landscape documentation package:

   1. Results of a soils analysis prepared by a qualified professional or laboratory. Soil sampling shall be conducted in accordance with laboratory protocol, including protocols regarding adequate sampling depth for the intended plants.
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The soils analysis may include the following, as recommended by a qualified professional:

a. Determination of soil texture, indicating the percentage of organic matter.
b. An appropriate soil infiltration rate determined by laboratory test or soil texture/infiltration rate tables.
c. Measure of pH.
d. Total soluble salts and sodium.
e. Recommendations.

2. The project applicant shall submit documentation verifying implementation of soil analysis report recommendations in the landscape plan.

D. Landscape Design Plan. A landscape design plan meeting the following design criteria shall be submitted as part of the landscape documentation package:

1. Plant Material.
   a. Any plant may be selected for the landscape, providing the estimated total water use in the landscape area does not exceed the maximum applied water allowance. To encourage the efficient use of water, the following is highly recommended:
      i. Protection and preservation of native species and natural vegetation.
      ii. Selection of water-conserving plant and turf species.
      iii. Selection of plants based on disease and pest resistance.
      iv. Selection of plants from local and regional landscape program plant lists.
   b. Each hydrozone shall have plant materials with similar water use, with the exception of hydrozones with plants of mixed water use, as specified in Section 15.10.050(E)(1)(t).
   c. Plants shall be selected and planted appropriately based upon their adaptability to the climatic, geologic, and topographical conditions of the project site. To encourage the efficient use of water, the following is highly recommended:
      i. Use the Sunset Western Climate Zone System which takes into account temperature, humidity, elevation, terrain, latitude, and varying degrees of continental and marine influence on local climate.
      ii. Recognize the horticultural attributes of plants (i.e., mature plant size, invasive surface roots) to minimize damage to property or infrastructure (e.g., buildings, sidewalks, power lines); and
      iii. Consider the solar orientation for plant placement to maximize summer shade and winter solar gain.
   d. Turf is not allowed on slopes greater than twenty-five (25) percent where the toe of the slope is adjacent to an impermeable hardscape and where twenty-five (25) percent means one-foot of vertical elevation change for every four feet of horizontal length (rise divided by run x 100 = slope percent).
   e. A landscape design plan for projects in fire-prone areas shall address fire safety and prevention. A defensible space or zone around a building or structure is required per Public Resources Code Section 4291(a) and (b). Avoid fire-prone plant materials and highly flammable mulches.
   f. The use of invasive and/or noxious plant species is strongly discouraged.
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g. The architectural guidelines of a common interest development, which includes community apartment projects, condominiums, planned developments, and stock cooperatives, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group.

2. Water Features.
   a. Recirculating water systems shall be used for water features.
   b. Where available, recycled water shall be used as a source for decorative water features.
   c. Surface area of a water feature shall be included in the high water use hydrozone area of the water budget calculation.
   d. Pool and spa covers are highly recommended.

3. Mulch and Amendments.
   a. A minimum two-inch (2") layer of mulch shall be applied on all exposed soil surfaces of planting areas except in turf areas, creeping or rooting groundcovers, or direct seeding applications where mulch is contraindicated.
   b. Stabilizing mulching products shall be used on slopes.
   c. The mulching portion of the seed/mulch slurry in hydro-seeded applications shall meet the mulching requirement.
   d. Soil amendments shall be incorporated according to recommendations of the soil management report and what is appropriate for the plants selected.

4. Landscape Plan. The project landscape plan shall, at a minimum:
   a. Delineate and label each hydrozone by number, letter, or other method.
   b. Identify each hydrozone as low, moderate, high water, or mixed water use. Temporarily irrigated areas of the landscape shall be included in the low water use hydrozone for the water budget calculation.
   c. Identify recreational areas.
   d. Identify areas permanently and solely dedicated to edible plants.
   e. Identify areas irrigated with recycled water.
   f. Identify type of mulch and application depth.
   g. Identify soil amendments, type, and quantity.
   h. Identify type and surface area of water features.
   i. Identify hardscapes (pervious and non-pervious).
   j. Identify location and installation details of any applicable stormwater best management practices that encourage on-site retention and infiltration of stormwater. Stormwater best management practices are encouraged in the landscape design plan and examples include, but are not limited to:
      i. Infiltration beds, swales, and basins that allow water to collect and soak into the ground.
      ii. Constructed wetlands and retention ponds that retain water, handle excess flow, and filter pollutants; and
iii. Pervious or porous surfaces (e.g., permeable pavers or blocks, pervious or porous concrete, etc.) that minimize runoff.

k. Identify any applicable rain harvesting or catchment technologies (e.g., rain gardens, cisterns, etc.).

l. Contain the following statement: "I have complied with the criteria of the Water Efficient Landscaping Chapter and applied it for the efficient use of water in the landscape design plan."

m. Bear the signature of a licensed landscape architect, licensed landscape contractor, or any other person authorized to design a landscape pursuant to the California Business and Professions Code.

E. Irrigation Design Plan. For the efficient use of water, an irrigation system shall meet all the requirements listed in this section and the manufacturers' recommendations. The irrigation system and its related components shall be planned and designed to allow for proper installation, management, and maintenance. An irrigation design plan meeting the following design criteria shall be submitted as part of the landscape documentation package.

1. Irrigation System.
   a. Dedicated landscape water meters are required on landscape areas greater than five thousand (5,000) square feet to facilitate water management and are highly recommended for projects less than five thousand (5,000) square feet.
   b. Weather-based irrigation controllers or soil moisture-based controllers or other self-adjusting irrigation controllers shall be required for irrigation scheduling in all irrigation systems.
   c. The irrigation system shall be designed to ensure that the dynamic pressure at each emission device is within the manufacturer's recommended pressure range for optimal performance.
      i. If the static pressure is above or below the required dynamic pressure of the irrigation system, pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be installed to meet the required dynamic pressure of the irrigation system.
      ii. Static water pressure, dynamic or operating pressure and flow reading of the water supply shall be measured at the point of connection. These pressure and flow measurements shall be conducted at the design stage. If the measurements are not available at the design stage, the measurements shall be conducted at installation.
   d. Sensors (rain, freeze, wind, etc.), either integral or auxiliary, that suspend or alter irrigation operation during unfavorable weather conditions shall be required on all irrigation systems, as appropriate for local climatic conditions. Irrigation should be avoided during windy or freezing weather or during rain.
   e. Manual shut-off valves (such as a gate valve, ball valve, or butterfly valve) shall be required, as close as possible to the point of connection of the water supply, to minimize water loss in case of an emergency (such as a main line break) or routine repair.
   f. Backflow prevention devices shall be required to protect the water supply from contamination by the irrigation system. A project applicant shall refer to the applicable local agency code (i.e., public health) for additional backflow prevention requirements.
   g. High flow sensors that detect and report high flow conditions created by system damage or malfunction are recommended.
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h. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto nontargeted areas, such as adjacent property, nonirrigated areas, hardscapes, roadways, or structures.

i. Relevant information from the soil management plan, such as soil type and infiltration rate, shall be utilized when designing irrigation systems.

j. The design of the irrigation system shall conform to the hydrozones of the landscape design plan.

k. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria as described in Section 15.10.050(B) regarding the maximum applied water allowance.

l. In mulched planting areas, the use of low volume irrigation is required to maximize water infiltration into the root zone.

m. Sprinkler heads and other emission devices shall have matched precipitation rates, unless otherwise directed by the manufacturer's recommendations.

n. Head to head coverage is recommended. However, sprinkler spacing shall be designed to achieve the highest possible distribution uniformity using the manufacturer's recommendations.

o. Swing joints or other riser-protection components are required on all risers subject to damage that are adjacent to high traffic areas.

p. Check valves or anti-drain valves are required for all irrigation systems.

q. Narrow or irregularly shaped areas, including turf, less than eight feet in width in any direction shall be irrigated with subsurface irrigation or a low volume irrigation system.

r. Overhead irrigation shall not be permitted within twenty-four (24) inches of any nonpermeable surface. Allowable irrigation within the setback from nonpermeable surfaces may include drip, drip line, or other low flow nonspray technology. The setback area may be planted or unplanted. The surfacing of the setback may be mulch, gravel, or other porous material. These restrictions may be modified if:
   i. The landscape area is adjacent to permeable surfacing and no runoff occurs; or
   ii. The adjacent nonpermeable surfaces are designed and constructed to drain entirely to landscaping; or
   iii. The irrigation designer specifies an alternative design or technology, as part of the landscape documentation package and clearly demonstrates strict adherence to irrigation system design criteria in Section 15.10.050(E)(1)(h). Prevention of overspray and runoff must be confirmed during the irrigation audit.

s. Slopes greater than twenty-five (25) percent shall not be irrigated with an irrigation system with a precipitation rate exceeding 0.75 inches per hour. This restriction may be modified if the landscape designer specifies an alternative design or technology, as part of the landscape documentation package, and clearly demonstrates no runoff or erosion will occur. Prevention of runoff and erosion must be confirmed during the irrigation audit.

t. Hydrozone.
   i. Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.
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ii. Sprinkler heads and other emission devices shall be selected based on what is appropriate for the plant type within that hydrozone.

iii. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.

iv. Individual hydrozones that mix plants of moderate and low water use, or moderate and high water use, may be allowed if:
   (a) Plant factor calculation is based on the proportions of the respective plant water uses and their plant factor; or
   (b) The plant factor of the higher water using plant is used for calculations.

v. Individual hydrozones that mix high and low water use plants shall not be permitted.

vi. On the landscape design plan and irrigation design plan, hydrozone areas shall be designated by number, letter, or other designation. On the irrigation design plan, the areas irrigated by each valve shall be designated and assigned a number to each valve. This valve number shall be provided in the Hydrozone Information Table and used to assist with pre-inspection and final inspection of the irrigation system and programming the controller.

2. Irrigation Design Plan Specifications. The irrigation design plan shall, at a minimum, contain the following:
   a. Location and size of separate water meters for landscape.
   b. Location, type and size of all components of the irrigation system, including controllers, main and lateral lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices.
   c. Static water pressure at the point of connection to the public water supply.
   d. Flow rate (gallons per minute), application rate (inches per hour), and design operating pressure (pressure per square inch) for each station.
   e. Recycled water irrigation systems as specified in Section 15.10.110
   f. The following statement: "I have complied with the criteria of the Water Efficient Landscape Chapter and applied it accordingly for the efficient use of water in the irrigation design plan."
   g. The signature of a licensed landscape architect, certified irrigation designer, licensed landscape contractor, or any other person authorized to design an irrigation system. (See Sections 5500.1, 5615, 5641 through 5641.6, 6701, 7027.5 of the Business and Professions Code, Section 832.27 of Title 16 of the California Code of Regulations, and Section 6721 of the Food and Agricultural Code.)

F. Grading Design Plan. For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading plan shall be submitted as part of the Landscape Documentation Package. A comprehensive grading plan prepared by a civil engineer for other local agency permits satisfies this requirement.

1. The project applicant shall submit a landscape grading plan that indicates finished configurations and elevations of the landscape area, including the height of graded slopes, drainage patterns, pad elevations, finish grade, percent or ratios of slope and stormwater retention improvements, if applicable.

2. To prevent excessive erosion and runoff, the grading plan shall be designed to the extent practical to:
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a. Grade so that all irrigation and normal rainfall remains within property lines and does not drain on to nonpermeable hardscapes.

b. Avoid disruption of natural drainage patterns and undisturbed soil.

c. Avoid soil compaction in landscape areas.

3. The grading design plan shall bear the signature of a licensed professional as authorized by law and shall contain the following statement: "I have complied with the criteria of the Water Efficient Landscape Chapter and applied it accordingly for the efficient use of water in the grading design plan."

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.060 Certificate of completion.

Upon completion of the installation of landscaping and irrigation systems in compliance with the approved landscape design plan, a certificate of completion shall be submitted to the city for review and to the owner of record. The city shall review the certificate of completion and shall approve or deny the certificate. If the certificate of completion is denied, the city shall provide information to the project applicant regarding re-application, appeal or other assistance. The certificate of completion shall include the following elements:

A. Project Information. This shall include, but is not limited to, the date, project name, address and location; project applicant's name, telephone number, and mailing address; and property owner's name, telephone number and mailing address.

B. Certification by either the signer of the landscape design plan, the signer of the irrigation design plan, or the licensed landscape contractor that the landscape project has been installed in accordance with the approved landscape documentation package. Where there have been significant approved changes made in the field during construction, "as-built" or record drawings shall be included with the certification.

C. Irrigation-scheduling parameters used to set the controller (see Section 15.10.070, Irrigation Scheduling).

D. Landscape- and irrigation-maintenance schedule (see Section 15.10.080, Irrigation Maintenance Schedule).

E. Irrigation audit report (see Section 15.10.090, Irrigation Audit, Survey and Water Analysis).

F. Soil analysis report, if not submitted with landscape documentation package and documentation verifying implementation of soil report recommendations (see Section 15.10.050(C), Elements of Landscape Documentation Package, Soil Management Report).

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.070 Irrigation scheduling.

For the efficient use of water, all irrigation schedules shall be developed, managed, and evaluated to utilize the minimum amount of water required to maintain plant health. Irrigation schedules shall meet the following criteria:

A. Irrigation scheduling shall be regulated by automatic irrigation controllers.

B. Overhead irrigation shall be scheduled between 8:00 p.m. and 10:00 a.m. unless weather conditions prevent it. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.
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C. For implementation of the irrigation schedule, irrigation run times, emission device, flow rate, and current reference evapotranspiration, shall be considered so that applied water meets the estimated total water use. Total annual applied water shall be less than or equal to maximum applied water allowance (MAWA). Irrigation schedules shall be regulated by automatic irrigation controllers using current reference evapotranspiration data or soil moisture sensor data.

D. Parameters used to set the automatic controller shall be developed and submitted for each of the following:
1. The plant establishment period.
2. The established landscape.
3. Temporarily irrigated areas.

E. Each irrigation schedule shall consider for each station all of the following that apply:
1. Irrigation interval (days between irrigation).
2. Irrigation run times (hours or minutes per irrigation event to avoid runoff).
3. Number of cycle starts required for each irrigation event to avoid runoff.
4. Amount of applied water scheduled to be applied on a monthly basis.
5. Application rate setting.
6. Root depth setting.
7. Plant type setting.
8. Soil type.
9. Slope factor setting.
10. Shade factor setting.
11. Irrigation uniformity or efficiency setting.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.080 Landscape and irrigation maintenance schedule.

Landscapes shall be maintained to ensure water use efficiency.

A. A regular maintenance schedule shall be submitted with the certificate of completion. A regular maintenance schedule shall include, but is not limited to, routine inspection; adjustment and repair of the irrigation system and its components; aerating and dethatching turf areas; replenishing mulch; fertilizing; pruning; weeding in all landscape areas, and removing and obstruction to emission devices. Operation of the irrigation system outside the normal watering window is allowed for auditing and system maintenance.

B. Repair of all irrigation equipment shall be done with the originally installed components or their equivalents.

C. A project applicant is encouraged to implement sustainable or environmentally-friendly practices for overall landscape maintenance.

(Ord. No. 10-206, § 2, 1-5-2010)
15.10.090 Irrigation audit, survey and water use analysis.

An irrigation audit is required for new construction and rehabilitated landscape projects installed after January 1, 2010. All landscape irrigation audits shall be conducted by a certified landscape irrigation auditor. The project applicant shall submit an irrigation audit report with the certificate of completion to the local agency that may include, but is not limited to: inspection, system tune-up, system test with distribution uniformity, reporting overspray or runoff that causes overland flow and preparation of an irrigation schedule.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.100 Irrigation efficiency.

For the purpose of determining maximum applied water allowance, average irrigation efficiency is assumed to be 0.71. Irrigation systems shall be designed, maintained and managed to meet or exceed an average landscape irrigation efficiency of 0.71.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.110 Recycled water.

The installation of recycled water irrigation systems shall allow for the current and future use of recycled water, unless a written exemption has been granted as described in Section 15.10.11O(A).

A. Irrigation systems and decorative water features shall use recycled water unless a written exemption has been granted by the city stating that recycled water meeting all public health codes and standards is not available and will not be available for the foreseeable future.

B. All recycled water irrigation systems shall be designed and operated in accordance with all applicable local and state laws.

C. Landscapes using recycled water are considered special landscape areas. The ET adjustment factor for special landscape areas shall not exceed 1.0. Landscape areas which use solely reclaimed water for irrigation are exempt from the requirements of this chapter.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.120 Stormwater management.

Stormwater management practices minimize runoff and increase infiltration which recharges groundwater and improves water quality. Implementing stormwater best management practices into the landscape and grading design plans to minimize runoff and to increase on-site retention and infiltration are encouraged.

A. Project applicants shall refer to the city or regional water quality control board for information on any applicable stormwater ordinances and stormwater management plans.

B. Rain gardens, cisterns, and other landscapes features and practices that increase rainwater capture and create opportunities for infiltration and/or onsite storage are recommended.

(Ord. No. 10-206, § 2, 1-5-2010)
15.10.130 Model homes/public education.

The city shall provide information to property owners and developers at the customer service and permit center counters regarding the design, installation, management and maintenance of water efficient landscapes. All model homes that are landscaped shall use signs and written information to demonstrate the principles of water efficient landscapes described in this chapter.

A. Signs shall be used to identify the model as an example of a water efficient landscape featuring elements such as hydrozones, irrigation equipment, and others that contribute to the overall water efficient theme.

B. Information shall be provided about designing, installing, managing, and maintaining water efficient landscapes.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.140 Environmental review.

Projects subject to this chapter shall comply with the California Environmental Quality Act (CEQA), as appropriate.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.150 Provisions for existing landscapes.

This section shall apply to all existing landscapes that were installed before January 1, 2010 and are over one acre in size.

A. The city shall analyze utility records to determine water use for existing landscape areas and identify feasible recommendations as necessary to reduce landscape water use to a level that does not exceed the maximum applied water allowance for existing landscapes. The maximum applied water allowance for existing landscapes shall be calculated as: MAWA = (0.8)(ETo)(LA)(0.62).

B. No retrofits to irrigation systems existing prior to January 1, 2010, shall be required.

C. Ongoing monitoring of existing landscape areas shall be pursuant to Section 15.10.180 of this chapter.

(Ord. No. 10-206, § 2, 1-5-2010)

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)
15.10.170 Effective precipitation.

The city will utilize effective precipitation (twenty-five (25) percent of annual precipitation) in tracking water use and may use the following equation to calculate maximum applied water allowance:

\[
\text{MAWA} = (\text{ETo} - \text{Eppt})(0.62) [(0.7 \times \text{LA}) + (0.3 \times \text{SLA})].
\]

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.180 Ongoing monitoring.

The city shall utilize its automatic meter reading (AMR) system for ongoing monitoring of landscape areas subject to this chapter. The water leak detection capability available through the AMR allows the city to closely monitor usage and quickly detect potential water waste. If the city identifies excessive water use, the customer will be immediately notified of the situation.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.190 Exceptions.

Exceptions to these Landscape Water Conservation Standards may be granted by the development services director or his/her designee upon a finding, based on substantial evidence, that the exceptions will promote equivalent or greater water conservation than is provided for in these standards. Requests for exceptions shall be in writing and shall be submitted to the development services director or his/her designee at the time the application is submitted to the city for review. Requests for exceptions must be accompanied by documentary evidence supporting the finding of equivalent or greater water conservation.

(Ord. No. 10-206, § 2, 1-5-2010)

15.10.200 Enforcement.

A violation of any portion of this chapter and of guidelines adopted pursuant to this chapter is subject to the provisions of Chapter 1.16 of this Code (General Penalty), in addition to other civil or administrative remedies as approved by the city attorney.

(Ord. No. 10-206, § 2, 1-5-2010)