



2010

# Urban Water Management Plan



Livermore Municipal Water

June 2011

# **2010 Urban Water Management Plan for Livermore Municipal Water**

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# Introduction

The City of Livermore has prepared this 2010 Urban Water Management Plan (UWMP) for the Livermore Municipal Water system in accordance with the Urban Water Management Planning Act (Act). The Act requires every urban water supplier to prepare and adopt an UWMP in years that end in 0 and 5. A 6-month extension was granted for submittal of the 2010 UWMP to provide additional time for water suppliers to address new requirements resulting from the Water Conservation Bill of 2009.

The Urban Water Management Planning Act (Act) defines an urban water supplier as “a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly for more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.” The UWMP supports an urban water supplier’s long-term water resource planning, and ensures adequate water supplies are available to meet existing and future water demands. The reliability of water sources is assessed over a 20-year planning horizon, and normal, dry and multiple dry year conditions are considered.

It should be noted that this UWMP covers the Livermore Municipal Water service area only. The City-owned Livermore Municipal Water system, which serves a portion of the City of Livermore, is operated and maintained by the City Public Works Department’s Water Resources Division (WRD). Water service for the balance of the City of Livermore is provided by the California Water Service Company (Cal Water); Cal Water prepares a separate Urban Water Management Plan documenting its activities.

This UWMP includes information required by the Water Conservation Bill of 2009. In February 2008, Governor Arnold Schwarzenegger set a goal of a 20 percent statewide reduction in per capita daily water use by year 2020. The reduction in per capita daily water use outlined in the 20 x 2020 plan was supported by legislation passed in November 2009 (SBX7\_7 Steinberg), also known as the Water Conservation Bill of 2009. Beginning with the 2010 UWMP, each urban retail water supplier is required to determine the baseline daily per capita water use in its service area, and establish water conservation targets for the years 2015 and 2020.

Under State Water Code (Section 10652), the California Environmental Quality Act (CEQA) does not apply to the preparation and adoption of an Urban Water Management Plan.

This UWMP was prepared following the Department of Water Resources, *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan*. The Guidebook includes an Urban Water Management Plan Checklist covering each subject area that must be addressed in the plan. For ease of review, each checklist item in the UWMP is identified with a  **Checklist #** icon and the corresponding checklist number. The completed UWMP Checklist is also included in Section 7.

# Section 1: Agency Coordination

## Public Participation

### Checklist #55

10642 – Encourage Active Involvement

Urban water suppliers are required to encourage the active involvement of diverse social, cultural, and economic elements of the population prior to and during the preparation of the plan. Water Resources Division (WRD) staff encouraged public participation from all elements of the population within the service area by providing notices announcing the preparation of the 2010 UWMP through a variety of methods including the following:

1. Including notice on customer water bills;
2. Posting notice at Livermore City Hall;
3. Posting notice at Civic Center Library;
4. Posting notice on the City of Livermore website;
5. Posting notice at the City's Multi-Service Center;
6. Mailing notice to the Livermore Chamber of Commerce;
7. Mailing notice to Livermore Downtown Association;
8. Mailing notice to large churches in the Livermore Municipal Water service area.

Despite a significant number of notices announcing the preparation of the Urban Water Management Plan, staff received no inquiries from the general public about the plan or the process. A sample copy of the notice announcing the preparation of the 2010 UWMP is included in Attachment A.

### Checklist #6

10621(b) Notification of Plan preparation

As required by Section 10621(b) of the Water Code, notice of the June 13, 2011 public hearing was provided to Alameda County Department of Public Works at least 60 days prior to the hearing. A copy of the notification letter to Alameda County Public Works, dated April 4, 2011, is included in Attachment A.

While the Livermore Municipal Water system does not supply water in any other cities, copies of the draft plan were also sent for review and comment to the other Tri-Valley water retailers (City of Pleasanton, Dublin San Ramon Services District and California Water Service Company) and the Tri-Valley's wholesale supplier, the Zone 7 Water Agency.

# Coordination

## Coordination within the City

Water Resources Division staff worked closely with the City's Planning and Engineering Divisions in developing the 2010 UWMP. As discussed in Section 3, Engineering Division staff and the City's GIS consultant Lynx Technologies worked with Water Resources Division staff to develop population estimates and projections for the Livermore Municipal Water service area. Water Resources Division staff also gathered input and information from other City departments to ensure internal coordination in developing the 2010 UWMP.

### Checklist #4

10620(d)(2) Coordinating plan development with other agencies

## Interagency Coordination

Water Resources Division staff routinely coordinates water supply discussions with other Tri-Valley water retailers (City of Pleasanton, Dublin San Ramon Services District and California Water Service Company) through the Tri-Valley Water Retailers Group (TWRG). In addition to this staff-level group, there is additional coordination on water policy in the Tri-Valley through the Committee of Valley Water Retailers, which is made up of Council, Board, or management-level representatives of each retailer.

In addition to routine discussions between the retailers, there is also close coordination between the retailers and wholesaler Zone 7 Water Agency on water supply and quality issues. Staff members from each retail agency and Zone 7 meet frequently at both the operational and policy level to improve system operations or to plan for future supplies.

During the preparation of this Urban Water Management Plan, Water Resources Division staff worked particularly closely with Zone 7 staff and the other retailers to ensure consistency. Since the City purchases all of the water supply for Livermore Municipal Water from wholesaler Zone 7, Water Resources Division staff coordinates closely with Zone 7 to project accurate demands, ensuring that Zone 7 can plan for and provide appropriate water deliveries. Due to the wholesale/retail relationship between Zone 7 and City of Livermore, Water Resources Division staff relied on Zone 7 for much of the information necessary to develop the Urban Water Management Plan.

Water Resources Division staff also worked closely with the other Tri-Valley water retailers during the development of this UWMP, particularly with respect to how best to meet the requirements of the Water Conservation Bill of 2009. While the retailers decided not to pursue regional compliance with the 20% reduction required by the Conservation Bill, there was general agreement on the need for coordinated conservation activities and complementary public education messages to support demand reductions.

Table 1-1 (DWR Table 1) below summarizes the agencies or groups contacted,

consulted or notified regarding the preparation of the 2010 Urban Water Management Plan for Livermore Municipal Water.

**Table 1-1 – Coordination with Appropriate Agencies**

Table 1 Coordination with appropriate agencies							
Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was sent a copy of the draft plan	Was sent a notice of intention to adopt	Not involved / No information
Other water suppliers DSRSD, Pleasanton, Cal Water				X	X	X	
Water mgmt agencies Zone 7 Water Agency	X	X		X	X	X	
Relevant public agencies Alameda County						X	
General public						X	
Other – Chamber of Comm. Livermore Downtown City's Multi- Service Center						X	
Other - Local Churches						X	

## Plan Adoption, Submittal, and Implementation

### Plan Adoption

The 2010 Urban Water Management Plan for Livermore Municipal Water was adopted following the requirements of the California Water Code and California Government Code as noted below and is described following the 2010 DWR Guidebook format.

#### Checklist #56

#### 10642 – Inspection and Public Hearing Prior to Adoption

Section 10642 requires urban water suppliers to make the UWMP available for public inspection and to hold a public hearing prior to adopting the plan. Copies of the draft UWMP were made available to the public starting in June 2011 at the Water Resources Division offices located at the Livermore Water Reclamation Plant, the Livermore Main (Civic Center) Library, Rincon Library, Springtown Library, and the City of Livermore website.

Legal public notices regarding the availability of the Draft UWMP for public inspection, and of the formal public hearing, were published in the local media (Valley Times, Tri-Valley Herald and The Independent) twice (June 1, 2011 and June 8, 2011), posted at City Hall and the Civic Center Library, and on the City's website. Publication in the above listed newspapers complies with the jurisdiction requirements contained in Government Code Section 6066. Copies of the public notices are included in Attachment A. Notification of the public hearing was also provided to Alameda County as required under Section 10642 of the California Water Code.

 **Checklist #7**

Section 10621(c) – Amendments to the Plan

Any subsequent amendments to the 2010 Urban Water Management Plan for Livermore Municipal Water will be adopted at a duly noticed public hearing following the same process outlined above and submitted to the Department of Water Resources, Alameda County, and filed for public review as required by Article 3 of the California Water Code (commencing with Section 10640).

 **Checklist #54**

10635(b) Providing Plan to Other Agencies Served

Section 10635(b) of the California Water Code requires urban water suppliers to provide copies of the UWMP to any City or County within which it supplies water no later than 60 days after submission of its UWMP.

Copies of the 2010 Urban Water Management Plan for Livermore Municipal Water were provided to Alameda County within the 60-day requirement. A copy of the July 1, 2011 transmittal letter to Alameda County is included in Attachment A. The Livermore Municipal Water system does not supply water in any other city; therefore no other notifications were required under Section 10635(b).

 **Checklist #57**

10642 Adoption after Public Hearing

As required by Section 10642 of the California Water Code, this 2010 Urban Water Management Plan was adopted through a formal Public Hearing process that included the adoption of any comments by the Livermore City Council on June 13, 2011. Attachment A includes a copy of Resolution 2011-095 adopting the UWMP.

## **Plan Submittal**

 **Checklist #59**

10644(a) – Submission of Adopted Plan

Per the Urban Water Management Planning Act, the final adopted version of this Plan was submitted to the Department of Water Resources (DWR) before August 1, 2011. Additional copies of the adopted Plan were sent to the California State Library in Sacramento and to the Alameda County Department of Public Works.

Copies of transmittal letters to DWR, the California State Library and Alameda County are included in Attachment A.

 **Checklist #60**

10645 – Availability of Final Plan

A copy of the 2010 Urban Water Management Plan for Livermore Municipal Water was made available at the Water Resources Division offices located at the Livermore Water Reclamation Plant within 30 days of adoption by the Livermore City Council. Copies of the final, approved 2010 UWMP were also placed on file with the Livermore Main (Civic Center) Library, Rincon Library, and Springtown Library.

## **Plan Implementation**

 **Checklist #58**

10643 – Implementation Plan

The 2010 Urban Water Management Plan for Livermore Municipal Water will be implemented by the City's Water Section staff with administrative oversight and support from Water Resources Division staff. One of the primary focus areas for implementation will be the Demand Management Measures (DMMs) and other Water Use Reduction Plan elements necessary to meet the requirements of the Water Conservation Act of 2009.

To assist in this effort, the Water Resources Division has provided additional administrative support for the Water Section to expand water conservation efforts. Specifically, in 2010, a Management Analyst was added to the Water Resources Division, in part to assist with implementation and tracking of water conservation efforts. This was one of the areas that was lacking after completion of the 2005 UWMP, and the City has taken this step to improve implementation of the 2010 plan.

In addition to more emphasis on implementing the DMMs, staff will also focus additional efforts on improving data quality and collection to ensure accurate tracking of daily per capita water use. The current water billing system records will be reviewed to ensure the system is capturing the data necessary for tracking compliance with the Water Conservation Act of 2009 and for updating the Urban Water Management Plan in the future.

The following general timeline has been developed to guide the implementation of the 2010 Urban Water Management Plan for Livermore Municipal Water:

Period	Activities
July 2011-December 2012	<ul style="list-style-type: none"> <li>• Update Legal Authority for expanded conservation measures as necessary;</li> <li>• Review water billing database and implement any required upgrades;</li> <li>• Conduct pilot studies for DMMs that rely heavily on usage data to target activities to ensure data accuracy;</li> <li>• Review per capita usage to evaluate compliance status with 2015 and 2020 water use targets.</li> </ul>
January 2012 – December 2012	<ul style="list-style-type: none"> <li>• Proceed with implementation of DMMs as discussed in Section 6;</li> <li>• Review per capita usage to evaluate compliance status with 2015 and 2020 water use targets.</li> </ul>
January 2013 – December 2013	<ul style="list-style-type: none"> <li>• Complete implementation of all DMMs;</li> <li>• Review per capita usage to evaluate compliance status with 2015 and 2020 water use targets;</li> <li>• Develop action plan to increase targeted conservation program implementation if not on track to meet 2015 interim target.</li> </ul>
January 2014 – December 2014	<ul style="list-style-type: none"> <li>• Review data being collected to evaluate DMM effectiveness for 2015 UWMP Update; refine data collection as necessary;</li> <li>• Adjust DMM implementation as necessary based on data review noted above or based on progress towards meeting 2015 interim target;</li> <li>• Review per capita usage to evaluate compliance status with 2015 and 2020 water use targets.</li> </ul>
January – December 2015	<ul style="list-style-type: none"> <li>• Review per capita usage to evaluate compliance status with 2015 and 2020 water use targets;</li> <li>• Compile and review DMM effectiveness data;</li> <li>• Make any final adjustments to baseline water use methodology and/or 2020 targets;</li> <li>• Update and submit 2015 Urban Water Management Plan.</li> </ul>

# Section 2: System Description

## Service Area Physical Description

 Checklist #8

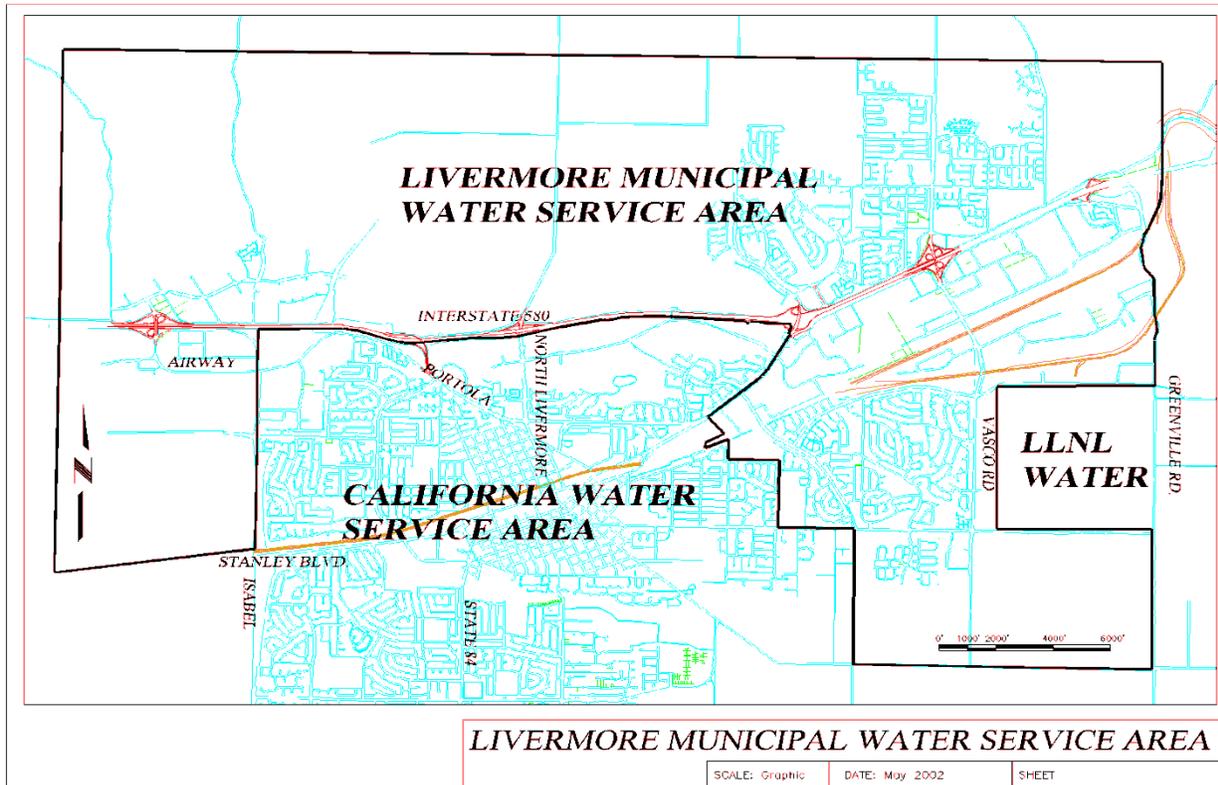
10631(a) Describe the Service Area

The Livermore Municipal Water (LMW) service area comprises portions of the City of Livermore, with the remainder of the City being served by the California Water Service Company. The City of Livermore is the easternmost city in the San Francisco Bay Area, the gateway to the Central Valley. Protection by the coastal range provides the Livermore Valley with a mild climate that enhances the pursuit of a more relaxed, less congested lifestyle.



The Livermore Municipal Water service area, shown below in Figure 2-1, comprises approximately 23 square miles and includes approximately 9500 service connections.

**Figure 2-1 – Livermore Municipal Water Service Area**



 **Checklist #9**

10631(a) Describe the Service Area Climate

The City of Livermore has a Mediterranean climate, with warm, dry summers and cool, moist winters. The average daily maximum temperature in Livermore is 59 degrees, and the average January to July daily temperature range varies from 37 to 88 degrees<sup>1</sup>. The average rainfall and evapotranspiration in Livermore are approximately 14.4 inches and 49 inches respectively, making the Livermore area relatively dry and arid, which may increase the associated irrigation demands within the Livermore Municipal Water service area.

Average monthly temperature and precipitation data for the City of Livermore is shown below in Table 2-1 and Figure 2-2<sup>2</sup>.

**Table 2-1– Average Livermore Temperature/Precipitation**

Temperature - Precipitation						
	Jan	Feb	March	April	May	June
Average high in °F	57	62	65	71	77	84
Average low in °F	37	40	42	44	49	53
Av. precipitation – inch	2.99	2.76	2.48	0.94	0.43	0.08

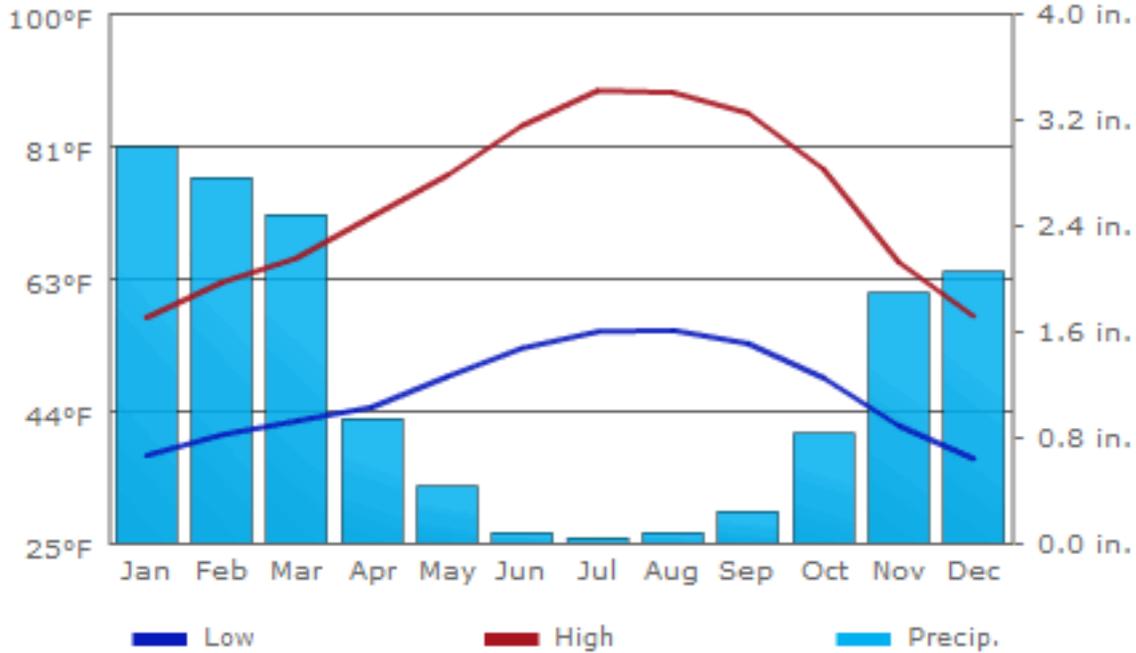
	July	Aug	Sep	Oct	Nov	Dec
Average high in °F	89	89	86	78	65	57
Average low in °F	55	55	53	48	42	37
Av. precipitation - inch	0.04	0.08	0.24	0.83	1.89	2.05

<sup>1</sup> City of Livermore website

<sup>2</sup> Table 2-1 from USClimatedata.com

<http://www.usclimatedata.com/climate.php?location=USCA0618>

**Figure 2-2 - Average Livermore Temperature/Precipitation**



Additional rainfall, temperature and evapotranspiration data for the overall Zone 7 service area, which includes the Livermore Municipal Water service area, are included in Table 2-3 from the 2010 Zone 7 Water Agency Urban Water Management Plan<sup>1</sup>. That table is shown below.

**Zone 7 UWMP Table 2-3– Climate Data for Zone 7’s Service Area**

Weather Parameter	Month												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
ETo, inches of water <sup>(a),(b)</sup>	1.18	1.65	4.17	4.78	5.68	6.64	7.29	6.26	5.05	2.95	1.84	1.51	49.00
Average Temperature, °F <sup>(b)</sup>	45.2	51.7	55.5	54.9	61.3	63.6	68.8	69.4	67.7	58.7	51.1	47.8	--
Average Rainfall, inches of water <sup>(c)</sup>	2.96	2.50	2.18	1.07	0.48	0.11	0.02	0.04	0.24	0.69	1.64	2.64	14.57

<sup>(a)</sup> ETo = evapotranspiration based on standard grass as reference.

<sup>(b)</sup> Data for CIMIS Station 191 from May 2004 to November 2009, downloaded on 12/21/09: [www.cimis.water.ca.gov](http://www.cimis.water.ca.gov).

<sup>(c)</sup> Obtained from Table 3.1-3 of the Zone 7 Annual Report for the Groundwater Management Program – 2009 Water Year (see CD attachment).

<sup>1</sup> 2010 Zone 7 Urban Water Management Plan, page 2-9

## Service Area Population



### 10631(a) Service Area Population Estimates

The Livermore Municipal Water service area population was calculated using Methodology 2 from the February 2011 California Department of Water Resources guidance document, *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*.

Data published by the U.S. Census Bureau serve as the foundational building block for all population estimates used in this Urban Water Management Plan. Since the Livermore Municipal Water service area does not include the entire City of Livermore, some refinements were necessary to make the census data more directly applicable to the Livermore Municipal Water service area. Based on the guidance document (page 25), Livermore Municipal Water is classified as a Category 2 Water Supplier since its service area does not substantially overlap the City boundary but it maintains a geographical information system (GIS) map of the distribution area. Therefore, staff chose to use the persons-per-connection method described in Appendix A of the guidance document as the most appropriate method of determining the Livermore Municipal Water service area population.

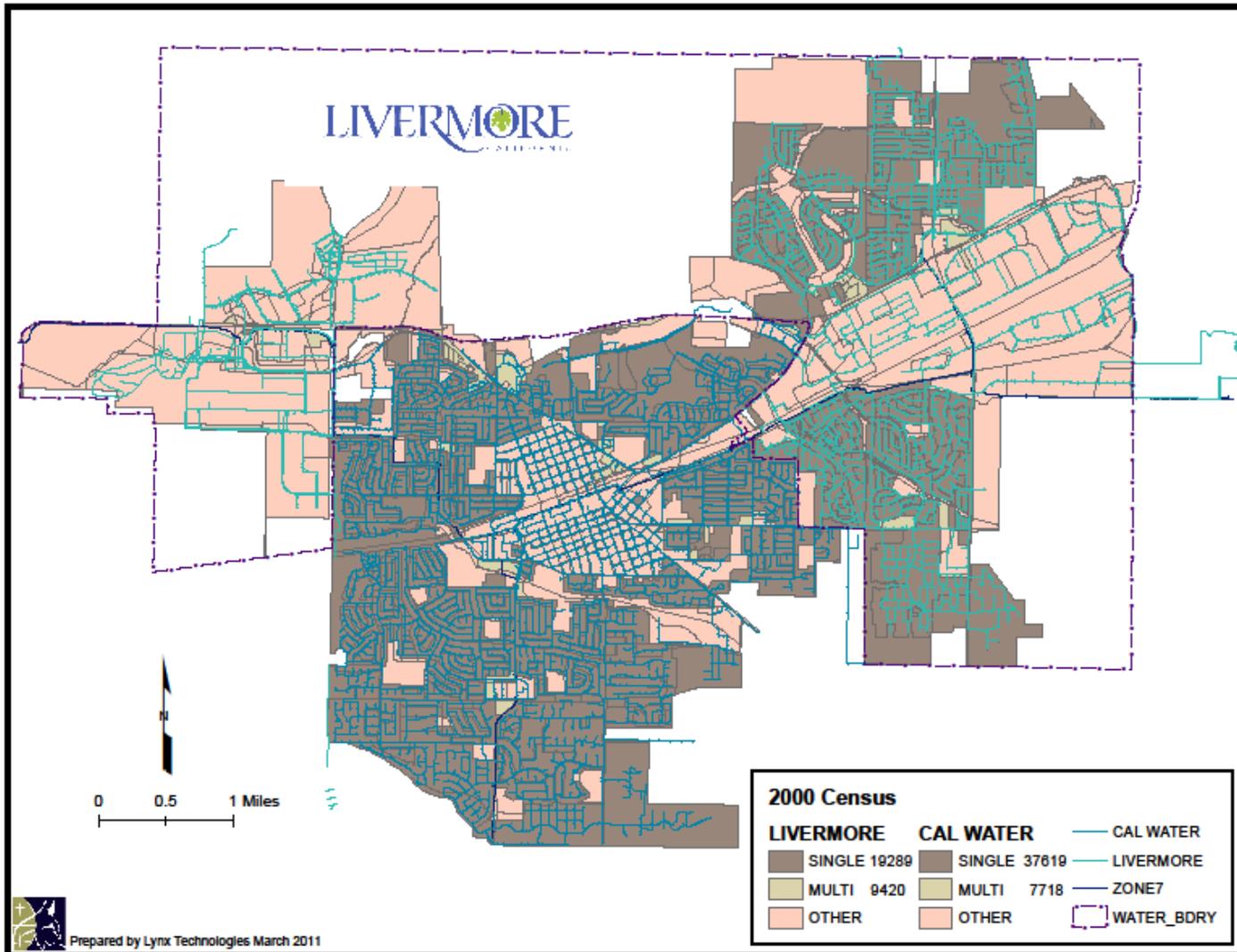
Based on the Appendix A procedure, the City's GIS consultant Lynx Technologies prepared finalized year 2000 Census blocks for the water service area by single-family and multi-family occupancy types. Since the Livermore Municipal Water service area comprises only a portion of the City, staff also had the consultant prepare estimates for the remainder of the City (served by California Water Service Company) to evaluate the accuracy of the projections against the total 2000 Census Population.

The calculated year 2000 population of the Livermore Municipal Water service area was 28,709; comprised of 19,289 people in single family residences and 9420 people in multi-family residential units ranging in size from duplex/triplex to multi-unit apartment complexes. The remainder of the City area was calculated to have a population of 45,337 using the Appendix A methodology; with a single family population of 37,619 and a multi-family population of 7,718.

Therefore, total calculated year 2000 population for Livermore via the Appendix A methodology was 74,046 compared to an actual 2000 Census population of 73,345; a difference of 701 people or just under 1 percent. This is an excellent correlation of the calculated and actual population data and demonstrates the high quality of the City's GIS mapping and knowledge of the Livermore Municipal Water service area.

A copy of the 2000 Census map data by land-use category and water service area is shown below as Figure 2-3.

Figure 2-3 – 2000 Census Map



To determine the population estimates for non-census years, staff applied the persons-per-connection method recommended in Step 5 of Appendix A. Under this method, the number of persons per connection in both the single- and multi-family categories is obtained for the 2000 Census year by dividing each population by the number of service connection in each category. The resulting year 2000 person-per-connection value is multiplied by the number of connections in each non-census year to obtain the service area population. Staff had excellent historical records for single-family residential services; however multi-family residential services had only been tracked separately for the last few years. Fortunately, in prior years, multi-family services had been included in the commercial category and therefore did not affect the single family service counts. Also, since there were relatively few multi-family accounts, staff was able to pull the original start dates for each account and re-create actual multi-family service records back to 1989 for the analysis of baseline per capita usage.

After calculating populations for years 1989 through 2010 using the number of people per connection obtained from the 2000 Census, staff attempted to check the validity of the calculations using 2010 Census data. Again the City’s GIS consultant Lynx Technologies was invaluable in providing Census calculations. However, due to limitations in the 2010 multi-family Census data, Lynx staff was only able to complete the calculations for the single-family category. Based on the 2010 Census data, the single-family residential population in the Livermore Municipal Water service area was 21,831. Based on the persons per connection method using 2000 Census data and current service count information, the calculated 2010 population of the LMW service area was 22,574; a difference of only 743 people or about 3%. Again this demonstrates a very good correlation between calculated and actual population data for the single-family residential component.

The year 2000 persons-per-connection value was also used to project future service area populations based on estimated growth in service connections over time. Table 2-2 below shows the estimated service area population. As shown in the table, population in the Livermore Municipal Water service area is expected to stabilize by 2025 as portions of the City reach build-out.

 Checklist #11

10631(a) Projected Population in 5-year Increments

**Table 2-2 – Service Area Population- Current and Projected**

Table 2 Population — current and projected							
	2010	2015	2020	2025	2030	2035 – optional	Data source <sup>2</sup>
<b>Service area population<sup>1</sup></b>	31,994	33,641	37,724	39,160	39,160	39,160	2000 Census

<sup>1</sup> Service area population is defined as the population served by the distribution system. See Technical Methodology 2: Service Area Population (2010 UWMP Guidebook, Section M).

 Checklist #12

## 10631(a) Demographic Factors Affecting Water Supply

Livermore is located in a mid- to high-income area relative to many parts of California, and has no significant employment, economic or industrial factors that will significantly impact the water supply relative to other local communities.

According to the latest U.S. Census information, Livermore is the third wealthiest midsize city in the nation. In 2005, the median household income in Livermore was \$96,632, which ranked it the third highest income midsize city (between 65,000 and 249,999 people) just behind number two Newport Beach, CA (\$97,428) and Livermore's western neighbor, Pleasanton, CA (\$101,022)<sup>4</sup>. In addition to a high median income, only about 5.3% of the Livermore population was living below the poverty line as of 2005<sup>5</sup>, compared to a statewide poverty rate of about 14.2% in 2000<sup>6</sup>. Therefore, customers in the Livermore Municipal Water service area have historically had the resources available to support prudent water rates necessary to develop and maintain a safe and reliable water supply.

One factor affecting water supply is the suburban, East Bay Area location, and the corresponding expectation for relatively expansive public and private landscaping treatments on both residential and commercial projects that increase baseline water demands. Due to the level of additional public and private landscaping present in well-developed suburban communities such as Livermore, the corresponding per capita water consumption in the Livermore Municipal Water service area could be slightly higher than in some rural communities with less irrigated landscaping.

Another factor that might influence per capita water consumption is the number or percentage of single family residential units in the Livermore Municipal Water service area. Approximately 73% of the housing units in Livermore are single-family residential, compared to only about 54.6% state-wide<sup>3</sup>. A larger percentage of single-family residential units, with the associated landscaping, might increase the Livermore Municipal Water service area water demand compared to some other communities. Also, a large percentage of the housing units in Livermore are owner-occupied. About 72% of housing units in Livermore are owner-occupied, compared to an ownership rate of only about 57% state-wide. A higher percentage of home ownership in Livermore compared to the rest of California might increase overall water demands due to the fact that homeowners typically spend more time and effort on exterior landscaping (and therefore irrigation) compared to owners of rental properties.

Based on 2000 US Census data, approximately 75% of Livermore households were

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<sup>4</sup> San Jose Mercury News

[http://www.mercurynews.com/mld/mercurynews/news/breaking\\_news/15393147.htm](http://www.mercurynews.com/mld/mercurynews/news/breaking_news/15393147.htm)

<sup>5</sup> "Livermore, California Fact Sheet". 2005 American Community Survey, United States Census Bureau. 2005. Retrieved 2007-04-20.

<sup>6</sup> BayAreaCensus.com/cities/Livermore.html

classified as “family households”, with 40% of households having children under 18 years of age in the home. By comparison, only about 69% of California households were classified as “family households”, and about 36% reported children under 18 residing in the home<sup>7</sup>. A higher percentage of households with children and families compared to statewide averages would tend to drive overall water use higher in the Livermore Municipal Water service area than in communities with fewer households.

And finally, Livermore is fortunate to have a somewhat more educated population than the overall California average, with 20% of Livermore residents holding bachelor degrees and 11.5% holding graduate degrees compared to about 17% and 9.5% respectively statewide<sup>8</sup>. The higher percentage of advanced level degrees in Livermore might be due to the presence of Lawrence Livermore National Laboratory and the associated research personnel who reside locally. A more educated population is likely to be more accepting of conservation and other environmental messages which may be necessary to achieve compliance with the Water Conservation Act of 2009.

A recent study in Canada found that increasing levels of education was one of the factors affecting the willingness of people to adopt conservation measures. The study also found that home ownership and higher income levels affected the willingness of residents to adopt energy and water conservation measures<sup>9</sup>. Therefore, the Livermore Municipal Water service area is well-positioned to have a high percentage of residents adopt conservation measures due to the relatively high income, education, and home-ownership levels in its service area.

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<sup>7</sup> [BayAreaCensus.com/cities/Livermore.html](http://BayAreaCensus.com/cities/Livermore.html)

<sup>8</sup> [BayAreaCensus.com/cities/Livermore.html](http://BayAreaCensus.com/cities/Livermore.html)

<sup>9</sup> Statistics Canada. 2010. Households and the environment: Energy Use, 2007. Statistics Canada Catalog No. 11-526-S. 39p

## Section 3: System Demands

This Section describes the current and past water demands in the Livermore Municipal Water service area; reviews the calculation of baseline per capita water use and conservation targets; and projects the estimated future water demands based on the assumed reduction in per capita water usage required by the Water Conservation Bill of 2009.

### Baseline and Targets

#### Checklist #1

##### 10608.20(e) Baseline Per Capita Water Use, Use Targets, and Basis for Estimates

City staff followed the 2010 Urban Water Management Plan Guidebook closely while developing the baseline water usage and targets. Staff applied Methodology 3 from the Guidebook to calculate base daily per capita water use, as well as Part II, Section D of the Guidebook to develop a baseline period and water use targets required by the Water Conservation Bill of 2009.

First, to determine the appropriate range of multiyear base period to use for calculating the Base Daily Per Capita Water Use, staff evaluated potable and recycled water supply data for the year 2008. During 2008, the City supplied 304.9 MG of recycled water, compared to 2,328.8 MG of potable water. Therefore, approximately 11.6% of the 2008 water demand in the Livermore Municipal Water service area was met with recycled water. Under the Water Conservation Bill of 2009, water suppliers who met at least 10% of the 2008 demand using recycled water are allowed to extend the multi-year base period from 10 up to 15 years.

The base period must be a continuous 10- to 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010. To evaluate the effect of selecting different base periods on Base Per Capita Water Use, staff reviewed water system and population data from 1989 through 2010. For the years 1989 through 2010, staff estimated the service area population using Methodology 2; the year 2000 Census data and the persons-per-service connection method contained in Appendix A of the *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use*. Service count information was obtained from the City's Sungard Public Sector Utility Billing System.

Staff then reviewed the gross water use for the years 1989 through 2010 based on the total water purchased from the City's wholesale supplier, the Zone 7 Water Agency. As noted above, the City has no other water supply sources and obtains all of its potable water for the Livermore Municipal Water system from Zone 7.

Using the estimated population and measured gross water use, staff calculated the Base Per Capita Water Use for each year from 1989 through 2010. This annual per

capita water use data was used to calculate 10 and 15 year averages for the various potential 10 and 15-year base periods ending in 2004 through 2010. Because Livermore Municipal Water met more than 10% of its 2008 water demands with recycled water, it is entitled to use up to a 15-year baseline period for determining Base Per Capita Water Use. However, based on an analysis of the data, using a 10-year baseline period was the most favorable option.

The highest average 15-year Base Per Capita Water Use observed was 185.6 gallons per capita per day (GPCD) for the period 1996 to 2010. The highest average 10-year Base Per Capita Water Use observed was 194.6 GPCD for the period 1999 to 2008. Therefore, staff selected 1999 to 2008 as the 10-year baseline period and will be using a Base Per Capita Water Use of 194.6 GPCD to calculate water use targets. Tables 3-1 and 3-2 (DWR Tables 13 and 14) show the Base Period Ranges, as well as the population and gross water use data used in the calculations of annual daily per capita water use.

**Table 3-1 – Base Period Ranges**

<b>Table 13</b>			
<b>Base period ranges</b>			
<b>Base</b>	<b>Parameter</b>	<b>Value</b>	<b>Units</b>
10- to 15-year base period	2008 total water deliveries	2,633.733	<i>see below</i>
	2008 total volume of delivered recycled water	304.923	<i>see below</i>
	2008 recycled water as a percent of total deliveries	11.58%	percent
	Number of years in base period <sup>1</sup>	10	years
	Year beginning base period range	1999	/
	Year ending base period range <sup>2</sup>	2008	/
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2004	/
	Year ending base period range <sup>3</sup>	2008	/

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

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

<sup>2</sup>The ending year must be between December 31, 2004 and December 31, 2010.

<sup>3</sup>The ending year must be between December 31, 2007 and December 31, 2010.

**Table 3-2 – Base Daily Per Capita Water Use – 10 to 15 Year Range**

Table 14				
Base daily per capita water use — 10- to 15-year range				
Base period year		Distribution System Population	Daily system gross water use (mgd)	Annual daily per capita water use (gpcd)
Sequence Year	Calendar Year			
Year 1	1999	28,138	5.2	184.9
Year 2	2000	28,709	5.5	191.9
Year 3	2001	29,154	6.0	206.1
Year 4	2002	29,688	6.0	202.3
Year 5	2003	30,102	5.5	183.6
Year 6	2004	31,227	6.1	194.0
Year 7	2005	31,632	5.9	187.0
Year 8	2006	31,836	6.2	193.3
Year 9	2007	31,945	6.5	202.8
Year 10	2008	31,940	6.4	199.8
<b>Base Daily Per Capita Water Use<sup>1</sup></b>				194.6
<sup>1</sup> Add the values in the column and divide by the number of rows.				

After calculating the Base Daily Per Capita Water Use, staff determined the 2020 Water Use Target by multiplying the base water use by 80%. This calculation yields a 2020 Water Use Target of 155.7 GPCD (0.8 X 194.6 GPCD = 155.7 GPCD).

The Water Conservation Bill of 2009 establishes minimum water use reduction requirements in addition to the general “20% reduction by 2020” requirement. Section 10608.22 of the California Water Code requires that the water use target not exceed 95% of a continuous 5-year period ending no earlier than December 31, 2007 and no later than December 31, 2010. Staff calculated the highest 5-year average during this date range to be for the period 2004 through 2008, with a corresponding gallons-per-capita-per-day of 195.4. Multiplying this value by 95% yields a 5-year baseline per capita water use of 185.6 GPCD, compared to a 2020 Water Use Target of 155.7 GPCD.

Since the calculated 2020 Water Use Target is LESS than 95% of the 5-year baseline value, no further reduction to the 2020 Water Use Target is required. Based on the guidance for calculating Minimum Water Use Reduction Requirements, the 2015 Water Use Target should be set at the mid-point between the 10-year baseline per capita water use and the 2020 water use target. Using a Base Per Capita Water Use of 194.6 GPCD and a 2020 Water Use Target of 155.7 GPCD, the interim 2015 Water Use Target would be 175.1 GPCD (194.6 GPCD – 155.7 GPCD = 38.9GPCD / 2 = 19.4 GPCD + 155.7 GPCD = 175.1 GPCD).

Table 3-3 (DWR Table 15) below shows the estimated population, gross water use and annual daily per capita water use for the 5-year period 2004 to 2008.

**Table 3-3 – Base Daily Per Capita Water Use – 5 Year Range**

<b>Table 15</b>				
<b>Base daily per capita water use — 5-year range</b>				
<b>Base period year</b>		<b>Distribution System Population</b>	<b>Daily system gross water use (mgd)</b>	<b>Annual daily per capita water use (gpcd)</b>
<b>Sequence Year</b>	<b>Calendar Year</b>			
Year 1	2004	31,227	6.06	194.0
Year 2	2005	31,632	5.91	187.0
Year 3	2006	31,836	6.15	193.3
Year 4	2007	31,945	6.48	202.8
Year 5	2008	31,940	6.38	199.8
<b>Base Daily Per Capita Water Use<sup>1</sup></b>				<b>195.4</b>
<sup>1</sup> Add the values in the column and divide by the number of rows.				

## Water Demands

### Checklist #25

#### 10631(e)(1) and (2) – Past, Current and Projected Water Demands

Sections 10631(e) (1) and (2) require urban water suppliers to quantify, to the extent that records are available, past and current water use, and projected water use over five-year increments. Water suppliers are required to identify the uses among sectors of water customer classes, 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.

The current water demands listed in Tables 3-4 and 3-5 (DWR Tables 3 and 4) are based on metered, delivered water consumption information from 2005 and 2010 respectively. In addition to the metered, delivered water consumption data, the City also maintains metered and estimated records of construction usage and water used during system operations in the Livermore Municipal Water service area.

In 2005, the City provided water service to 9,344 services and sold approximately 2,055 million gallons of water as shown in Table 3-4 (DWR Table 3).

**Table 3-4 Water Deliveries – Actual, 2005**

Table 3					
Water deliveries – actual, 2005					
	2005				
	Metered		Not metered		Total
Water use sectors	# of accounts	Volume	# of accounts	Volume	Volume
<b>Single family</b>	<b>7,735</b>	<b>1,132.003</b>	<b>0</b>		<b>1,132.003</b>
<b>Multi-family</b>	<b>45</b>	<b>78.034</b>	<b>0</b>		<b>78.034</b>
<b>Commercial</b>	<b>614</b>	<b>412.519</b>	<b>0</b>		<b>412.519</b>
<b>Industrial</b>	<b>4</b>	<b>32.974</b>	<b>0</b>		<b>32.974</b>
<b>Institutional/governmental</b>	<b>23</b>	<b>25.121</b>	<b>0</b>		<b>25.121</b>
<b>Landscape</b>	<b>465</b>	<b>371.609</b>	<b>0</b>		<b>371.609</b>
<b>Agriculture</b>	<b>0</b>	<b>0.000</b>	<b>0</b>		<b>0.000</b>
<b>Other - Commercial Fire lines</b>	<b>458</b>	<b>3.200</b>	<b>0</b>		<b>3.200</b>
<b>Total</b>	<b>9344</b>	<b>2055.460</b>	<b>0</b>	<b>0</b>	<b>2,055.460</b>

*Units (circle one): acre-feet per year **million gallons per year** cubic feet per year*

Between 2005 and 2010, the Livermore Municipal Water system had grown by about 201 services, or about 2.2%, to 9,545 services, although the total volume of water sold decreased by over 17%, from about 2,055 MG to only 1,697 MG as shown below in Table 3-5 (DWR Table 4). This decrease in total water consumption was likely due to a combination of increased conservation awareness due to the California drought and pumping restrictions imposed in the Sacramento -San Joaquin Delta, as well as a reduction in commercial activity due to the 2007/08 economic collapse.

The number of commercial accounts actually declined by 51, or about 9.1%, from 2005 to 2010; while commercial water use declined by over 23% during this period. Single-family residential accounts increased by about 1.6% between 2005 and 2010; however single-family water use declined by about 13.5% over this period. The number of multifamily residential accounts remained constant during this period, while multifamily consumption declined by 17.9%. Based on the number of residential services and water consumption data between 2005 and 2010, it appears that significant reductions in water consumption were achieved by the residential sector within the Livermore Municipal Water service area.

**Table 3-5 – Water Deliveries – Actual, 2010**

<b>Table 4</b>					
<b>Water deliveries — actual, 2010</b>					
	<b>2010</b>				
	<b>Metered</b>		<b>Not metered</b>		<b>Total</b>
<b>Water use sectors</b>	# of accounts	Volume	# of accounts	Volume	Volume
<b>Single family</b>	<b>7,861</b>	<b>979.793</b>	<b>0</b>	<b>0</b>	<b>979.793</b>
<b>Multi-family</b>	<b>46</b>	<b>64.129</b>	<b>0</b>	<b>0</b>	<b>64.129</b>
<b>Commercial</b>	<b>558</b>	<b>315.709</b>	<b>0</b>	<b>0</b>	<b>315.709</b>
<b>Industrial</b>	<b>0</b>	<b>0.000</b>	<b>0</b>	<b>0</b>	<b>0.000</b>
<b>Institutional/governmental</b>	<b>41</b>	<b>24.141</b>	<b>0</b>	<b>0</b>	<b>24.141</b>
<b>Landscape</b>	<b>536</b>	<b>306.254</b>	<b>0</b>	<b>0</b>	<b>306.254</b>
<b>Agriculture</b>	<b>0</b>	<b>0.000</b>	<b>0</b>	<b>0</b>	<b>0.000</b>
<b>Other - Fire lines and Flushing</b>	<b>503</b>	<b>7.723</b>	<b>0</b>	<b>0</b>	<b>7.723</b>
<b>Total</b>	<b>9,545</b>	<b>1,697.749</b>	<b>0</b>	<b>0</b>	<b>1,697.749</b>

*Units (circle one): acre-feet per year **million gallons per year** cubic feet per year*

Projected water deliveries for 2015 are shown below in Table 3-6 (DWR Table 5), and include an estimated growth in total services of about 4.3%, from 9,545 to 9,952 between 2010 and 2015. Total water deliveries by 2015 are expected to increase 5.7% from 2010 levels to about 1,794 million gallons, representing an expected economic recovery by 2015.

Estimated 2015 water deliveries take into account the interim 2015 Water Use Target of 175.1 GPCD described previously in Section 3. Total water use estimates in Table 3-11 (DWR Table 11) are based on total projected water deliveries plus system losses, and were calculated using the corresponding annual population and the interim 2015 and final 2020 water use targets.

**Table 3-6 – Water Deliveries – Projected, 2015**

<b>Table 5</b>					
<b>Water deliveries — projected, 2015</b>					
	<b>2015</b>				
	<b>Metered</b>		<b>Not metered</b>		<b>Total</b>
<b>Water use sectors</b>	# of accounts	Volume	# of accounts	Volume	Volume
<b>Single family</b>	<b>8,143</b>	<b>1014.941</b>	<b>0</b>	<b>0</b>	<b>1,014.941</b>
<b>Multi-family</b>	<b>50</b>	<b>69.705</b>	<b>0</b>	<b>0</b>	<b>69.705</b>
<b>Commercial</b>	<b>630</b>	<b>356.446</b>	<b>0</b>	<b>0</b>	<b>356.446</b>
<b>Industrial</b>	<b>0</b>	<b>0.000</b>	<b>0</b>	<b>0</b>	<b>0.000</b>
<b>Institutional/governmental</b>	<b>46</b>	<b>27.063</b>	<b>0</b>	<b>0</b>	<b>27.063</b>
<b>Landscape</b>	<b>560</b>	<b>319.967</b>	<b>0</b>	<b>0</b>	<b>319.967</b>
<b>Agriculture</b>	<b>0</b>	<b>0.000</b>	<b>0</b>	<b>0</b>	<b>0.000</b>
<b>Other - Fire lines and Flushing</b>	<b>523</b>	<b>6.000</b>	<b>0</b>	<b>0</b>	<b>6.000</b>
<b>Total</b>	<b>9,952</b>	<b>1,794.122</b>	<b>0</b>	<b>0</b>	<b>1,794.122</b>

*Units (circle one): acre-feet per year **million gallons per year** cubic feet per year*

Estimated 2020 water deliveries are projected to increase by 12% above 2015 deliveries, based on an anticipated 8.3% increase in water accounts from 9,952 to 10,781. This projection includes a return to more normal historic growth patterns in commercial accounts, with an increase of about 24%.

As noted above, water delivery projections for 2020, 2025, 2030, and 2035 in Tables 3-7 and 3-8 (DWR Tables 6 and 7) were developed based on the final 2020 Water Use Target of 155.7 GPCD and the estimated annual population for each year while taking into account system losses shown in Table 3-10 (DWR Table 10).

**Table 3-7 – Water Deliveries – Projected, 2020**

Table 6 Water deliveries — projected, 2020					
Water use sectors	2020				
	Metered		Not metered		Total
	# of accounts	Volume	# of accounts	Volume	Volume
Single family	8,690	1,083.119	0	0	1,083.119
Multi-family	62	86.434	0	0	86.434
Commercial	780	441.315	0	0	441.315
Industrial	0	0.000	0	0	0.000
Institutional/governmental	56	32.946	0	0	32.946
Landscape	630	359.963	0	0	359.963
Agriculture	0	0.000	0	0	0.000
Other - Fire lines and Flushing	563	6.000	0	0	6.000
<b>Total</b>	<b>10,781</b>	<b>2,009.777</b>	<b>0</b>	<b>0</b>	<b>2,009.777</b>

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

Estimated 2025 water deliveries shown in Table 3-8 (DWR Table 7) are projected to increase by 3.7 % above 2020 deliveries, based on an anticipated 4.8% increase in water accounts from 10,871 to 11,301. This projection includes a return to more normal historic growth patterns in commercial accounts, with an increase of about 2.6% over projected 2020 levels.

Projections for water years 2030 and 2035 are estimated to remain at 2025 levels as the Livermore Municipal Water service area reaches build-out due to the Urban Growth Boundary (UGB). Livermore has an UGB that corresponds with Alameda County’s Urban Growth Boundary. Livermore voters approved the South Livermore Urban Growth Boundary Initiative in 2000; and a North Livermore Boundary Initiative in 2002.

Estimates for the future number and timing of residential services were calculated based on the location of the current UGB in relationship to the Livermore Municipal Water service area, the amount of growth projected in the Livermore General Plan, and historic growth rates. Estimates of the number of future commercial/industrial and public agency accounts were developed based on the remaining development projected by the

General Plan in the Livermore Municipal Water service area and historic commercial growth rates. Water delivery projections were made using a variety of current and historic consumption data, interim and final water use targets, and the estimated growth in the number of connections over time.

**Table 3-8 – Water Deliveries – Projected 2025, 2030, and 2035**

Table 7 Water deliveries — projected 2025, 2030, and 2035						
	2025		2030		2035 - optional	
	Metered		Metered		Metered	
Water use sectors	# of accounts	Volume	# of accounts	Volume	# of accounts	Volume
Single family	9,190	1,145.439	9,190	1,145.439	9,190	1,145.439
Multi-family	62	86.434	62	86.434	62	86.434
Commercial	800	452.631	800	452.631	800	452.631
Industrial	0	0.000	0	0.000	0	0.000
Institutional/governmental	56	32.946	56	32.946	56	32.946
Landscape	630	359.963	630	359.963	630	359.963
Agriculture	0	0.000	0	0.000	0	0.000
Other - Fire lines and Flushing	563	6.000	563	6.000	563	6.000
<b>Total</b>	<b>11,301</b>	<b>2,083.413</b>	<b>11,301</b>	<b>2,083.413</b>	<b>11,301</b>	<b>2,083.413</b>

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

The City does not sell water to any other agency; therefore Table 3-9 (DWR Table 9) below indicates no water deliveries in any of the past or projected water years.

**Table 3-9 – Sales to Other Water Agencies**

Table 9 Sales to other water agencies							
Water distributed	2005	2010	2015	2020	2025	2030	2035 - opt
None	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>						

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

In addition to delivered potable water, the City also meets some of the water demand in the Livermore Municipal Water service area by using recycled water. Table 3-10 (DWR Table 10) reflects the projected amounts of recycled water that will be delivered in each water year based on the existing 2004 Recycled Water Master Plan. The final component of total water use is water loss, which Water Resources Division staff tracks annually. Historic water loss has averaged between 4-10% of total purchases depending on the year, and future projections include decreasing percentages of water loss over time. Staff will continue to monitor water loss and identify opportunities to eliminate or minimize system losses where possible.

**Table 3-10 – Additional Water Uses and Losses**

Table 10							
Additional water uses and losses							
Water use <sup>1</sup>	2005	2010	2015	2020	2025	2030	2035 - opt
Saline barriers	0	0	0	0	0	0	0
Groundwater recharge	0	0	0	0	0	0	0
Conjunctive use	0	0	0	0	0	0	0
Raw water	0	0	0	0	0	0	0
Recycled water	266.889	428.196	618.506	725.392	725.392	725.392	725.392
System losses	103.267	282.810	170.000	130.000	140.000	140.000	140.000
Other (define)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total</b>	<b>370.156</b>	<b>711.006</b>	<b>788.506</b>	<b>855.392</b>	<b>865.392</b>	<b>865.392</b>	<b>865.392</b>
<i>Units (circle one): acre-feet per year <b>million gallons per year</b> cubic feet per year</i> <i><sup>1</sup>Any water accounted for in Tables 3 through 7 is not included in this table.</i>							

Total past, current, and projected Livermore Municipal Water service area use is shown in Table 3-11 (DWR Table 11) below.

Note that the totals for water years 2015 and beyond shown in Table 3-11 (DWR Table 11) exceed the total volume of water indicated by the estimated population and the 2015 and 2010 Water Use Targets due to the inclusion of recycled water use. Total potable water use projections calculated using the estimated population and Water Use Targets, excluding recycled water use are 2,150.3 MG in 2015; 2,143.3 MG in 2020; and 2224.9 MG in 2025 and beyond.

**Table 3-11 – Total Water Use**

Table 11							
Total water use							
Water Use	2005	2010	2015	2020	2025	2030	2035 - opt
Total water deliveries (from Tables 3 to 7)	2055.460	1697.749	1794.122	2009.777	2083.413	2083.413	2083.413
Sales to other water agencies (from Table 9)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Additional water uses and losses (from Table 10)	370.156	711.006	788.506	855.392	865.392	865.392	865.392
<b>Total</b>	<b>2425.613</b>	<b>2408.755</b>	<b>2582.628</b>	<b>2865.169</b>	<b>2948.805</b>	<b>2948.805</b>	<b>2948.805</b>

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

 **Checklist #34**

10631.1(a) – Lower Income Water Demands

The 2009 to 2014 Housing Element Needs Assessment indicates that within the Livermore Municipal Water service area, there are approximately 119 existing single-family homes that are affordable to low-income households and approximately 207 multi-family units that are affordable to low-income households.

Note that 207 multi-family units do not correspond to 207 multi-family service connections. The Livermore Municipal Water service area currently has 46 multi-family services that comprise approximately 1046 units. Therefore, the current number of lower-income multi-family units in the Livermore Municipal Water service area represents about 19.8% of the total multi-family units present.

With a total of 7861 single family residential services in 2010; the 119 lower-income single-family homes represent about 1.5% of the total single-family homes in the Livermore Municipal Water service area.

The Housing Element anticipates another 100 affordable single-family units will be added to the existing stock within the Livermore Municipal Water service area through construction, anticipated development and/or as secondary dwelling units.

Housing Element Program 1.1.1, Residential Sites Inventory, requires the City to re-designate and rezone land at a minimum density of 30 dwelling units per acre to accommodate 966 units affordable to low- and very low-income households. The City has identified several potential sites within the Livermore Municipal Water service area

boundaries that can be re-designated to accommodate these units. The addition of 100 lower income, single-family units and 966 lower-income, multi-family units would bring the total percentage of lower income single-family units in the Livermore Municipal Water service area to 2.75%, while the total percentage of lower-income multi-family units would increase to about 27%. For the purposes of completing Table 3-12 (DWR Table 8), staff assumed the current percentages of lower income single-family and multi-family residential units (1.5% and 19.8%) for the 2015 and 2020 periods, and the higher projections (2.75% and 26.8%) for 2025 and 2030.

**Table 3-12 – Low-Income Projected Water Demands**

Table 8					
Low-income projected water demands					
Low Income Water Demands <sup>1</sup>	2015	2020	2025	2030	2035 – opt
Single-family residential - a percentage of total consumption.	152.2	162.5	312.2	315.0	
Multi-family residential – a percent of total consumption	13.8	17.1	23.2	23.2	
<b>Total</b>	166.0	179.6	335.4	338.2	0

*Units (circle one):* acre-feet per year million gallons per year cubic feet per year  
<sup>1</sup>Provide demands either as directly estimated values or as a percent of demand.

The lower-income water demands shown above are included in the total water demands of the Livermore Municipal Water service area. Since Zone 7 intends to meet 100% of the water demand in all of the supply years included in this UWMP, the demands of all lower-income units will be met.

The paragraph quoted below from page 9-7 of the 2010 Zone 7 Urban Water Management Plan indicates Zone 7’s intent to meet water demands associated with lower-income households.

*“In compliance with Senate Bill 1087 (SB 1087; Projected Water Use for Lower Income Households), the projected demands presented in Table 9-4 include the projected water use for single-family and multi-family residential housing for low-income households. Zone 7’s current policy, as discussed in Chapter 7, is to meet 100% of projected demands. Zone 7 is therefore planning to meet 100% of the water demand associated with low-income households as required in SB 1087.”*

## Water Demand Projections

### Checklist #33

10631(k) – Wholesale Agency Demand Projections

Water Resources Division staff provided the demand projections shown below in Table 3-13 (DWR Table 12) to Zone 7 Water Agency staff and requested confirmation of the

Agency’s ability to meet these water demands. Zone 7 staff provided the information contained in Table 4-1 (DWR Table 16) in response to the request for verification by Water Resources Division staff. Based on the response, Zone 7 can meet the requested demands through implementation of water supply projects identified in the Zone 7 Water Supply Master Plan (discussed in further detail in Section 5 - System Reliability).

**Table 3-13 – Demand Projections Provided to Wholesaler**

Table 12							
Retail agency demand projections provided to wholesale suppliers							
Wholesaler	Contracted Volume <sup>1</sup>	2010	2015	2020	2025	2030	2035 - opt
<b>Zone 7 Water Agency</b>	100%	2387.993	2150.255	2143.303	2224.880	2224.880	2224.880

<sup>1</sup> Million Gallons

## Water Use Reduction Plan



10608.26 (a) – Water Use Reduction Plan

Water Resources Division staff has developed the following Water Use Reduction Plan to ensure compliance with the Water Conservation Bill of 2009. In general, the plan involves a combination of Public Education and Outreach, Demand Management Measures, Monitoring and Tracking, and a Review and Analysis procedure to refine and target additional use reduction efforts as the 2020 deadline approaches.

### Public Education/Outreach

Water Resources Division staff will conduct water conservation outreach efforts both individually, in conjunction with other retailers through the Tri-Valley Water Retailers Group, and regionally, through projects funded by the retailers through Zone 7.

The initial emphasis of public outreach efforts will be on continuing to use water wisely, given the very wet winter of 2010 and the excellent progress Livermore residents and businesses have made towards meeting the 2015 interim water use target. City staff will gauge public education messages in subsequent years to ensure consistent and complementary messages according to local and state-wide water conditions, as well as progress towards meeting the water use targets. For example, in very wet years when the Livermore Municipal Water service area is on-track or ahead of schedule in meeting interim and final water use targets, conservation messages will likely be less aggressive than they would be in dry or drought years or if the service area were not on track to meet the use targets.

In addition to general outreach activities, the Water Resources Division staff would also

conduct targeted outreach efforts if monitoring indicates that a particular use sector is not meeting reduction goals. For example, if usage were to increase in the commercial sector while overall usage is declining; staff would develop additional targeted outreach for commercial customers. Education/outreach will be one important method of targeting use reductions to ensure that no one sector is unfairly burdened.

### **Demand Management Measures**

Implementation of the Demand Management Measures, discussed in Section 6, will be an important component of the Water Use Reduction Plan. Demand Management Measures will assist Water Resources Division staff in reducing overall system demands as well as targeting high-use sectors or customers for potential reductions. For example, the use of residential surveys and large landscape audits are two targeted methods that staff might utilize in response to elevated or excessive use by individual customers. Consistent implementation of Demand Management Measures will also be an important tool in ensuring that use reductions are spread evenly over the Livermore Municipal Water customer base, and that a disproportionate burden is not placed on any customer sector.

Section 6 includes procedures and criteria for evaluating the effectiveness of individual Demand Management Measures. Staff will periodically use this evaluation information to refine and adjust implementation of Demand Management Measures to increase the effectiveness or to ensure all customer sectors are contributing to reductions.

### **Monitoring and Tracking**

Water Resources Division staff will monitor and track the progress of the Water Use Reduction Plan on a quarterly basis to ensure the Livermore Municipal Water system is on-schedule to meet the 2015 interim and 2020 final water use targets. Monitoring will include tracking of overall water use; use by different customer sectors; calculation of daily per capita consumption; and a review of the status of Demand Management Measure implementation.

Monitoring data will be used in the Analysis/Plan Revision process to identify additional measures or strategies to meet use targets, or to ensure all customer sectors are contributing to required reductions. Also, monitoring data may be used in Public Outreach/Education component to publicize the status of conservation efforts or to remind customers where additional targeted efforts are needed.

### **Analysis and Plan Revision**

As noted above, Water Resources Division staff will evaluate water use data on at least an annual basis and propose modifications to existing conservation strategies as necessary to achieve compliance with the Water Conservation Bill of 2009. Based on the reductions achieved at the time of the review, staff might target individual customer sectors for additional reductions and identify best management practices or expanded demand management efforts for those sectors. If the Livermore Municipal Water system is on-track to meet the interim and final water use targets, and the data does not

indicate that a significantly disproportionate burden is being placed on any customer section, no changes to the plan would be made.

### **Economic Impacts**

Water Resources Division staff will consider the economic impacts of conservation requirements on both customers as well as on water system revenue. Staff will attempt to minimize the cost of implementing Demand Management Measures, and will consider the cost-effectiveness of use reductions when developing new or expanded requirements. Also, the review and analysis procedures will be used not only to identify additional efforts necessary to meet the water use targets, but will also identify if any one customer sector has already achieved significant reductions or has very low water use and does not need to implement further reductions. Similarly, residential conservation efforts will recognize those customers who have already reduced their consumption to very low levels and do not need to implement additional conservation practices. These efforts will help to reduce costs for those customers who have already been conscientious in limiting their water consumption.

Staff will also consider the economic impact to the City from reduced water sales due to conservation efforts and will ensure that proper revenues are collected through revised rates as necessary. Staff is currently evaluating the need to increase water rates in response to long-term conservation and a decreasing trend in water use to cover fixed costs. The City currently has a water rate structure that provides sufficient funding for operations, maintenance, and renewal/replacement of the Livermore Municipal Water system. Future funding deficits caused by decreased consumption will be addressed through increased water rates or by instituting temporary conservation rates as necessary.

Initial estimates of the overall economic impact of compliance with the Water Conservation Bill of 2009 are between approximately \$100,000 and \$150,000 per year. This represents the additional costs in materials and staff time associated with implementing the Demand Management Measures, Public Outreach campaign and the other components of the Water Use Reduction Plan.

Significant reductions in revenue from reduced water sales would need to be recovered from increased water rates. However, while the unit cost might increase, the total cost to individual customers should remain relatively constant due to the expected decrease in consumption by an average of 20 percent. Also, while gross revenue decreases substantially with reduced water sales, the net loss is somewhat tempered by a reduction in expenses as the City purchases less water from Zone 7.

# Section 4: System Supplies

## Water Sources



10631(b) – Identify and Quantify Water Sources

As noted previously, the City purchases all of its water for the Livermore Municipal Water service area from wholesaler Zone 7 Water Agency. In response to Water Resources Division staff’s request for verification of supplies, Zone 7 staff provided the information shown in Table 4-1 (DWR Table 16) regarding the sources and quantities Zone 7 plans to use to meet deliveries requested by the City.

**Table 4-1 – Water Supplies – Current and Projected**

Table 16							
Water supplies — current and projected							
Water Supply Sources		2010	2015	2020	2025	2030	2035 - opt
Water purchased from <sup>1</sup> :	Wholesaler supplied volume (yes/no)						
Wholesaler 1 - Zone 7 Water Agency	YES	1,980.559	2,150.255	2,143.302	2,224.880	2,224.880	2,224.880
Wholesaler 2							
Wholesaler 3							
Supplier-produced groundwater <sup>2</sup>							
Supplier-produced surface water							
Transfers in							
Exchanges In							
Recycled Water		428.196	618.506	725.392	725.392	725.392	725.392
Desalinated Water							
Other							
Other							
<b>Total</b>		<b>2408.755</b>	<b>2,768.761</b>	<b>2,868.712</b>	<b>2,950.272</b>	<b>2,950.272</b>	<b>2,950.272</b>

Units (circle one): acre-feet per year million gallons per year cubic feet per year

<sup>1</sup> Volumes shown here should be what was purchased in 2010 and what is anticipated to be purchased in the future. If these numbers differ from what is contracted, show contracted quantities in Table 17.

<sup>2</sup> Volumes shown here should be consistent with Tables 17 and 18.

Table 4-1 (DWR Table16) includes current and projected recycled water use based on the City’s current 2004 Recycled Water Master Plan; additional recycled water supplies of over 2,000 million gallons per year are available.

## Groundwater

### Checklist #14

#### 10631(b) – Groundwater Sources

The City of Livermore does not pump groundwater to meet any water demands of the Livermore Municipal Water service area. While the City does retain a small pumping quota of about 30 acre-feet per year, it is unlikely that it would be used during the 20 year planning horizon. The City does receive groundwater from wholesaler Zone 7 as part of the overall supply purchased for the Livermore Municipal Water service area.

### Checklist #15

#### 10631(b)(1) – Groundwater Management Plans

The City has not developed a Groundwater Management Plan. The Zone 7 Water Agency is the groundwater manager for the Tri-Valley and has developed both a Groundwater Management Program and a Salt Management Plan to ensure protection of the Livermore-Amador Valley Groundwater Basin. A copy of the Zone 7 Groundwater Management Plan on CD is included in Attachment A, and is available on the Zone 7 website at [www.zone7water.com](http://www.zone7water.com).

## Transfer Opportunities

### Checklist #24

#### 10631(d) – Short and Long-Term Transfer Opportunities

The City has the opportunity for short-term, emergency water transfers through interties with the California Water Service Company, the City of Pleasanton and Dublin San Ramon Services District. The City also maintains a small intertie with the San Francisco Public Utilities Commission (SFPUC) Water System via the Lawrence Livermore National Laboratory. During an emergency, the Livermore Municipal Water service area could receive small amounts of water from that intertie. However, the intertie has historically been used for the City to supply water to the Lawrence Livermore National Laboratory during planned, temporary interruptions of the SFPUC system.

The City has only limited opportunities for long-term water transfers due to its contract with the Zone 7 Water Agency. Under the current water supply contract, if the City obtains water from another source, it must still pay Zone 7 for the amount of water it would have normally purchased *unless the Zone is unable to supply the water*. Since Zone 7 has traditionally guaranteed all deliveries requested for the Livermore Municipal Water system, it has not been economical for the City to establish additional long-term transfer agreements with other suppliers. However, should Zone 7 be unable to meet future projected delivery requests, the City would be free to seek transfer agreements or develop other independent water sources.

## Desalinated Water Opportunities



### 10631(i) – Desalinated Water Opportunities

The City has few, if any, opportunities for developing desalinated water other than through regional transfers being considered in the Zone 7 2011 Water Supply Evaluation.

Due to its location, the City has no direct access to the ocean or San Francisco Bay, and is contractually restricted from independent water transfers as discussed above. While the City has access to brackish groundwater in the Livermore Municipal Water service area that is not subject to the pumping restrictions on the main groundwater basin, there has been no incentive to develop this potential source since Zone 7 has been able to meet all delivery requests. Also, the amount of water available in these fringe groundwater basins is limited and likely insufficient to provide significant volumes to make desalination treatment economical.

## Recycled Water Opportunities



### 10633 – Recycled Water Opportunities

The City has excellent opportunities to meet significant portions of the Livermore Municipal Water service area demands with recycled water. The City of Livermore has been producing and distributing recycled water since 1966 and has a relatively well-developed recycled water program that currently distributes an average of about 2 million gallons of recycled water per day.

There are significant opportunities for expansion of the recycled water production capabilities of the Livermore Water Reclamation Plant. However, there are currently insufficient customers to utilize the production capacity. The City is working with Zone 7 and the other retailers to look for opportunities to expand recycled water use in the Livermore-Amador Valley. The City is also currently updating its Recycled Water Master Plan to identify additional projects that could potentially increase recycled water use.

## System Description and Disposal



### 10633 – Recycled Water System Description and Flows

The City of Livermore has approximately 286 miles of sanitary sewer lines ranging in size from 6” to 48”. Wastewater collected from the City of Livermore, Lawrence Livermore National Laboratory, and the City of Pleasanton’s Ruby Hills housing development, is collected and treated at the Livermore Water Reclamation Plant

(LWRP) located on the corner of West Jack London Blvd. and Isabel Ave/Kittyhawk Road (State Route 84) in Livermore.

The LWRP receives an average daily dry weather flow of approximately 7.0 million gallons per day (MGD) (7,841 AF/Y) and is owned, operated, and maintained by the City's Water Resources Division. Wastewater is treated using conventional primary and secondary wastewater treatment processes, as well as tertiary treatment to produce recycled water.

Conventional wastewater treatment processes consist of:

- Primary sedimentation where heavy organic solids are removed from the raw sewage and sent to the solids stabilization and dewatering facilities.
- Secondary treatment utilizing the activated sludge process which removes 85% - 95% of the remaining organic material after primary sedimentation.
- Disinfection using sodium hypochlorite to reduce the bacteria levels in the secondary effluent prior to disposal.
- Disposal of secondary effluent through the Livermore Amador Valley Water Management Agency (LAVWMA) pipeline.
- Solids stabilization using anaerobic digestion followed by belt pressing for dewatering prior to beneficial reuse as alternate daily cover or land application.

Tertiary treatment for water reclamation consists of:

- Mono-media filters where 95% - 99% of suspended material is removed from secondary effluent.
- Disinfection using ultraviolet light (UV) prior to disposal.

Tertiary treated effluent meeting California Title 22 requirements for unrestricted water reuse is recycled through landscape irrigation. An average 2.0 MGD (6.1 AF), with peak summer flows approaching 3.0 MGD, is recycled. The tertiary filtration capacity of the Livermore Water Reclamation Plant was recently upgraded to approximately 10 MGD; however, the UV disinfection capacity is currently limited to 6 MGD. Based on the current limitations of the UV system, the annual amount of recycled water that could be produced is approximately 2190 MG (6721AF/Y). By comparison, this amount is roughly equal to the total projected 2015 water demand for the entire Livermore Municipal Water service area. Therefore, significant potential exists for expanded recycled water use if feasible projects can be identified through the on-going Recycled Water Master Plan update.

The Water Resources Division provides disinfected tertiary treated recycled water to the northwestern portion of the City. The distribution system consists of two aboveground reservoirs with a holding capacity of 1.88 million gallons each. There are approximately

20 miles of distribution pipeline ranging in size from 4- to 18- inches, with 110 meter connections. Livermore also has 100 recycled water fire hydrants available for contractors to use during construction, fire fighting, and system maintenance. Currently, recycled water is provided for several uses including landscape and agricultural irrigation, fire protection, construction, street sweeping and toilet and urinal flushing.

 **Checklist #46**

10633(b) – Recycled Water Volume Available

Table 4-2 (DWR Table 21) below shows the past, current, and projected amounts of wastewater collected and treated by the Livermore Water Reclamation Plant (LWRP), as well as the volume of recycled water produced over the same periods. Since the LWRP discharges secondary treated wastewater for disposal and tertiary treated wastewater for recycling, the volume that meets recycled water standard shown in the table indicates the volume of recycled water estimated to be produced by the plant in each year. Estimated future recycled water production is based on the existing 2004 Recycled Water Master Plan. This estimated volume is expected to increase with the completion of the on-going Recycled Water Master Plan update. As noted above, additional water could be treated to recycled water standards if uses were available.

**Table 4-2 – Recycled Water – Wastewater Collection and Treatment**

Table 21							
Recycled water — wastewater collection and treatment							
Type of Wastewater	2005	2010	2015	2020	2025	2030	2035 - opt
Wastewater collected & treated in service area	2,474.023	2,616.755	2,807.065	2,949.797	3,056.683	3,246.992	
Volume that meets recycled water standard	266.889	428.196	618.506	725.392	725.392	725.392	

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

**Wastewater Disposal**

The remainder of the wastewater collected and treated by the Livermore Water Reclamation Plant is discharged to the San Francisco Bay via the Livermore Amador Valley Water Management Agency (LAVWMA) pipeline. The City of Livermore currently discharges approximately 2,188 MG/Y (6,715 AF/yr) of secondary effluent via the LAVWMA pipeline.

**Table 4-3 – Recycled Water – Non-Recycled Wastewater Disposal**

Table 22							
Recycled water — non-recycled wastewater disposal							
Method of disposal	Treatment Level	2010	2015	2020	2025	2030	2035 - opt
LAVWMA Pipeline Disposal	Secondary Effluent	2,188.559	2,188.559	2,224.079	2,331.291	2,509.543	
Total		2,188.559	2,188.559	2,224.079	2,331.291	2,509.543	0.000

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

## Uses and Projected Uses

### Checklist #48

#### 10633(d) – Potential Recycled Water Opportunities

The City of Livermore currently uses UV-disinfected tertiary treated effluent not exceeding a median total coliform value of 2.2 MPN/100 mL for all recycled water uses. The potential uses below in Table 4.4 (DWR Table 23) represent both the projected new facilities planned for the recycled water area as well as retrofitting existing facilities. In most cases it may not be economically feasible for existing developments that are currently using potable water for irrigation to switch to recycled water, nor would it be economically feasible to extend pipelines to serve a small number of customers with limited demands. However, one goal of the Recycled Water Master Plan Update is to identify multiple high water use sites that could be grouped together into viable projects that allow expansion of the recycled water system. Projected uses in Table 4.4 (DWR Table 23) are based on the existing 2004 master plan and do not include potential projects identified in the draft Recycled Water Master Plan Update.

**Table 4.4 – Recycled Water – Potential Future Use**

Table 23							
Recycled water — potential future use							
User type	Description	Feasibility <sup>1</sup>	2015	2020	2025	2030	2035 - opt
Agricultural irrigation	No Access	NF	0.000	0.000	0.000	0.000	0.000
Landscape irrigation <sup>2</sup>	Access	F	232.999	321.636	394.631	429.499	429.499
Commercial irrigation <sup>3</sup>	Access	F	179.230	195.523	195.523	195.523	195.523
Golf course irrigation	Access	F	131.978	189.006	189.006150	189.006	189.006
Wildlife habitat	No Access	NF					
Wetlands	No Access	NF					
Industrial reuse	Access	F					
Groundwater recharge	Access	NF					
Seawater barrier	No Access	NF					
Geothermal/Energy	No Access	NF					
Indirect potable reuse	Access	F					
Construction Water	Access	F	36.172	36.172	36.172	0	0
Other (user type)							
<b>Total</b>		<b>0</b>	<b>580.379</b>	<b>742.337</b>	<b>815.332</b>	<b>814.028</b>	<b>814.028</b>

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

<sup>1</sup>Technical and economic feasibility.

<sup>2</sup>Includes parks, schools, cemeteries, churches, residential, or other public facilities)

<sup>3</sup>Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

## Current Uses

### Checklist #47

#### 10633(c) – Current Recycled Water Use

Current 2010 recycled water use data is shown below in Table 4.5 (DWR Table 24). Recycled water use between 2005 and 2010 increased by approximately 62%, from about 266 MG/yr to about 430 MG/Y. Approximately 56% of the recycled water supplied by the City was used for commercial irrigation, while about 30% was used for irrigation of the Las Positas Municipal Golf Course. An additional 12% was used for landscape irrigation of parks and public facilities, including the Livermore Water Reclamation Plant and the Livermore Municipal Airport. The remaining 2% was used for construction uses.

## Projected Uses

### Checklist #49

#### 10633(e) – Projected Recycled Water Use

Table 4-5 (DWR Table 24) below shows the actual 2010 recycled water use and the projected 2010 recycled water use from the 2005 Urban Water Management Plan. It is unclear exactly where the differences between the projected and actual use lie due to the modification in use types since the 2005 UWMP. However, overall 2010 recycled water use was only about 9.3% lower than projected in the 2005 UWMP. This is an excellent projection given that recycled water use increased by approximately 62% between 2005 and 2010, from about 266 MG/yr to about 430 MG/yr.

**Table 4-5 – Recycled Water–2005 UWMP Use Projection Compared to 2010 Actual**

Table 24 Recycled water — 2005 UWMP use projection compared to 2010 actual		
Use type	2010 actual use	2005 Projection for 2010 <sup>1</sup>
Agricultural irrigation		
Landscape irrigation <sup>2</sup>	50.184	364.977
Commercial irrigation <sup>3</sup>	239.842	72.670
Golf course irrigation	131.978	
Wildlife habitat		
Wetlands		
Industrial reuse		
Groundwater recharge		
Seawater barrier		
Geothermal/Energy		
Indirect potable reuse		
Construction Water	7.821	36.172
Other (user type)		
<b>Total</b>	<b>429.825</b>	<b>473.819</b>

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year  
<sup>1</sup>From the 2005 UWMP. There has been some modification of use types. Data from the 2005 UWMP can be left in the existing categories or modified to the new categories, at the discretion of the water supplier.  
<sup>2</sup>Includes parks, schools, cemeteries, churches, residential, or other public facilities)  
<sup>3</sup>Includes commercial building use such as landscaping, toilets, HVAC, etc) and commercial uses (car washes, laundries, nurseries, etc)

 Checklist #50

10633(f) – Actions to Increase Recycled Water Use

The primary and most effective action to increase recycled water use in the Livermore Municipal Water service area is the requirement that customers in the designated recycled water use area (LMW Zone 1) must use recycled water for irrigation. This requirement ensures that 100% of new customers in that area use recycled water for irrigation unless they can demonstrate a need for potable irrigation.

The main financial incentive to increase recycled water use in the Livermore Municipal Water service area is a reduced recycled water rate. By Livermore City Council policy, the recycled water rate is set at 80% of the potable water rate. Therefore, recycled water customers have a built-in incentive of at least 20% savings on their water consumption bill by using or switching to recycled water.

In addition to a reduced potable water rate, recycled water customers also avoid the one-time potable water connection fee from Zone 7 that represents a significant financial savings. Potable water connection fees from Zone 7 can range from \$22,000 to \$56,000 for smaller meters (5/8" to 1"), and can exceed several hundred thousand dollars for large industrial or irrigation meters (3" to 6" or larger). Since connection fees are charged during initial project construction and are not refundable, these connection fee savings are only available to customers who initially install recycled water services, and not to those customers who subsequently switch from potable to recycled water.

### **Optimizing Recycled Use**

 Checklist #51

10633(f) – Optimizing Recycled Water Use

As noted above, the City of Livermore currently requires all new development within the City's recycled water service area to use recycled water for outdoor irrigation purposes. Water Resources Division staff also encourages developers to use recycled water for toilet flushing inside certain categories of buildings, or to install dual plumbing for possible future use if the tenant is unknown at the time of construction.

Since all customers within the recycled water use area are required to use recycled water for irrigation, and the City does not currently supply recycled water outside of the recycled water use area, it is impossible to evaluate the impact of the methods, such as financial incentives, used to encourage recycled water use. When the City expands the recycled water system into areas that are not required to use recycled water it will be better able to evaluate the impact of incentives to increase recycled water use. This inability to currently quantify the effect of financial incentives is reflected in Table 4-6 (DWR Table 25) below.

**Table 4-6 – Methods to Encourage Recycled Water Use**

Table 25 Methods to encourage recycled water use						
Actions	Projected Results					
	2010	2015	2020	2025	2030	2035 - opt
Financial incentives	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<b>Total</b>	0	0	0	0	0	0
Units (circle one): acre-feet per year <u>million gallons per year</u> cubic feet per year						

As previous indicated, the City of Livermore is currently completing an update of its Recycled Water Master Plan (RWMP) to consider the expanded use of recycled water. The goals of the master plan are to:

- Offset potable water use by supplying recycled water when and where appropriate.
- Expanding and fully subscribing the existing recycled water system.
- Optimizing the existing and future system configuration

The RWMP examines potential recycled water use sites outside the existing recycled water use area to develop potential projects to expand the recycled water system. Phase I of the master plan identified 10 alternatives and a series of screening criteria that were used to select three alternatives for further evaluation. A copy of the Executive Summary of the Phase I Recycled Water Master Plan Report is in Attachment A.

Phase II of the master plan will include further evaluation of the three alternatives, as well as an investigation of current and projected recycled water production and distribution costs. The final Recycled Water Master Plan update will not be completed in time to include the results in this UWMP. Therefore, recycled water use projections in Table 4-4 (DWR Table 23) are based on build-out of the 2004 Recycled Water Master Plan for the existing recycled water use area.

### Future Water Projects

 **Checklist #30**

10631(h) – Future Water Supply Projects

The City has no planned projects to increase its independent water supply during the UWMP planning horizon as reflected below in Table 4-7 (DWR Table 26).

**Table 4-7 – Future Water Supply Projects**

Table 26 Future water supply projects								
Project name <sup>1</sup>	Projected start date	Projected completion date	Potential project constraints <sup>2</sup>	Normal-year supply <sup>3</sup>	Single-dry year supply <sup>3</sup>	Multiple-dry year first year supply <sup>3</sup>	Multiple-dry year second year supply <sup>3</sup>	Multiple-dry year third year supply <sup>3</sup>
None	N.A.	N.A.	N.A.	0	0	0	0	0
<b>Total</b>			0	0	0	0	0	0

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

The City will continue to work with Zone 7 to support and implement water supply projects, both independently and cooperatively with other local retailers through the Tri-Valley Water Retailers Group and Committee of Valley Water Retailers.

Zone 7 is currently finalizing its 2011 Water Supply Evaluation (WSE) that will provide “a flexible roadmap to meet the water supply needs of the Livermore-Amador Valley through build-out of adopted general plans”. The Zone 7 2011 WSE includes a variety of options to increase future supplies to meet demands at build-out, including expanded use of recycled water, long-term or permanent water transfers, and desalination. Zone 7 anticipates that it can secure 10,500 AF of new supply during normal water years though a combination of several water supply projects.

Table 11-1 of the 2010 Zone 7 Water Agency Urban Water Management Plan shows the anticipated new supply for the 2020 and 2030 Planning Horizons in Normal, Single-Dry and Multiple Dry years; the table has been excerpted and is shown below<sup>10</sup>.

Zone 7 UWMP Table 11-1. Projected New Water Supply

Water Year Type	Base Year(s)	2020 to 2030	
		Yield, AF	% of Normal
Normal	1942	10,500	100%
Single-Dry	1977	6,100	57%
Multiple-Dry	Year 1 to 5 (1988 to 1992)	6,100	57%

In addition to these new supply options, Zone 7 is also participating in efforts to develop a Delta Fix and examining policies and operational practices for local groundwater and

<sup>10</sup> 2010 Zone 7 Water Agency Urban Water Management Plan

surface water storage to protect and maximize existing supplies. Therefore, the City will meet future demands in the Livermore Municipal Water service area through a combination of new water supply projects by Zone 7, a statewide Delta Fix, enhanced operation of existing surface and groundwater storage, and demand reductions required by the Water Conservation Bill of 2009.

## Section 5: Water Supply Reliability and Water Shortage Contingency Planning

Section 5 requires water suppliers to compare projected water supplies and demands, and to assess the overall reliability of future supplies regardless of drought or emergency conditions. This section also requires the water supplier to discuss how its supply sources might vary as a result of emergency or outside influence and how the water supplier plans to respond to potential supply limitations via a Water Shortage Contingency Plan.

### Checklist #5

#### 10620(f) Maximizing Resources to Minimize Imported Water

While the City does not import any water directly, it does rely on imported surface water from wholesaler Zone 7 Water Agency. To minimize the need for imported water, the Water Resources Division implements the Demand Management Measures (DMMs) described in Section 6 of this Urban Water Management Plan, and will be implementing an expanded Water Use Reduction Plan to comply with the Water Conservation Act of 2009.

In addition to efforts to minimize demand, the City supports Zone 7's efforts to maximize the use of local runoff via surface storage in Lake Del Valle, and future storage in the Chain of Lakes to minimize reliance on imported water. The City also supports Zone 7's groundwater basin management and recharge efforts, which help to reduce the amount of imported water needed.

The City produces and distributes recycled water, which offsets a significant amount of potable water demand that would otherwise need to be met with imported water. The City currently supplies over 10% of the Livermore Municipal Water service area demands with recycled water.

### **Water Supply Reliability**

The City purchases all of its potable water supply from the Zone 7 Water Agency and has no additional supply sources during normal operations. The City does maintain emergency interties with other water retailers in the area to provide back-up supplies for short-term service interruptions.

Zone 7 has worked with the Tri-Valley water retailers to develop a reliable water system with a variety of supply sources. One of the important factors in developing this system was the Zone 7 Reliability Policy, adopted on August 18, 2004. The reliability policy has two main goals to drive water system planning and capital improvements:

- Goal 1 – Meet 100% of Municipal and Industrial water demands over the next 20

- years through average, single dry, and multiple dry years;
- Goal 2 – Meet 75% of maximum day demands with a major facility out of service

Based on these two goals, and with the support of water retailers in adopting rates to support the cost, Zone 7 has been able to develop a variety of water supply sources to provide for the needs of the Tri-Valley through at least year 2020. Zone 7 is currently finalizing its 2011 Water Supply Evaluation and has identified additional projects and programs to provide sufficient supplies to meet water demands through build-out. The Reliability Policy will be reviewed and updated in late 2011.

### Checklist #23

#### 10631(c)(2) Alternate Water Supply Sources and Plans

The City relies on Zone 7 as its primary water source for the Livermore Municipal Water system; the Zone 7 system consists of a variety of different sources. A summary of Zone 7's supply sources includes:

- Imported Surface Water
  - State Water Project
  - Byron Bethany Irrigation District
- Local Surface Water Runoff
  - Arroyo del Valle
- Local Storage
  - Lake Del Valle
  - Chain of Lakes(future)
- Non-Local Storage
  - Semitropic Water Storage District
  - Cawelo Water District

Zone 7 is able to balance its supply between a variety of different sources to adapt to shortages or limitations in any one source due to legal, environmental, regulatory, or climatic factors. Chapters 7 and 16 of the 2010 Zone 7 Water Agency Urban Water Management Plan discuss the reliability of each of the Zone's water supply sources and the overall system reliability through 2030. Excerpts from page 16-1 of the Zone 7 Urban Water Management Plan regarding system reliability during normal, single dry years, and multiple dry years are included below:

- *Under normal water years, Zone 7 does not anticipate any difficulty in meeting projected water demands, with or without additional conservation measures, assuming Zone 7 can successfully implement planned programs and projects (Table 16-1);*
- *Under single dry years, Zone 7 does not expect shortages through 2030 with the implementation of planned programs and projects (Table 16-2). The maximum potential shortage—based on the High Water Demand scenario—could be as high as 8,700 AF between 2020 and 2030 if Zone 7 cannot implement planned programs and projects.*
- *Under multiple dry years, planned programs and projects have similarly been designed to prevent any shortages. Zone 7's analysis indicates that, without such programs and*

*projects, shortages of up to 36,000 AF can be expected under a multiple dry year scenario ending in 2030 based on the High Water Demand scenario.*

City staff will continue to work with Zone 7 staff directly and through the Tri-Valley Water Retailers Group and the Committee of Valley Water Retailers to ensure that appropriate projects and programs are implemented to meet expected water demand at build-out of the adopted Livermore General Plan.

## **Water Shortage Contingency Planning**

The City first adopted a Water Shortage Contingency Plan in 1991 and updated the plan in 1996 and 2005. The Water Shortage Contingency Plan has gone through a more comprehensive revision as part of the 2010 Urban Water Management Plan update, and was adopted along with the 2010 UWMP. As part of the update of the Water Shortage Contingency Plan, the Water Conservation Plan originally developed in 1991 which specifies voluntary and mandatory conservation measures, has also been revised and incorporated into the Water Shortage Contingency Plan. The updated Water Shortage Contingency Plan replaces previous shortage contingency and conservation plans. Modifications to the Livermore Municipal Code updating the authority to implement expanded conservation measures will be made after adoption of the updated Water Shortage Contingency Plan.

The updated 2010 Water Shortage Contingency Plan is included in Attachment A.



### **Checklist #37**

#### **10632(c) – Catastrophic Supply Interruptions**

This section describes actions taken by the Water Resources Division to prepare for and to be implemented during a catastrophic interruption of water supplies. Potential catastrophic supply interruptions include but are not limited to a regional power outage, earthquake, or other disaster causing a water supply outage such as a failure of the San Joaquin Delta levee system.

The Water Resources Division has developed a comprehensive Emergency Response Plan (ERP) that addresses a variety of potential emergency situations directly affecting the Livermore Municipal Water system. The goals of the ERP are to:

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

The ERP establishes “Action Plans” for different emergency conditions which outline the steps Water Resources Division staff will take to respond to, evaluate, and mitigate the

emergency. Action Plans were developed for a variety of water supply interruptions including: power outages; earthquakes; flooding; and terrorist events. In addition to Action Plans, the Livermore Municipal Water Emergency Response Plan includes an inventory of emergency supplies, mutual aid contacts, and lists of potential vendors of emergency supplies.

The Livermore Municipal Water Emergency Response Plan was developed 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. Due to the sensitive nature of the information contained in the Emergency Response Plan, the plan includes an Access Control section that limits distribution of the plan to “individuals directly involved in Livermore Municipal Water’s emergency planning and response activities”. Therefore, excerpts from the Livermore Municipal Water Emergency Response Plan are not included with this Urban Water Management Plan.

Below is a brief summary of some of the steps the Water Resources Division staff will implement in response to specific water supply interruptions:

**Regional Power Outage** – Four of the Livermore Municipal Water system’s five pump stations have emergency generators in the event of regional or local power outage situations. The water telemetry center at the Livermore Water Reclamation Plant also has plans to implement emergency backup power during extended outages. Backup pump station power will allow City staff to maintain water service as long as Zone 7 has available water supplies.

In addition to maintaining pump station power, the Water Resources Division staff has access to the City of Livermore “Communicator” system which will allow staff to contact all residents via a reverse-911 system to inform them to immediately minimize water use. This will maximize the length of time that remaining supplies in the storage reservoirs will last.

**Water Supply Outage** – After notification by Zone 7 of a regional water supply outage, Water Resources Division staff will immediately put one of the emergency plans into action. If the South Bay Aqueduct (part of State Water Project) were damaged, it is possible that a limited amount of water would be available in the Patterson Pass Treatment Plant forebay and additional water could be taken from Lake Del Valle. If a Zone 7 pipeline were damaged, water could be networked around the Tri-Valley and around the leak through retailer interties. If a Livermore Municipal Water system pipeline were damaged or leaking, the leak or damaged section could be isolated and an alternate supply path created through the supply network.

During short-term supply outages, Water Resources Division staff would implement similar procedures described above for power outages. For prolonged, regional outages, Water Resources Division staff would consider the need and feasibility of implementing progressively more aggressive strategies to extend local reservoir supplies. These might include restricting all uses except emergency fire-fighting, with

staff distributing drinking water and portable toilets throughout the service area to meet sanitation and drinking needs. These types of measures would only be considered in the most extreme and prolonged emergency conditions.

**Earthquake** – The Livermore Municipal Water Emergency Response Plan includes specific Action Plans addressing earthquake-related impacts to the water system in a manner similar to power outages or service interruptions.

## **Mandatory Prohibitions**



### **Checklist #38**

#### 10632(d) – Mandatory Prohibitions During Shortages

The Livermore Municipal Code includes a variety of voluntary and mandatory management practices to conserve water. The majority of the mandatory conservation practices are triggered at the Stage 3 level, corresponding to an expected reduction of 20-35% below normal use.

Some of the mandatory prohibitions are described below and summarized in Table 5-1 (DWR Table 36):

- The use of potable water for municipal activities such as street cleaning and sewer main flushing will be suspended at the Stage 3 level. Recycled water will be used for these needs in Stage 3, with the exception of water used for sewer line flushing in response to emergency sanitary sewer blockages or overflows.
- Implementation of odd/even irrigation, with no watering on the 31<sup>st</sup> of each month for residential and commercial uses is included in Stage 2 and may be implemented as a voluntary or mandatory prohibition.
- The use of sprinkler irrigation will be prohibited and the requirement to irrigate by hand-watering only on Saturday or Sunday will become mandatory at the Stage 3 level.
- The use of potable water for compaction or dust control during construction activities will be prohibited at the Stage 3 level since recycled water is available for those uses.
- The use of potable water for filling swimming pools will become a mandatory prohibition at the Stage 4 level.
- The use of potable water for washing buildings, vehicles or boats except at facilities which capture and recycle the water will become a mandatory prohibition at the Stage 4 level.

**Table 5-1 – Water Shortage Contingency – Mandatory Prohibitions**

Table 36 Water shortage contingency — mandatory prohibitions	
Examples of Prohibitions	Stage When Prohibition Becomes Mandatory
Using potable water for street washing	Stage 3
Odd/Even Irrigation Limitations	Stage 3
Use of potable water for compaction/dust control	Stage 3
Prohibition of landscape irrigation except hand-watering	Stage 4
Prohibition on filling swimming pools	Stage 4
Prohibition on using water for vehicle or building washing	Stage 4

### Consumption Reduction Methods

 **Checklist #39**

#### 10632(e) – Consumption Reduction Methods

Section 10632(e) of the California Water Code allows urban water suppliers to use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its service area, and have the ability to achieve a reduction consistent with up to a 50% reduction in water supply.

The City will use a variety of methods to achieve up to a 50% reduction in water demands in the event of serious supply shortages. One of the most important and earliest strategies will be public education and outreach during the initial stages of any water shortage. During past water shortage events, Livermore Municipal Water customers reduced consumption by 15-20% based on education and voluntary water use reductions. Water consumption during the 1977-1978 and 1987-1992 droughts declined by about 20% based on increased customer awareness and without the City implementing mandatory conservation measures or conservation rates.

While continued “hardening” of water demand through building practices, toilet and washer rebates, and other programs may reduce this expected reduction slightly, there will continue to be a significant reduction in demand through public education during critical shortage events.

The recommended and mandatory conservation practices discussed above are projected to reduce consumption by an additional 10% during the highest stage of shortage. The most significant reduction will be in irrigation savings when the odd/even watering restrictions become mandatory at the Stage 3 level.

By far the most important consumption method during prolonged shortage events will be implementation of Conservation Rates, which will also be important in recovering necessary revenue for water system operations. Stage 2 Conservation Rates are projected to reduce consumption by only about 5% since they do not increase

dramatically for the lowest tiers. However, implementation of Stage 3 rates is expected to reduce consumption by an additional 10% as rates increase across all rate tiers. At Stage 4, the projected reduction in consumption again decreases to about 5% assuming that the majority of non-critical irrigation and other uses have already been minimized by this point. However, this assumption may be overly conservative and Stage 4 rates may lead to a reduction of 10% or more due to the large increase in rates between Stage 3 and Stage 4.

Based on a combination of public education/outreach, recommended and mandatory conservation practices, and the implementation of several levels of conservation rates, the projected reduction in water use is expected to be about 45-50%. The final measure to ensure a 50% reduction in demand during extreme and prolonged shortages would be to prohibit all outdoor irrigation other than hand-irrigation using a watering can or container. This is expected to reduce demand by another 5-10% or more and should ensure that the City is able to reduce Livermore Municipal Water service area demand by up to 50% in combination with the other methods summarized below in Table 5-2 (DWR Table 37). However, this type of extreme measure would only be considered in extreme shortage conditions due to the impacts/damage to landscape infrastructure throughout the service area.

**Table 5-2 – Water Shortage Contingency – Consumption Reduction Methods**

Table 37 Water shortage contingency — consumption reduction methods		
Consumption Reduction Methods	Stage When Method Takes Effect	Projected Reduction (%)
Public Education/Outreach	Stage 2	15-20%
Recommended and Mandatory conservation Practices	Stage 2/3	10%
Stage 2 Conservation Rates	Stage 2	5%
Stage 3 Conservation Rates	Stage 3	10%
Stage 4 Conservation Rates	Stage 4	5-10%
Outdoor Irrigation Prohibition in extreme events	Stage 3/4	10%

**Penalties for Excessive Use**

 Checklist #40

10632(f) – Penalties for Excessive Use

The City utilizes several financial disincentives or penalties to discourage excessive water use, both during normal water conditions and during shortage events.

The primary financial “penalty” for excessive use is the inverted tier water rates, with increasing rates for higher levels of use. Inverted tier rates are in place during normal and water shortage conditions. In addition, the City also utilizes conservation rates during shortage events that have an ascending rate structure to further discourage excessive use.

The City also has the authority to implement a penalty for excessive use by individual customers. Water Resources Division staff will develop conservation usage targets based on average per-capita consumption or a percentage of historic consumption in response to specific shortage events. These usage targets will be used to evaluate customers for potential excessive use penalties. If customers use more than the allotted usage targets for three consecutive billing periods, the City may increase the water rates to the highest conservation tier for a period of three months.

Customers will be provided with the ability to appeal excessive use penalties if they feel their use allocation was inappropriate due to factors such as:

- A higher than average number of people in residential units;
- Medical needs that demand water-consuming devices or uses;
- Water consumed in products or activities that cannot be reduced.

Customers will also have an opportunity to appeal excessive use penalties based on economic hardship or other factors. Excessive use penalties would be implemented at the Stage 4 level.

In addition to additional charges for excessive use through inverted tier rates and penalties for excessive use, the City may also issue penalties for violating mandatory prohibitions. Water Resources Division staff will be able to issue administrative citations to customers violating mandatory prohibitions starting at the Stage 4 conservation level. Administrative citations carry a fine of approximately \$100 each.

Table 5-3 (DWR Table 38) includes a summary of the penalties and charges for excessive use which are available to Water Resources Division staff.

**Table 5-3 – Water Shortage Contingency – Penalties and Charges**

Table 38		
Water shortage contingency — penalties and charges		
Penalties or Charges	Stage When Penalty Takes Effect	
Charges for excess use (Tiered Rates)	1 - 4	
Charge for excess use	4	
Penalty for violating mandatory prohibitions	4	

**Financial Impacts - Conservation Rates**

 Checklist #41

10632(g) – Impacts of Shortages on Revenue and Expenditures -Conservation Rates

The actions and conditions addressed in Water Code Sections 10632(a) through (f) and discussed above will have impacts on the City’s water revenues and expenses. While

expenses will be reduced through lower wholesale water purchases from Zone 7, the decline in expenses does not fully offset the loss in revenue from reduced sales. This is due, in part, to the fact water rates and charges do not fully recover all of the fixed costs on meter service charges, and instead allocate some fixed charges to the water rate component of the bill. This practice slightly inflates the consumption-based portion of the customer bill to encourage conservation during normal conditions. However, the downside of this practice is that net revenue can decline during water shortages or other periods of reduced water sales.

The impact to net water system revenues will vary with each stage of action and the corresponding level of water shortage and expected conservation. The 2010 Water Shortage Contingency Plan included in Attachment A provides a review of the impacts to water revenues and expenses based on the expected reductions in water sales.

To offset the impacts of water shortages, the City has developed conservation rates that can be enacted in response to water shortages. Conservation rates are updated and adopted by the Livermore City Council each time normal water rates and service charges are adjusted. By having previously-adopted conservation rates, the City can avoid the delays associated with Proposition 218 notification and ballot procedures prior to implementing conservation rates in response to a water shortage.

The City has conservation rates that correspond to each Stage identified in the Water Shortage Contingency Plan, and are calculated to recover the necessary revenue based on the reduced volume of water expected to be sold and purchased in each Stage. For example, Stage 2 conservation rates are designed to recover the revenue lost from a 20% reduction in water sales while taking into account the reduced cost of purchasing 20% less water.

 Checklist #42

10632(h) – Water Shortage Contingency Ordinance

The updated 2010 Water Shortage Contingency Plan for Livermore Municipal Water will be adopted by resolution of the Livermore City Council rather than by specific ordinance. Legal authority to implement conservation measures, penalties or other administrative requirements of the Water Shortage Contingency or Water Use Reduction Plans will be contained in an expanded water conservation chapter of the Livermore Municipal Code addressing water system operations.

Attachment A includes a resolution adopting the 2010 Water Shortage Contingency Plan as well as proposed modifications to the Livermore Municipal Code addressing water conservation.

 Checklist #43

10632(i) – Mechanisms for Determining Reductions

The Water Resources Division has developed monitoring procedures to determine if water use reductions are being met during Stage 1-4 water shortages, as well as during critical water emergency or disaster events.

Normal Monitoring Procedure:

In normal water supply conditions, purchase and sales data is checked monthly by Water Section staff and compiled by the Water Supervisor. These totals are reported to the Water Resources Division Manager or the Public Works Director as requested. The totals are also logged into the annual report to the Department of Water Resources.

Stage 1 or Stage 2 Water Shortages:

During a Stage 1 or Stage 2 water shortage, weekly turnout readings are reported to the Water Supervisor. The Supervisor compares the weekly purchase records to the weekly target to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Resources Division Manager and the Public Works Director. Monthly summary reports are also sent to the Public Works Director. If reduction goals are not met, the Water Supervisor will propose additional activities or conservation measures and advise the Water Resources Division Manager. The Manager will notify the Public Works Director that additional corrective actions or use-reduction measures will be implemented.

Stage 3 and 4 Water Shortages:

During a Stage 3 or 4 water shortage, the procedure listed above will be followed, with the addition of a daily water purchase report being submitted to the Water Resources Division Manager.

Emergency Shortages:

During an Emergency Shortage, a major focus will be on monitoring water storage tanks to ensure adequate fire protection and emergency storage. Water Resources Division staff will review tank levels via the Supervisory Control and Data Acquisition (SCADA) system on an hourly or continuous basis to ensure tank levels are maintained at safe levels for as long as possible. Also, purchase meter readings can be reported to the Water Supervisor, Water Resources Division Manager or Public Works Director hourly, if needed.

## Water Quality

### Checklist #52

#### 10643 – Water Quality

The City is a retail water supplier only, and provides no treatment, disinfection, or chemical addition. It purchases all of its water supply from wholesaler Zone 7 Water Agency, which uses a combination of surface water and groundwater to meet local water supply demands. Therefore, the City has very limited control over delivered water quality.

The City has been assured by Zone 7 it does not anticipate that any water quality related parameters would negatively impact the ability to provide a safe and reliable supply of water over the next 20 years based on current and expected regulatory limits. Zone 7 uses water quality as a parameter in water supply planning, and had identified Total Dissolved Solids (TDS) as a potential water quality issue in the groundwater basin many years ago. Zone 7, in conjunction with the Tri-Valley water retailers, developed a Salt Management Program to ensure that salts did not build up to a level that would threaten the groundwater supply.

In addition to the Salt Management Program, Zone 7 also developed a comprehensive Water Quality Management Program with significant input and assistance from the water retailers. The program, adopted in 2003, has four main goals surrounding attainment of primary and secondary Maximum Contaminant Levels (MCLs), meeting Public Health Goals where technically feasible and fiscally responsible, reducing earthy/musty taste and odor events from surface water supplies, and generally working toward improving the quality of delivered water.

With the existing Salt Management Program, Water Quality Management Program, and the continued attention of the water retailers and Zone 7 on tracking and improving water quality, there are no projected water quality impacts on the reliability or sustainability of the water supply for the Livermore Municipal Water service area.

While Zone 7 does not anticipate any water quality issue affecting water supply availability, there are water quality concerns that are monitored on an on-going basis. Below is an excerpt from page 15-1 of the 2010 Zone 7 Urban Water Management Plan discussing water quality concerns:

*Water quality issues of specific concern to Zone 7 are:*

- *Taste and odor (T&O) - primarily a problem in the warmer months, when algal blooms may be present. It can affect supplies from the Delta and from Lake Del Valle. Algae produce geosmin and 2-methylisoborneol (MIB), which are key taste and odor-causing compounds in surface water supply. Zone 7 currently treats T&O using powdered activated carbon (PAC), which is of limited effectiveness under high levels of geosmin and MIB. High levels of T&O in surface water require a switch to groundwater supplies.*
- *Total and dissolved organic carbon (TOC/DOC) – levels of organic carbon affect the amounts of coagulant and disinfectant chemicals used at Zone 7's water treatment*

plants (WTPs), and therefore result in higher costs. In addition, the formation of disinfectant byproducts is dependent upon the amount of TOC/DOC. TOC/DOC levels have historically not affected the amount of imported surface water supply available to Zone 7.

- Turbidity – like TOC/DOC, turbidity affects the amounts of chemicals used at the WTPs, and Zone 7’s ability to meet drinking water standards. Turbidity levels have historically not affected the amount of imported surface water supply available to Zone 7.
- Salinity or total dissolved solids (TDS) – salinity is a water quality parameter that has significant impacts on SWP operations and the availability of water. To meet the salinity objectives in the Delta, water exports from the Delta may be restricted, reducing the amount of water supply available during certain times of the year.

Table 5-4 (DWR Table 30) below indicates the lack of water quality-based supply impacts over the planning horizons.

**Table 5-4 – Water Quality – Current and Projected Water Supply Impacts**

Table 30 Water quality — current and projected water supply impacts							
Water source	Description of condition	2010	2015	2020	2025	2030	2035 - opt
Zone 7	None	0	0	0	0	0	

Units (circle one): acre-feet per year **million gallons per year** cubic feet per year

## Drought Planning

Water Resources Division staff works closely with Zone 7 Water Agency staff to coordinate water demand projections with available supplies in both normal and drought conditions. As noted previously, Zone 7 has historically been able to meet all delivery requests based on the Zone 7 Reliability Policy and the willingness of Tri-Valley water retailers to adopt rates to support the development of a diverse portfolio of water supply options. Based on Zone 7’s current Reliability Policy, Zone 7 intends to meet the demands of the Livermore Municipal Water service area in average, single dry, and multiple dry years.

The water demand information presented below for average, single dry and multiple dry years is based on a combination of Zone 7 supply and Livermore Municipal Water demand data.

### Checklist #22

10631(c) (1) – Average, Single Dry and Multiple Dry Years

Table 5-5 (DWR Table 27) below shows the base year(s) used by Water Resources Division staff to calculate water demand data in the normal, single dry and multiple dry water year types.

**Table 5-5 – Basis of Water Year Data**

Table 27 - Basis of water year data	
Water Year Type	Base Year(s)
Average Water Year	2010
Single-Dry Water Year	1977
Multiple-Dry Water Years	1988 -1992

The base year used by Zone 7 to calculate available supply information for the “normal” year varies between the different supply sources due to a wide variety of hydrologic and storage conditions as well as the variability in supply, storage and transfer agreements. However, the single dry year was 1977 and the multiple dry years were 1988 to 1992 for most of the Zone 7 supply sources.

**Table 5-6 – Supply Reliability – Historic Conditions**

Table 28 Supply reliability — historic conditions					
Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
1942, 1932, 1922-2003 <sup>a</sup>	1977	1988	1989	1990	1991
Percent of Average/Normal Year:	100%	100%	100%	100%	100%

(a) The Normal water year varies depending on the various Zone 7 supply sources.

Table 7-9 below from the 2010 Zone 7 Urban Water Management Plan shows the estimated available water based on each of the Zone 7 supplies in normal, single-dry, and multiple-dry years. Based on the total volume of water available in each of the water year types, it appears that the Zone 7 supply is consistent regardless of hydrologic conditions due to the ability to pull additional water from local and non-local groundwater storage and to maximize the use of “carryover” water in the State Water Project.

Zone 7 UWMP Table 7-9. Summary of Estimated Available Water Based on Hydrologic Records and Existing Supplies and Storage Options

Water Source	Yields (Acre-Feet Annually)		
	Normal Year <sup>(a)</sup>	Single-Dry Year <sup>(b)</sup>	Multiple-Dry Years <sup>(c)</sup>
Arroyo del Valle	7,100	0	150 - 4,400
SWP – Table A	51,400	8,000	15,700 - 47,800
SWP – Carryover	0	20,200	20,200 - 27,600
SWP – Yuba Accord	145	676	676
BBID	4,500	2,000	2,000
<i>From storage:</i>			
Main Basin	9,200	26,200	14,000
Semitropic	0	9,100	9,600 - 13,600
Cawelo	0	10,000	10,000
<b>TOTAL</b>	<b>72,345</b>	<b>76,176</b>	<b>72,326 - 120,076</b>

<sup>(a)</sup> Based on median runoff or allocation levels and patterns.

<sup>(b)</sup> Based on the lowest annual runoff or allocation in the historical sequence.

<sup>(c)</sup> Based on the lowest runoff or allocation for a consecutive 5-year period in the historical sequence.

Based on the supply data in Table 7-9 from the 2010 Zone 7 UWMP, it appears that Zone 7 can meet 100% of normal supplies in either single-dry or multiple-dry water years, and that the amount of water available in single-dry and multiple-dry water years meets or exceeds the amount of water available in normal years.

 **Checklist #35**

10632(a) – Stages of Action

Table 5-7 (DWR Table 35) below shows the four stages of action in the Livermore Municipal Water Water Shortage Contingency Plan. Stage 1 indicates a minimal reduction in supply, with a voluntary reduction of 0 -20%. Stage 2 corresponds to a supply shortage of up to 20%, which equates to a reduction of about 396 MG/year based on a total 2010 Livermore Municipal Water system demand of about 1980 MG, and includes either voluntary or mandatory conservation measures. Stage 3 and 4 indicate supply reductions of 20-35% and 35-50% respectively, equaling reductions of up to 693 MG/yr at Stage 3 and 990 MG/Yr at Stage 4.

Each Stage in the Plan is organized in the following manner:

- **Definition:** This is the condition of the water supply that would normally trigger this element of the Plan.
- **Message:** This is an example of the message that might be communicated to the public to describe the state of water availability.
- **Type:** This defines whether the stage is voluntary or mandatory on the part of the customer.
- **Expected Reduction:** This is an estimate of the range of reduction that may be required under each stage of the Plan. A specific goal will be defined when each stage of the Plan is activated.

## Normal Supply

Inclusion of “Normal Supply” in the Plan is an important level. The Water Conservation Bill of 2009 requires urban water suppliers to reduce per-capita water consumption by 20 percent by 2020. Implementing conservation during “Normal Supply” periods will play an important role in reaching the required 20 percent reduction in per-capita consumption.

- **Definition:** Water supplies are adequate to meet all the water demands of customers.
- **Message:** We can deliver all the water our customers need, recognizing that customers should practice wise water use at all times.
- **Type:** Voluntary.
- **Expected Reduction:** None targeted
- **Conservation:** Basic water conservation measures and public information promoting wise water use and Best Management Practices when using water for residential, commercial or irrigation uses.

## Stage 1- Minimal Reduction

- **Definition:** There is sufficient uncertainty concerning water supplies for this year or in the next few years that it would be prudent to conserve local water supplies so that these supplies may be used to meet water demands in the future.
- **Message:** We think we can deliver all the water our customers want, but request their help to conserve water to be sure local and imported supplies are adequate to meet future years’ water demands – please conserve.
- **Type:** Voluntary.
- **Expected Reduction:** Up to 20%

## Stage 2- Moderate Reduction

- **Definition:** There are definable events that lead to a reasonable conclusion that in the current and/or upcoming water years, water supplies may not be adequate to meet all customer water demands.
- **Message:** We may not be able to deliver all the water our customers want and we need customers’ help to conserve water.
- **Type:** Voluntary or Mandatory.
- **Expected Reduction:** Up to 20%

## Stage 3- Severe Reduction

- **Definition:** There are definable events that lead to a firm conclusion that in the current water year, water supplies will not be adequate to meet customers’ water demands.

- **Message:** We cannot deliver all the water our customers need and we are requiring our customers to use less water.
- **Type:** Mandatory.
- **Expected Reduction:** 20 to 35%

#### Stage 4- Critical Reduction

- **Definition:** A Stage 3 shortage has been in effect and the reduction goal is not being met or new definable events require increasing the reduction goal.
- **Message:** We cannot deliver all the water our customers need and we have not been able to achieve targeted reductions so we now have to enforce the use of less water.
- **Type:** Mandatory.
- **Expected Reduction:** 35 to 50%

#### Water Emergency

A water emergency is when a specific event causes a disruption in the water supply. The disruption may affect all or part of the local Livermore Municipal Water system or the wider Zone 7, or statewide distribution system. In the event of emergency conditions affecting the water supply, the Livermore City Manager may declare a Water Emergency.

- **Definition:** There is a major failure of a supply, storage or distribution facility.
- **Message:** A very serious problem has occurred and we are unable to deliver sufficient water for human consumption, sanitation and/or fire protection.
- **Type:** Mandatory.
- **Expected Reduction:** Varies by area in response to specific situation

**Table 5-7 – Water Shortage Contingency – Rationing Stages to Address Water Supply Shortages**

<b>Table 35 Water shortage contingency — rationing stages to address water supply shortages</b>		
<b>Stage No.</b>	<b>Water Supply Conditions</b>	<b>% Shortage</b>
Stage 1	Minimal Reduction Required - Voluntary	0-20%
Stage 2	Moderate Reduction – Voluntary or Mandatory	0-20%
Stage 3	Severe Reduction - Mandatory	20-35%
Stage 4	Critical Reduction – Mandatory <sup>1</sup>	35-50%

<sup>1</sup>One of the stages of action must be designed to address a 50 percent reduction in water supply.

 **Checklist #36**

10632(b) – Minimum 3-Year Water Supply

The 2010 Zone 7 Urban Water Management Plan includes projections for the minimum water supply available during the next three years based on the driest three-year historic sequence for Zone 7’s water supplies. Table 13-1 from the 2010 Zone 7 UWMP is included below. The quantities in the table below do not include water available from local and non-local storage facilities. As noted previously, the minimum supply years vary between imported surface water and local runoff due to hydrologic conditions, water supply infrastructure, and other conditions<sup>11</sup>.

Zone 7 UWMP Table 13-1. Three-Year Estimated Minimum Water Supply<sup>(a)</sup> (Acre-Feet Annually)

Acre-Feet Annually		Year			
		2011	2012	2013	Normal
Imported Surface Water	SWP <sup>(b)</sup> – Table A	15,700	22,700	19,500	51,400
	SWP <sup>(b)</sup> – Yuba Accord	676	676	676	145
	BBID <sup>(c)</sup>	2,000	2,000	2,000	4,000
Local Runoff	Arroyo del Valle	350	520	150	3,440
<i>Total Water Supply</i>		18,726	25,896	22,326	58,985

<sup>(a)</sup> Based on the driest three-year historic sequence applicable for each water supply.

<sup>(b)</sup> State Water Project

<sup>(c)</sup> Byron-Bethany Irrigation District

 **Checklist #53**

10635(a) – Water Supply Assessment

California Water Code Section 10635(a) requires urban water suppliers to conduct an assessment of the reliability of its water service during normal, dry, and multiple dry water years over the next 20 years in 5-year increments. Tables 5-8, 5-9 and 5-10 (DWR Tables 32, 33, and 34) below show the supply and demand comparisons for normal, single dry, and multiple dry year events, respectively. The information contained in these tables is based on information provided by Zone 7 staff in response to requests for supply verification from Water Resources Division staff.

**Table 5-8 – Supply and Demand Comparison – Normal Year**

Table 32					
Supply and demand comparison — normal year					
	2015	2020	2025	2030	2035 - opt
<b>Supply totals (from Table 16)</b>	2,768.761	2,868.712	2,950.272	2,950.272	2,950.272
<b>Demand totals (From Table 11)</b>	2,582.628	2,865.169	2,948.805	2,948.805	2,948.805
<b>Difference</b>	186.133	3.543	1.467	1.467	1.467
Difference as % of Supply	6.7%	0.1%	0.05%	0.05%	0.05%
Difference as % of Demand	7.2%	0.1%	0.05%	0.05%	0.05%

*Units are in million gallons per year.*

<sup>11</sup> 2010 Zone 7 Urban Water Management Plan

Since Zone 7 has assured adequate supplies are available to meet one hundred percent of Livermore Municipal Water demands in all water years, the projected supply and demand amounts shown in the comparison tables are very similar. Also, since the Livermore Water Reclamation Plant discharges secondary effluent and balances the production of tertiary-treated recycled water to meet on-going demands, there is no “excess” recycled water supply shown in the comparison tables. As noted previously, there is additional recycled water production capacity available and an update of the City’s Recycled Water Master Plan is currently underway to identify additional recycled water projects.

**Table 5-9 – Supply and Demand Comparison – Single Dry Year**

<b>Table 33</b>					
<b>Supply and demand comparison — single dry year</b>					
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035 - opt</b>
<b>Supply totals<sup>1,2</sup></b>	2,768.761	2,868.712	2,950.272	2,950.272	2,950.272
<b>Demand totals<sup>2,3,4</sup></b>	2,582.628	2,865.169	2,948.805	2,948.805	2,948.805
<b>Difference</b>	186.133	3.543	1.467	1.467	1.467
Difference as % of Supply	6.7%	0.1%	0.05%	0.05%	0.05%
Difference as % of Demand	7.2%	0.1%	0.05%	0.05%	0.05%

*Units are in acre-feet per year.*

<sup>1</sup>Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.

<sup>2</sup>Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

<sup>3</sup>Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

<sup>4</sup>The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

As noted above, since Zone 7 has adequate supplies to meet the projected demands of the Livermore Municipal Water system in all hydrologic conditions, the comparison tables below for multiple-dry years includes the same supply and demand information as shown for normal and single-dry water years.

**Table 5-10 – Supply and Demand Comparison – Multiple Dry Year Events**

Table 34 Supply and demand comparison — multiple dry-year events						
		2015	2020	2025	2030	2035 - opt
<b>Multiple-dry year first year supply</b>	<b>Supply totals<sup>1,2</sup></b>	2,768.761	2,868.712	2,950.272	2,950.272	2,950.272
	<b>Demand totals<sup>2,3,4</sup></b>	2,582.628	2,865.169	2,948.805	2,948.805	2,948.805
	<b>Difference</b>	186.133	3.543	1.467	1.467	1.467
	Difference as % of Supply	6.7%	0.1%	0.05%	0.05%	0.05%
	Difference as % of Demand	7.2%	0.1%	0.05%	0.05%	0.05%
<b>Multiple-dry year second year supply</b>	<b>Supply totals<sup>1,2</sup></b>	2,768.761	2,868.712	2,950.272	2,950.272	2,950.272
	<b>Demand totals<sup>2,3,4</sup></b>	2,582.628	2,865.169	2,948.805	2,948.805	2,948.805
	<b>Difference</b>	186.133	3.543	1.467	1.467	1.467
	Difference as % of Supply	6.7%	0.1%	0.05%	0.05%	0.05%
	Difference as % of Demand	7.2%	0.1%	0.05%	0.05%	0.05%
<b>Multiple-dry year third year supply</b>	<b>Supply totals<sup>1,2</sup></b>	2,768.761	2,868.712	2,950.272	2,950.272	2,950.272
	<b>Demand totals<sup>2,3,4</sup></b>	2,582.628	2,865.169	2,948.805	2,948.805	2,948.805
	<b>Difference</b>	186.133	3.543	1.467	1.467	1.467
	Difference as % of Supply	6.7%	0.1%	0.05%	0.05%	0.05%
	Difference as % of Demand	7.2%	0.1%	0.05%	0.05%	0.05%

*Units are in acre-feet per year.*

<sup>1</sup>Consider the same sources as in Table 16. If new sources of water are planned, add a column to the table and specify the source, timing, and amount of water.

<sup>2</sup>Provide in the text of the UWMP text that discusses how single-dry-year water supply volumes were determined.

<sup>3</sup>Consider the same demands as in Table 3. If new water demands are anticipated, add a column to the table and specify the source, timing, and amount of water.

<sup>4</sup>The urban water target determined in this UWMP will be considered when developing the 2020 water demands included in this table.

Based on the data provided, it appears that Zone 7 has adequate supplies to meet the City’s requests for the Livermore Municipal Water service area over the next 20 years in normal, single-dry, and multiple-dry water years. Zone 7’s ability to meet the water needs of the Tri-Valley at build-out of the cities’ General Plans depend on the implementation of additional water supply projects capable of providing up to 10,500 AF of new supplies during normal water years, as discussed in Section 5 under Future Water Projects. Therefore, based on the current Zone 7 supplies and the projected new supplies available through future water projects, the Livermore Municipal Water system has a reliable and adequate water supply to meet system demands over the next 20 years.

## Section 6: Demand Management Measures

In evaluating DMM implementation, staff considered the intent of the DMM as well as the size and complexity of the Livermore Municipal Water system. Staff has made a concerted, effort to implement all measures in the most cost effective and practical way for a utility of Livermore Municipal Water's size. Also, the high reliability of the Zone 7 water supply has historically influenced the emphasis the staff has placed on implementing the Demand Management Measures. As a small water retailer that is not a signatory to the California Urban Water Council's Memorandum of Understanding (MOU) for implementing the DMM's, and which has a very reliable water supply capable of meeting all demands in normal, single-dry, and multiple-dry years, rigorous implementation of the DMM's has not historically been a critical priority for Livermore Municipal Water. Consequently, while the DMMs have been implemented in the Livermore Municipal Water system, they have been implemented in a somewhat informal manner with limited documentation that makes it difficult to evaluate their effectiveness.

With the passage of the Water Conservation Bill of 2009 and the corresponding requirement to reduce per capita water demand by 20 percent by the year 2020, implementation and evaluation of the Demand Management Measures will become more important for the Livermore Municipal Water system. This section discusses in detail the current implementation as well as any planned enhancements for each of the DMMs. In general, planned enhancements will be steps necessary to formalize or better document and evaluate some of the existing efforts that staff has implemented on an informal basis.

In addition to programs planned and implemented by staff, the City of Livermore and the other three Tri-Valley water retailers, work together with water wholesaler Zone 7 to plan and implement regional programs that promote water conservation and water efficiency. The four Tri-Valley water retailers provide funding and participate in regional programs that are administered or coordinated by wholesaler Zone 7.

### Implementation, Conservation Savings and Methods to Evaluate Effectiveness



#### Checklist #26 - Checklist #27 – Checklist#28

10631(f)(1) -- Description of implementation or schedule for implementation

10631(f)(4) -- Estimate, if available, of conservation savings on water use

10631(f)(3) -- Description of methods to evaluate effectiveness

Each of the Demand Management Measures (A-N) is discussed individually below; including a summary of the implementation, estimated conservation savings on water use, and description of methods to evaluate effectiveness for each measure.

## **A. Water Survey programs for single-family residential and multifamily residential customers**

Information on the various programs that support this DMM is provided below. These programs include:

- the Residential Water Survey and Conservation Check-up Program;
- the Green House Call program implemented through a partnership between the City and Rising Sun Energy Center – California Youth Energy Services;
- the use of utility billing software to identify customers who may need assistance with water consumption issues.

### **Residential Water Survey and Conservation Check-up Program**

#### **Year of Implementation (or date scheduled for implementation)**

Components of this program have been in place since 2005, however many have been implemented on an informal basis. The program is being formalized and is scheduled for expanded implementation in 2011.

#### **Comprehensive Description**

Water Resources Division staff is currently implementing an informal Residential Water Survey and Conservation Check-up Program and is in the process of formalizing the procedures and documentation of the program.

Basic components of the program are currently performed by customer service staff and water meter readers on a daily basis. For example, when staff notices an unusual increase in historic usage or a consistent pattern of excessively high usage, the customer is contacted to alert them of the elevated usage and to provide them with conservation or leak-detection suggestions. Water Resources staff also provides follow up visits to assist customers in identifying the source of elevated usage. While many customer service calls are initiated by staff, a majority of the customer service appointments are driven by calls from customers. The current informal program includes documentation of customer service calls, but does not include documentation and follow-up to determine if conservation measures were implemented to reduce consumption.

The following are components of the formal Residential Water Survey and Conservation Check-up Program:

1. Review the top 5% of residential water users on a periodic basis, but at least twice per year; once during the irrigation season to identify outdoor use issues, and once during the winter to identify indoor use issues. This review may be conducted more frequently or expanded to a larger percentage of customers during periods of water shortage.
2. Contact residential customers in the top 5% of usage and send water usage survey by mail or email.

3. Based on survey responses, set-up appointments with residents to conduct a Conservation Check-up.
4. Staff discusses the problem(s) with the resident, reviews the most common causes of water loss in a residence, including the information contained in the Residential Water Survey.
5. Discussion always includes the most wasteful fixture, the toilet. The toilet's adjustment is checked along with the flapper. Toilet flappers are targeted as the chloramines used by water wholesaler Zone 7 as a primary disinfectant can cause deterioration of rubber. Chemical resistant flappers are recommended to combat toilet leaks.
6. Other common mechanisms (aerators, faucets, sprinkler systems) are also discussed and the customer is given the free water conservation kit consisting of water conservation literature and household water saving devices.
7. Follow-up phone calls and surveys are used to track results, participation and to plan future strategies.

#### **Steps necessary for implementation**

Staff will continue to contact and respond to customer service calls. As noted above, an informal survey and conservation check-up program is currently in progress. The following steps are in progress to formalize the Residential Water Survey and Conservation Check-up Program procedures and documentation:

1. Review and improve standard reporting from the City's utility billing software as necessary to better identify the highest usage customers to target for surveys and check-ups.
2. Customize outreach materials and utilize a Water Survey Checklist in single family residences. Previously, Water Resources Division staff has used conservation materials and checklists from other sources. To better target the materials used, staff will produce mail and email survey forms specific to Livermore Municipal Water. The following minimum components will be included in the checklist and covered during the visit:
  - a. Check for leaks, including toilets, faucets, and review with resident use of meter to check for leaks.
  - b. Check showerhead and aerator flow rates and recommend replacement, if necessary.
  - c. Check toilet and recommend HET replacement, as necessary; recommend replacement of leaking toilet flapper with chemical resistant

flapper, as necessary.

- d. Check irrigation system and timers.
  - e. Review or develop customer irrigation schedule or provide written irrigation guidance.
  - f. Measure/estimate landscaped area and total irrigable area.
  - g. Provide water conservation literature and devices as needed.
3. Develop a database or other method of tracking the number of surveys completed, the time spent on survey activities, and the water use before and after surveys.

### **Implementation Schedule**

The general implementation schedule below will be followed to expand and formalize the use of this DMM:

Task	Target Date
Review and improve reporting from utility billing software as necessary to better target highest users	October 2011
Develop/revise LMW-specific Water Survey Checklist and outreach materials	December 2011
Develop database to track surveys & usage	December 2011
Conduct 1 <sup>st</sup> formal winter-period survey	Jan-Feb 2012

### **Methods of Evaluation**

1. Utilize information from participants' consumption history for twelve months before and after participation in Residential Water Survey and Conservation Check-up.
2. Annually review actual program expenditures and water savings.
3. Use follow-up phone calls and surveys to track results, participation, and to plan future strategies.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Table 6-1 below includes potential savings from some of the conservation methods recommended during Residential Water Surveys and Water Conservation Check-ups.

**Table 6-1 – Average Estimated Savings**

<b>Water Conservation Method</b>	<b>Average Estimated Savings in Gallons Per Household Per Year</b>
Install a high efficiency clothes washer	5,000
Install faucet aerators	220
Minimize Leaks	5,500
Install low-flow shower heads	2,500
Install water-efficient toilets	8,800
<b>Total Estimated Savings</b>	<b>22,020</b>

Source: American Water Works Association, 1997.

Gallons saved per year based on household averages. Actual savings may vary.

## **Rising Sun Energy Center – California Youth Energy Services Green House Call**

### **Year of Implementation (or date scheduled for implementation)**

Since 2009, the Green House Call program has been implemented as a partnership between the City of Livermore Housing and Human Services Division, Water Resources Division, and the Rising Sun Energy Center – California Youth Energy Services. The City plans to continue participation through 2012.

### **Comprehensive Description**

The City’s Housing and Human Services Division has contracted with the Rising Sun Energy Center and California Youth Energy Services (CYES) to offer Livermore residents a free CYES Green House Call. This house call provides renters and homeowners with a free energy and water conservation assessment, education and mini-retrofit. Table 6-2 below shows the number of customers in the Livermore Municipal Water service area that have participated in the program, the type of water conservation service performed, and estimated savings.

**Table 6-2 – Summary of CYES Green House Call Program Results**

<b>Description</b>	<b>2009</b>	<b>Estimated Average Savings in GPM*</b>	<b>2010</b>	<b>Estimated Average Savings in GPM*</b>
No. of Customers Reached through program	77		18	
Efficient-flow showerheads installed	13	1.0	2	0.8
Faucet aerators installed	61	0.11	19	1.8
Toilet Inspections	15		44	
Washing Machine Inspections	48		17	
Irrigation Inspections	17		15	

Source: Rising Sun Energy Center-CYES Water Report for 2009 and 2010.

\*GPM= Gallons per Minute saved across all new installations

### **Steps necessary for implementation**

1. The City's Housing and Human Services Division will continue to work with the contractor to market the program. Marketing strategies include, but are not limited to, advertising and distribution of flyers. The Water Resources Division provides partial funding for the cost of the flyers. The program also benefits from word-of-mouth to bring in additional participants.
2. The Water Resources Division will provide the low-flow showerheads and faucet aerators that are distributed by CYES personnel.
3. The Water Resources Division will request a detailed report from CYES/ Housing and Human Services Division detailing water components performed for Livermore Municipal Water customers to evaluate water savings and cost-effectiveness.

### **Implementation Schedule**

Implementation of this year's program will begin in the summer of 2011.

### **Methods of Evaluation**

1. Compare annual water consumption for households before and after participating in the program.
2. Utilize information from follow-up reports provided by CYES, phone calls and/or surveys to track results and to plan strategy for future.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Water conservation estimates provided by CYES are included in Table 6-2 above. Based on CYES reports, a total of 50.9 gallons per minute was saved across all installations for 2009 and 16 gallons per minute for 2010.

Based on an analysis by the Pacific Institute in the report "California's Next Million Acre-Feet: Saving Water, Energy, and Money", the potential savings of replacing a 2.5 gallon per minute (gpm) showerhead with a 1.5 gpm showerhead is approximately 4,422 gallons per year<sup>12</sup>. This savings is based on the average person taking 4.9 showers per week with a duration of 9 minutes each, and an average of 2.87 people per residence. Based on this projected savings, replacing 15 showerheads through the Green House Call program saves approximately 66,330 gallons per year. With an estimated useful life of 8 years, the total savings from these replacements will be approximately 530,640 gallons.

The Pacific Institute also noted that faucet aerators save about 629 gallons per year and have an expected useful-life of 5 years. Based on this savings and lifespan, the 80

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<sup>12</sup> Pacific Institute report "California's Next Million Acre-Feet: Saving Water, Energy, and Money." [http://www.pacinst.org/reports/next\\_million\\_acre\\_feet/TechnicalDocumentation.pdf](http://www.pacinst.org/reports/next_million_acre_feet/TechnicalDocumentation.pdf)

aerators replaced by the Green House Call program will save about 50,320 gallons per year and a total of 251,600 over their lifespan.

### **Utility Billing Software**

#### **Year of Implementation (or date scheduled for implementation)**

Implementation began in the 1980s

#### **Comprehensive Description**

The City uses utility billing software to identify high irrigation consumption and to assist customers in curbing water waste and usage.

#### **Steps necessary for implementation**

The use of utility billing software has already been implemented.

#### **Implementation Schedule**

The City will continue to use utility billing software to identify high irrigation consumption.

#### **Methods of Evaluation**

The effectiveness of using the utility billing system to target high-use customers for conservation efforts will be evaluated under the Water Use Survey program.

#### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Tracking of water savings identified through use of the utility billing software has not been conducted to date. The database to be developed as part of the Water Survey Program will be used to track savings from leaks or other use-issues identified through the billing software.

## **B. Residential Plumbing Retrofit**

Information on how the Water Resources Division supports residential plumbing retrofits is discussed below. Programs and outreach that support this DMM include:

- Providing low flow shower heads and faucet aerators;
- Implementing the Direct Install Toilet and Urinal Replacement Program;
- The Green House Call program by Rising Sun Energy Center – California Youth Energy Services (CYES)

There is no City ordinance requiring residential and multi-family sectors in the Livermore Municipal Water service area to replace high-flow water fixtures. Therefore, Water Resources Division staff relies on public outreach to encourage voluntary installation of residential plumbing retrofits.

## **Provide Low Flow Shower Heads and Faucet Aerators**

### **Year of Implementation (or date scheduled for implementation)**

This program started in 2008

### **Comprehensive Description**

Low flow shower heads and faucet aerators are provided to Livermore Municipal Water customers during the Conservation Check-up and CYES Green House Call described above under the Water Use Survey DMM. Water Resources Division staff also distributes low flow shower heads and faucet aerators at public outreach events. Staff plans to begin tracking the distribution of these devices to improve the evaluation of this DMM in the future.

### **Steps necessary for implementation**

See DMM A – Water Use Surveys and DMM G – Public Outreach for a description of any efforts to expand implementation of this DMM.

### **Implementation Schedule**

See DMM A – Water Use Surveys and DMM G – Public Outreach

### **Methods of Evaluation**

See evaluation and tracking for DMM A – Water Use Surveys and DMM G – Public Outreach.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Based on CYES reports, a total of 50.9 gallons per minute was saved across all plumbing retrofit installations for 2009 and 16 gallons per minute for 2010.

Based on an analysis by the Pacific Institute in the report “California’s Next Million Acre-Feet: Saving Water, Energy, and Money”, the potential savings of replacing a 2.5 gallon per minute (gpm) showerhead with a 1.5 gpm showerhead is approximately 4,422 gallons per year<sup>13</sup>. This savings is based on the average person taking 4.9 showers per week with a duration of 9 minutes each, and an average of 2.87 people per residence. Based on this projected savings, replacing 15 showerheads through the Green House Call program saves approximately 66,330 gallons per year. With an estimated useful life of 8 years, the total savings from these replacements will be approximately 530,640 gallons.

The Pacific Institute also noted that faucet aerators save about 629 gallons per year and have an expected useful-life of 5 years. Based on this savings and lifespan, the 80 aerators replaced by the Green House Call program will save about 50,320 gallons per year and a total of 251,600 over their lifespan.

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<sup>13</sup> Pacific Institute report “California’s Next Million Acre-Feet: Saving Water, Energy, and Money.” [http://www.pacinst.org/reports/next\\_million\\_acre\\_feet/TechnicalDocumentation.pdf](http://www.pacinst.org/reports/next_million_acre_feet/TechnicalDocumentation.pdf)

## **Direct Install Toilet and Urinal Replacement Program**

### **Year of Implementation (or date scheduled for implementation)**

This program is scheduled for implementation in 2011

### **Comprehensive Description**

Water Resources Division staff is working with water wholesaler Zone 7 Water Agency and the other Tri-Valley water retailers on the Direct Install Toilet and Urinal Replacement Program for residential, commercial and industrial customers. The intent of the program is to encourage owners to install certain types of water-efficient plumbing fixtures in order to reduce water consumption and wastewater flows.

The program includes the replacement of older high volume toilets using 3.5 gallon per flush (gpf) or more with High Efficiency Toilets that use 1.28 gpf or less; and replacement of existing urinals using 1.0 to 2.5 gpf with High-Efficiency Urinals using only 1.0 gpf or less. Zone 7 Water Agency, with funding from the Tri-Valley water retailers, will reimburse pre-qualified plumbing companies a fixed amount for the cost of purchasing and installing the qualified fixtures.

### **Steps necessary for implementation**

Water Resources Division staff will work with Zone 7 and other Tri-Valley water retailers on the implementation of this program, and encourage participation with various marketing strategies that include, but are not limited to:

- placing links to information on the City's website;
- placing banners in strategic locations around the City;
- including a message on monthly billings; advertising;
- supplying postcards to local hardware stores or at local workshops and to residents in the Livermore Municipal Water service area as deemed appropriate.

Zone 7 will be responsible for the overall implementation of this program with cooperation from the Tri-Valley Waters Retailers, which includes the City of Livermore. Based on information provided by the Tri-Valley water retailers, Zone 7 will seek out local plumbers, plumbing suppliers, and plumbing fixture design businesses that meet all of the following requirements to participate in this program:

- Maintain a current valid State of California C-36 Plumbing Contractor's License;
- Have a current established business license in one of the Tri-Valley water retailers' service areas;
- Maintain current Auto, General Liability and Worker's Compensation Insurance;
- Pay prevailing wages; and
- Participate in a mandatory "Kick-Off" meeting (March 2011)

The City, other Tri-Valley water retailers, and wholesaler Zone 7 will provide a pre-

qualifying application to their respective water customers by mail, and also provide a downloadable application from the agencies' websites. Water Resources Division staff will review and approve completed, qualifying applications for the Livermore Municipal Water service area.

### **Implementation Schedule**

This program is scheduled to begin in July of 2011.

### **Methods of Evaluation**

The number of customers taking part in the program will be tracked. Usage reports from the customers taking part in the program will be compared pre- and post-participation to determine water savings and effectiveness of program. Zone 7 will track and provide the Water Resources Division with data for this program.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

The goal is to replace approximately 1,500 fixtures (urinals and toilets) in the Tri-Valley over the next two years. Based on the replacement of the approximately 1,500 fixtures, Zone 7 has estimated a total water savings of 119 million gallons over the lifespan of the fixtures.

### **Rising Sun Energy Center – California Youth Energy Services Green House Call**

#### **Year of Implementation (or date scheduled for implementation)**

The City's Housing and Human Services Division along with the Water Resources Division have supported the Rising Sun Energy Center – California Youth Energy Services Green House Call program since 2009. The City plans to continue participation through 2012.

#### **Comprehensive Description**

The City's Housing and Human Services Division has contracted with the Rising Sun Energy Center and California Youth Energy Services (CYES) to offer Livermore residents a free CYES Green House Call. This house call provides renters and homeowners with a free energy and water conservation assessment, education and mini-retrofit. Table 6-2 below shows the number of customers in the Livermore Municipal Water service area that have participated in the program, the type of water conservation service performed, and estimated savings.

**Table 6-2 – Summary of CYES Green House Call Program Results**

Description	2009	Estimated Average Savings in GPM*	2010	Estimated Average Savings in GPM*
No. of Customers Reached through program	77		18	
Efficient-flow showerheads installed	13	1.0	2	0.8
Faucet aerators installed	61	0.11	19	1.8
Toilet Inspections	15		44	
Washing Machine Inspections	48		17	
Irrigation Inspections	17		15	

Source: Rising Sun Energy Center-CYES Water Report for 2009 and 2010.

\*GPM= Gallons per Minute saved across all new installations

### Steps necessary for implementation

1. The City's Housing and Human Services Division will continue to work with the contractor to market the program. Marketing strategies include, but are not limited to, advertising and distribution of flyers. The Water Resources Division provides partial funding for the cost of the flyers. The program also benefits from word-of-mouth to bring in additional participants.
2. The Water Resources Division will provide the low-flow showerheads and faucet aerators.
3. The Water Resources Division will request a detailed report from CYES/ Housing and Human Services Division detailing water components performed for Livermore Municipal Water customers.

### Implementation Schedule

Implementation of this year's program will begin in the summer of 2011.

### Methods of Evaluation

1. Compare annual water consumption for households before and after participating in the program.
2. Utilize information from follow-up reports provided by CYES, phone calls and/or surveys to track results and to plan strategy for future.

### Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)

Water conservation estimates provided by CYES are included in Table 6-2 above. Based on CYES reports, a total of 50.9 gallons per minute was saved across all installations for 2009 and 16 gallons per minute for 2010.

Based on an analysis by the Pacific Institute in the report “California’s Next Million Acre-Feet: Saving Water, Energy, and Money”, the potential savings of replacing a 2.5 gallon per minute (gpm) showerhead with a 1.5 gpm showerhead is approximately 4,422 gallons per year<sup>14</sup>. This savings is based on the average person taking 4.9 showers per week with a duration of 9 minutes each, and an average of 2.87 people per residence. Based on this projected savings, replacing 15 showerheads through the Green House Call program saves approximately 66,330 gallons per year. With an estimated useful life of 8 years, the total savings from these replacements will be approximately 530,640 gallons.

The Pacific Institute also noted that faucet aerators save about 629 gallons per year and have an expected useful-life of 5 years. Based on this savings and lifespan, the 80 aerators replaced by the Green House Call program will save about 50,320 gallons per year and a total of 251,600 over their lifespan.

### **C. Water System Audits, Leak Detection, and Repair**

Water Resources Division staff routinely monitor water purchases and sales to quickly detect water losses and water system irregularities. A description of the audits performed and the leak detection and repair process is provided below.

#### **Year of Implementation (or date scheduled for implementation)**

Implementation started in 1990

#### **Comprehensive Description**

Water Resources Division staff monitors the monthly water purchases and the monthly water sales in order to quickly detect any system irregularities or excessive water loss. Staff also tracks un-accounted for water from activities such as system flushing, fire flow testing, and water quality corrections. Great progress has been made over the past seven years in better quantifying unaccounted for water. Previous water rate studies identified a relatively high volume of unaccounted for water, despite operational experience which suggested very few leaks identified in the distribution system. The average amount of unaccounted for water for the 2005 through 2009 period equaled only 7.40 percent.

All customers in the Livermore Municipal Water service area are metered and charged based on an inverted tiered water rate schedule. Leaks are costly to customers and therefore are typically noticed quickly. The Water Resources Division contracts with outside vendors and requires a maximum response time of 24 hours for making emergency repairs to the water system, including leaks. Smaller leaks are assessed on a case by case basis and are repaired by Water Resources Division staff.

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<sup>14</sup> Pacific Institute report “California’s Next Million Acre-Feet: Saving Water, Energy, and Money.” [http://www.pacinst.org/reports/next\\_million\\_acre\\_feet/TechnicalDocumentation.pdf](http://www.pacinst.org/reports/next_million_acre_feet/TechnicalDocumentation.pdf)

### **Steps necessary for implementation**

Staff already monitors water purchases and sales to quickly detect and respond to water losses and water system irregularities; additional activities are not planned at this time.

### **Implementation Schedule**

Additional activities are not planned at this time due to the reductions in water loss recently achieved through improved tracking, as well as the low occurrence of system leaks, and the failure of the two previous leak detection surveys to locate any leaks.

### **Methods of Evaluation**

Over the last 20 years, the Water Resources Division has contracted two leak surveys. Each survey found no water leaks in the areas surveyed.

Water Resources Division staff will continue to routinely closely monitor and audit water purchased and water sold to identify any continuous losses. Water Resources Division staff will also perform a more detailed leak audit and an area-wide leak survey on an as needed basis to identify and eliminate the source of any significant increase in unaccounted for water that could represent a continuous water loss.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Conservation savings estimates will vary based on level and type of leak. The goal is to bring the unaccounted for water percentage below five percent.

## **D. Metering with Commodity Rates for New and Retrofit Connections**

The City has always utilized metering and tiered rates; however the original tiers had a decreasing cost structure with higher use. In 1991, the City began using inverted tiered rates which charges higher rates for higher levels of water use. Water service in the Livermore Municipal Water service area is not allowed without a water meter and the City charges all customers by volume-of-use. Metering and commodity rates for are discussed below.

### **Year of Implementation (or date scheduled for implementation)**

The City has always utilized metering and tiered rates to bill its customers. Inverted tiered rates have been in place since 1991.

### **Comprehensive Description**

The City does not allow water service without a water meter and charges all customers by volume-of-use. This requirement is further strengthened by water wholesaler rules that also do not allow service connections without a meter. Since the City has always required meters, there are no un-metered connections and therefore no need for a retrofit program.

The City currently has inverted tiered rates in place for all accounts as a means of

encouraging water use efficiency. The inverted tiered rates can be found in Resolution 2009-087 in Attachment A.

### **Steps necessary for implementation**

The use of metering and commodity rates has already been implemented. All water sales in the Livermore Municipal Water service area are metered. Water customers are charged a flat monthly meter service charge, and charged for water use based on an inverted tiered rate schedule. Meters are read monthly and bills are issued to customers on a monthly basis.

### **Implementation Schedule**

No additional activities are necessary or planned at this time.

### **Methods of Evaluation**

Both components of this DMM have been in place for many years; there is no “before” and “after” to compare to be able to evaluate effectiveness of this DMM.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Since the City has always charged its customers for water based on metered usage, and has had inverted tiered rates in place since 1991, it would be difficult to provide accurate savings estimates. It is widely recognized that billing customers based on metered water use and inverted tiered rates is an effective means of encouraging water use efficiency.

## **E. Large Landscape Conservation Programs and Incentives**

Details about the programs and activities that support this DMM are provided below. Included is information about the City’s Water Efficient Landscape Ordinance (WELO) and Civic Bay-Friendly Landscaping Ordinance; how the City uses a centralized computer irrigation system, and recycled water to reduce potable water demand by customers with large landscapes; and the Large Landscape Irrigation Survey and the incentives provided by that survey program.

### **Water Efficient Landscape Ordinance (WELO)**

### **Civic Bay-Friendly Landscaping Ordinance**

### **Year of Implementation (or date scheduled for implementation)**

The WELO was implemented in 1992, and the Civic Bay-Friendly Landscaping Ordinance in 2009.

### **Comprehensive Description**

The City adopted a Water Efficient Landscape Ordinance (WELO) in 1992 that establishes standards and specifications for all landscaping and landscape irrigation to encourage conservation and limit water use. The WELO was updated in December

2010 to exceed the standards in the state's Model WELO. A copy of the City's WELO is included in Attachment A.

In 2009 the City adopted a Civic Bay-Friendly Landscaping Ordinance requiring civic projects to incorporate guidelines to achieve the benefits of Bay-friendly landscaping, including the promotion of water and resource efficiency. A copy of the Civic Bay-Friendly Landscaping Ordinance is included in Attachment A.

#### **Steps necessary for implementation**

The WELO and Civic Bay-Friendly Landscaping Ordinance have already been adopted and are already in effect.

#### **Implementation Schedule**

The WELO and Civic Bay-Friendly Landscaping Ordinance are currently being implemented.

#### **Methods of Evaluation**

Methods of evaluation are included in the City's WELO and Civic Bay-Friendly Landscaping Ordinance; copies of both are included in Attachment A.

#### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Conservation savings estimates and demand reduction estimates can be found in the City's WELO and Civic Bay-Friendly Landscaping Ordinance; copies of both are included in Attachment A.

#### **Centralized Computer Irrigation System**

##### **Year of Implementation (or date scheduled for implementation)**

The use of a centralized computer irrigation system began in 1998.

##### **Comprehensive Description**

The Water Resources Division encourages water-efficient landscape irrigation by utilizing a centralized computer irrigation system. This system is currently used for 80 percent of all City-maintained parks and landscaped areas. The system measures wind, rain, temperature, solar radiation, relative humidity, and computes evapotranspiration (ETo) to effectively conserve water while maintaining plant health.

##### **Steps necessary for implementation**

The use of a centralized computer irrigation system has already been implemented.

##### **Implementation Schedule**

As funding is available, the City will expand control of irrigation from the current 80 percent to 100 percent of all City-maintained parks and landscaped areas by centralized computer irrigation system technology.

## **Methods of Evaluation**

No evaluation of this measure has been conducted, however the primary method would be to compare current and pre-1988 usage data or to compare water use in parks with and without computer controlled irrigation.

## **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Because this system measures wind, rain, temperature, solar radiation, relative humidity, and computes ETo, irrigation can be accomplished more efficiently. The EPA Water Sense specifications for irrigation controllers estimate that a weather-based controller can save approximately 20% compared to a standard timer control<sup>15</sup>.

## **Recycled Water**

### **Year of Implementation (or date scheduled for implementation)**

The City began use of recycled water for landscape irrigation in 1963.

### **Comprehensive Description**

The Water Resources Division has encouraged use of recycled water for irrigation since 1963. In February 2003, the City designated a Recycled Water Service Area where recycled water must be used for all outdoor landscape irrigation, including commercial, public agency, and select residential systems installed after that date. Recycled water rates are set by the Livermore City Council at 80% of the potable water rate to encourage conversion of potable irrigation systems to recycled water use. Extremely low connection fees compared to potable system connection costs are another incentive for recycled water use.

The City is currently completing an update of its Recycled Water Master Plan (RWMP) to look at options for expanding recycled water use. The goals of the master plan are to:

- Offset potable water use by supplying recycled water when and where appropriate.
- Expand and fully subscribe the existing recycled water system.
- Optimize the existing and future system configuration.

The master plan update is being completed in two phases. Phase I identified 10 project alternatives and a set of screening criteria that were used to select three final alternatives for further evaluation. Phase II includes further evaluation of the three project alternatives as well as an investigation of current and projected recycled water production and distribution costs. Phase II of the RWMP is scheduled to be completed in mid-2011. A copy of the Phase 1 Executive Summary can be found in Attachment A.

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<sup>15</sup> [http://www.epa.gov/WaterSense/docs/controller\\_suppstat508.pdf](http://www.epa.gov/WaterSense/docs/controller_suppstat508.pdf)

### **Steps necessary for implementation**

1. Recycled water usage will continue to be encouraged and provided where available.
2. Work on Phase 2 of the Recycled Water Master Plan will continue.

### **Implementation Schedule**

Phase 2 of the Recycled Water Master Plan is scheduled for completion in 2011, after which City Council will consider the Master Plan results and provide direction to staff.

### **Methods of Evaluation**

Evaluation of the recycled water program includes monitoring the sale of recycled water, and identifying and establishing new recycled water customers. Water Resources Division staff will also monitor any potable water offsets obtained as the recycled water system expands.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Livermore Municipal Water currently offsets over 10% of its total water use with recycled water. Additional capacity exists to supply additional recycled water to equal or exceed the entire volume of potable water used in the LMW system if sufficient customers were identified.

### **Large Landscape Irrigation Survey**

#### **Year of Implementation (or date scheduled for implementation)**

Water Resources Division staff has been participating with Zone 7 and the other Tri-Valley water retailers in a Large Landscape Irrigation Survey program since 2009.

#### **Comprehensive Description**

This program is being administered by Zone 7 with funding and participation by the Tri-Valley water retailers, which includes the City of Livermore. Since landscape irrigation accounts for a substantial amount of water use each year, Water Resources Division staff has partnered with Zone 7 and the other water retailers to focus public education efforts on water efficient irrigation practices. Based on the water consumption data provided to Zone 7 by the Tri-Valley water retailers, the highest 20% of non-residential water users were identified and offered a free irrigation survey on their existing landscaping. The surveys are conducted according to the State Model Water Efficient Landscape Ordinance guidelines, codified in Title 23 of the California Code of Regulations (Sections 490-492), as required by the Water Conservation in Landscaping Act (Government Code, Section 65591 et seq.). Landscape plans, including irrigation system layout and scheduling, soil, precipitation, evapotranspiration (ET<sub>o</sub>), and plant hydrology are reviewed for efficiency. A list of recommended improvements is provided to the customer, along with an offer of up to \$5,000 in matching funds as an incentive to implement the recommendations.

This program not only offers an incentive for the customer to implement the recommendations, it also helps to foster customer relations by providing the customer

with a direct point of contact with water retailer staff. For surveys conducted through 2010, it was determined that most water customers believed their systems to be efficient. However, the summary report of the surveys concluded that the current irrigation systems had many deficiencies. A copy of the 2009-2010 Summary Report for Zone 7 Large Landscape Auditing by Zone 7's contractor, Spot Water Management, Inc., is included in Attachment A. The report provides details for surveys conducted in the Livermore Municipal Water service area as well as in the other Tri-Valley water retailer service areas.

In 2011 an additional component will be added to the program to provide education and information to the customers through a free commercial landscape irrigation workshop for landscapers, contractors and contract managers. Large landscape surveys will be conducted for more Livermore Municipal Water service area customers, including the Livermore Area Recreation and Park District and the Springtown Home Owners Association.

### **Steps necessary for implementation**

1. Continue to work with Zone 7 to identify more customers based on the highest non-residential irrigation water users in the Livermore Municipal Water service area for participation in the program.
2. Zone 7 and Water Resources Division staff will contact large irrigation use customers regarding participation in the program.
3. Zone 7 will send contractor out to conduct survey.
4. Water Resources Division staff will participate in site visits.
5. Customers will be provided with a list of recommended improvements, accompanied by an incentive program to assist the customer in implementing the recommendations.
6. Zone 7 contractor will provide a free commercial landscape irrigation workshop for landscapers, contractors and contract managers in May 2011.

### **Implementation Schedule**

The program is currently being implemented. Water Resources Division staff will provide Zone 7 with a list of large irrigation water use customers in the Livermore Municipal Water service area and encourage customer participation in the program.

### **Methods of Evaluation**

Water usage reports for the participating large irrigation use customers will be compared pre- and post-survey to determine water savings and effectiveness of program.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Conservation savings will vary depending on survey findings, adherence by participants to recommendations, and size and type of large landscape area. Water consumption use will be monitored up to three years post-survey.

## **F. High Efficiency Washing Machine Rebate Program**

Information on the High Efficiency Washing Machine Rebate Program, available to single-family residences, is provided below.

### **Year of Implementation (or date scheduled for implementation)**

This program began in 1999.

### **Comprehensive Description**

The City and the other Tri-Valley water retailers support and fund the High-Efficiency Washing Machine Rebate Program that is administered by water wholesaler Zone 7. In 2008, Zone 7 partnered with other San Francisco Bay Area water agencies and Pacific Gas and Electric (PG&E) on a regional strategy to increase water and energy efficiency. Over the last five years rebate amounts have ranged from \$50 to \$125 for the water portion of the rebate. The amount of the rebate is dependent on many factors, including water efficiency level and eligibility of the washer model.

### **Steps necessary for implementation**

This DMM is currently being implemented. Water Resources Division staff continues to work with Zone 7 to encourage participation through various marketing avenues. As the agency that administers the program for the Tri-Valley water retailers, Zone 7 tracks participation results.

### **Implementation Schedule**

This program is implemented on an annual basis.

### **Methods of Evaluation**

This method will be evaluated by the amount of water conserved, the cost per million gallons of savings, and the relative ease of implementation. Water Resources Division staff will continue to work with the other Tri-Valley water retailers and wholesaler Zone 7 to examine the cost of the program against the total water savings and effect of program on water use consumption.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

See Table 6-5 below.

**Table 6-5 – Summary of High-Efficiency Washing Machine Rebates**

Year <sup>1</sup>	2005-06 <sup>2</sup>	2006-07	2007-08	2008-09	2009-10	Total
<b>Rebate amount (\$)</b>	50 or 100	50 or 100	50 or 100	90 or 125	90 or 125	
<b>No. of rebates paid</b>	503	150	484	373	409	1,919
<b>Rebate Expenditures (\$)</b>	45,750	12,900	91,475	45,295	51,305	246,725.00
<b>Water Savings MG/Year<sup>3</sup></b>	2.6	.8	2.5	1.9	4.0 <sup>4</sup>	11.8

<sup>1</sup> Information contained in this table provided by Zone 7. The 2005-06 through 2008-09 HEW water savings calculations are based on number of rebates x 5,100 annual savings.

<sup>2</sup> In 2005-06 Zone 7 did not track rebates by retailer. The numbers provided by Zone 7 for 2005-06 were calculated using percentages based on the overall number of rebates per year for past five years.

<sup>3</sup> Million gallons per year.

<sup>4</sup> The 2010 calculation for HEW water savings is based on number of rebates x 365 days per year x 26.60 gallons per day, due to newer water saving technology.

## G. Public Information Programs

The Water Resources Division provides water conservation information and education to the general public using a variety of approaches and outreach methods. These efforts include staffing a booth at local special events including Earth Day, the Livermore Wine Country Festival, and conducting Livermore Water Reclamation Plant tours. Staff also conducts outreach through paid advertising, bill inserts, brochures, notices, and dedicated water conservation web pages on the City’s website. Staff also participates in several committees that focus on water conservation efforts. Details on the Water Resources Division’s public information and outreach efforts are provided below.

Tables 6-6 and 6-7 below summarize the City’s current and planned use of different outreach methods to encourage water conservation in the Livermore Municipal Water system.

**Table 6-6 – Summary of Public Information and Outreach**

Actual	2006	2007	2008	2009	2010
Paid Advertising	No	No	Yes	Yes	Yes
Public Service Announcement	No	No	No	No	No
Bill Inserts/Newsletters	Yes	Yes	Yes	Yes	Yes
Bill comparing previous water usage	Yes	Yes	Yes	Yes	Yes
Demonstration Gardens	No	No	No	No	No
Special Events, Media Events	Yes	Yes	Yes	Yes	Yes
Speaker’s Bureau	Yes	Yes	Yes	Yes	Yes
Program to coordinate with other govt	Yes	Yes	Yes	Yes	Yes

**Table 6-7 – Planned Public Information and Outreach**

<b>Planned</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>
Paid Advertising	Yes	Yes	Yes	Yes	Yes
Public Service Announcement	No	No	No	No	No
Bill Inserts/Newsletters	Yes	Yes	Yes	Yes	Yes
Bill comparing previous water usage	Yes	Yes	Yes	Yes	Yes
Demonstration Gardens	No	No	No	No	No
Special Events, Media Events	Yes	Yes	Yes	Yes	Yes
Speaker's Bureau	Yes	Yes	Yes	Yes	Yes
Program to coordinate with other govt	Yes	Yes	Yes	Yes	Yes

**Tri-Valley Water Conservation Group**

**Year of Implementation (or date scheduled for implementation)**

The Tri-Valley Water Conservation Group was formed in the late 1980's

**Comprehensive Description**

City staff actively participates in the Tri-Valley Water Conservation Group, which consists of staff from all four Tri-Valley water retailers and water wholesaler Zone 7. This group provides planning and direction for a variety of regional public outreach efforts. Some of these efforts include periodic advertising, outreach materials, and public service announcements. The majority of the advertising and materials is prepared and distributed by Zone 7, funded by and on behalf of the Tri-Valley water retailers.

**Steps necessary for implementation**

Water Resources Division staff will continue to attend Tri-Valley Water Conservation Group meetings and participate in the planning and implementation of public outreach efforts and programs.

**Implementation Schedule**

Water Resources Division staff will participate in all public outreach projects planned by the Tri-Valley Water Conservation Group. Current projects include the Green Plumbers USA training, Large Landscape Irrigation Survey, High Efficiency Toilet, High Efficiency Washing Machine, Ecoblue Cube, School Indoor and Outdoor Audit Support Services and Direct Install Toilet programs.

**Methods of Evaluation**

Water Resources Division staff will continue to work with Zone 7 and the other water retailers to examine the cost of the programs against the total water savings and effect of program on water use and consumption.

**Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Conservation savings estimates and effects on ability to further reduce demand are provided in the descriptions of the individual programs in this section of the UWMP.

While it is not quantifiable as to how staff's participation in the Tri-Valley Water Conservation Group directly results in conservation savings, participation does facilitate the success of the regional programs supported by the Tri-Valley water retailers and coordinated by Zone 7.

## **Water Suppliers Council Nursery Outreach Committee**

### **Year of Implementation (or date scheduled for implementation)**

The Water Suppliers Council Nursery Outreach Committee was formed in 2010

### **Comprehensive Description**

The Water Suppliers Council Nursery Outreach Committee was created by Stopwaste.org. The members include representatives from the Alameda County Water District, City of Hayward, City of Livermore, City of Pleasanton, Dublin San Ramon Services District, East Bay Municipal Utility District, Zone 7 Water Agency, and California Water Service Company. The goal of the group is to encourage residential water conservation by expanding point-of-purchase awareness of comprehensive Bay-Friendly practices and related products, and to expand recycled content supply channels for compost and mulch. This will be done in part by providing lawn conversion education, fact sheets, nursery displays, and signage for residents who have converted their yards. Stopwaste.org will provide content and/or resource links for water agencies to upload onto their respective websites and/or to print in newsletters and utility bills. They will also provide Home Gardener Workshops.

### **Steps necessary for implementation**

The following steps outline the Water Suppliers Council Nursery Outreach Committee's implementation plan:

1. Reach up to 3,500 nursery customers program-wide with the Bay-Friendly message of converting lawn to Bay-Friendly garden using the practice of sheet mulching, with involvement from all participating agencies.
2. Have up to a total of 90 customers from all participating agencies successfully convert their lawns.
3. Create larger consumer awareness of lawn conversion benefits.
4. Successfully pilot co-promotion with StopWaste.org and water agencies through nursery outreach.
5. Determine which certifications will be acceptable to nurseries and their customers.
6. Determine if recycled mulch product price points are competitive to existing mulch products at nurseries, and if not, why.
7. Identify existing bulk mulch outlets as venue for providing recycled mulch.
8. Expand relationships with Alameda County nurseries.

### **Implementation Schedule**

The Water Suppliers Council Nursery Outreach Committee's implementation schedule is as follows:

1. Press Event Kick-off in March 2011
2. Initiate recycled mulch rebates (bagged at nurseries and bulk through bulk stores in March – June 2011
3. Launch Bay-Friendly Lawn Conversion Showcase in March 2011.
4. Seven "Rethink Your Lawn" themed talks at nurseries throughout Alameda County, at least one per water district in March – June 2011.
5. In-store displays at nurseries, March – June 2011.
6. Provide signage for homeowners who choose to convert lawns, March– June 2011.
7. Bay-Friendly Garden Tour May 2011

### **Methods of Evaluation**

The Water Suppliers Council Nursery Outreach Committee's plan is to evaluate the program using the following methods:

1. Summarize participant evaluations at lawn talks, workshops, tour
2. Measure attendance at talks
3. Measure number of pledges for posting pictures
4. Measure number of 'sheet mulching' education signs distributed
5. Survey Bay-Friendly list in summer 2011 to measure number of people who converted lawns
6. Measure amount of recycled mulch sold at nurseries

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

According to the Bay-Friendly Landscaping and Gardening program, homeowners who replace their lawn can save anywhere between 6,000 and 13,000 gallons per 500 square feet per year. This translates to a possible savings of up to 87%, depending on size of lawn replaced, type of irrigation system, and types of plants used.

### **Outreach and Outreach Events**

#### **Year of Implementation (or date scheduled for implementation)**

Outreach and outreach events described below started in 1989.

#### **Comprehensive Description**

Representatives from the Water Resources Division provide water conservation information and materials aimed at children and adults during various outreach events and programs.

In addition to advertising and distributing conservation materials, Water Resources Division staff provides conservation information at several local festivals or events each year, including the Livermore Wine Country Festival, Earth Day, and Safety Day. Water Resources Division staff also provides a conservation program for senior citizens at the Livermore Area Recreation and Park District Community Center, and conducts water conservation classes for children in local schools, nursery schools and for the YMCA East Bay Outdoor School at Camp Arroyo.

Water Resources Division staff provides Livermore Water Reclamation Plant tours that include a water conservation component to various groups and individuals on a regular basis. The Livermore Water Reclamation Plant celebrated its 50<sup>th</sup> anniversary in 2008. In recognition of that milestone, the public was invited to take a “behind-the-scenes” look at what it takes to keep drinking water, wastewater, storm water, and recycled water flowing in the City of Livermore. Nearly 800 visitors attended over a three-hour period. The Water Section handed out water conservation information, and displayed various types of water meters, a typical service connection, and how to decipher hydrant colors. Staff helped visitors share favorite water conservation tips and pin them on a display board to share with visitors to the booth.

In 2009 Water Resources Division staff, in conjunction with the California Water Service Company, created water conservation reminder shopping cart ads that were displayed on local grocery store carts, as well as on the back of cash register receipts. Restaurant tent-cards were also created and distributed to a few local restaurants.

In May of 2009 Water Resources Division staff held a Public Works Showcase during the Public Works Week. The event was organized as an open house to showcase the City’s Public Works Divisions to the local primary schools. The showcase had many hands-on activities as well as many demonstrations that provided the students with a better understanding of how and what each Section of the Water Resources Division does to maintain the City’s infrastructure. Water staffed their own exhibit at this event, answering questions and handing out water conservation literature.

### **Steps necessary for implementation**

Water Resources Division staff will continue to provide outreach as described above and look for other cost effective ways to increase outreach.

### **Implementation Schedule**

This measure is currently being implemented.

### **Methods of Evaluation**

The criteria used to measure the effectiveness of public information and public outreach events include:

- Number of events and participants served
- Number of residents visiting event booths

- Event survey results
- Cost of outreach

**Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

It is not directly quantifiable as to the conservation savings resulting from these outreach events. However, through these events, Water Resources Division staff provides a wide variety of water conservation education and outreach to the general public as well as to Livermore Municipal Water customers.

**Monthly Billings**

**Year of Implementation (or date scheduled for implementation)**

The use of monthly bills to reach out to customers about their water consumption began in 1991.

**Comprehensive Description**

Monthly bills provide another method for the City to reach out to its water customers with information about their water use and to promote water conservation. The monthly bills show, in graph form, the current year’s monthly water consumption compared to the previous year’s consumption. Reminders are placed on customer’s bills that include, but are not limited to, notices about re-setting sprinklers in the winter or simply turning off all outdoor irrigation. Monthly billings, along with tiered rates (see DMM D – Metering with Commodity Rates), are an effective way to encourage water conservation. Customers have the ability to see the impact of wasted water much sooner with monthly billings than bi-monthly or flat rate billings and act more swiftly to identify and correct any problems.

**Steps necessary for implementation**

This measure is currently being implemented

**Implementation Schedule**

No additional actions are planned at this time.

**Methods of Evaluation**

No methods to evaluate this measure have been identified.

**Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

No conservation savings estimates are available for this measure.

**Water-Wise Gardening**

**Year of Implementation (or date scheduled for implementation)**

The Water-Wise Gardening program commenced in 2005-2006

### **Comprehensive Description**

In 2005, the Tri-Valley Water Conservation Group worked with a software firm to develop a CD-ROM that provides Tri-Valley-specific information on “Water-Wise Gardening.” The CD-ROM was financed by the Tri-Valley water retailers through Zone 7. The CD-ROM, distributed by Zone 7 and the Tri-Valley water retailers, provided homeowners with information on how to establish landscaping that is water efficient. The CD-ROM was available to all customers upon request.

In 2008, instead of continuing to hand out CD-ROMs, the City supported the Tri-Valley Water Conservation Group’s decision to go to a web-based format of the “Water-Wise Gardening” information as a means of reducing program costs. Livermore Municipal Water customers can access the recently updated “Water-Wise Gardening” information through the City of Livermore Web page at no cost.

### **Steps necessary for implementation**

The “Water Wise Gardening” program has already been implemented.

### **Implementation Schedule**

No additional activities are planned at this time. Staff will continue to provide access to the “Water-Wise Gardening” information thru the City of Livermore website.

### **Methods of Evaluation**

Hits to the Water-Wise Gardening program site will be monitored.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

While it is not possible to estimate conservation savings, “Water Wise Gardening” provides guidelines to customers that, when followed, will result in water-wise plant and landscape choices, significantly decreasing their demand for potable water. Estimates for Alameda County indicate that customers could save approximately 13 gallons per year for each square foot of lawn converted to water-efficient landscaping<sup>16</sup>.

## **H. School Education Program**

Educational programs are offered to the schools in the Livermore Municipal Water service area. The City, along with the other Tri-Valley water retailers, funds and supports the regional school education program implemented by water wholesaler Zone 7. Livermore Water Resources Division staff also conducts classroom presentations on a variety of topics, including water conservation, to the schools in the Livermore Municipal Water service area. A description of the school education program is provided below.

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<sup>16</sup> Table 8, Pacific Institute report “California’s Next Million Acre-Feet: Saving Water, Energy, and Money.”

### **Year of Implementation (or date scheduled for implementation)**

The regional School Education Program has been in place since 2002. The Water Resources Division staff has conducted additional classroom presentations for the Livermore Municipal Water service area since 2004.

### **Comprehensive Description**

The Tri-Valley water retailers fund the regional School Education Program that is conducted by Zone 7 staff or their contractors. Educational materials and course outlines used by Zone 7 in classroom presentations have been developed in accordance with the state of California curriculum standards and framework, and are age and grade appropriate.

In addition to the regional program, Water Resources Division staff conducts additional classroom presentations on a variety of topics, including water conservation. The Water Resources Division's school education program offers presentations to day care classrooms and to every grade level from kindergarten through grade 12. The program includes 16 different topics on water, storm water, and sewer science. Each grade level is covered by one or more elements of this overall education program. The number of classroom presentations presented by Water Resources Division staff that included a water conservation segment is shown in Table 6-8 below. A copy of the school education program brochure is included in the Attachment A.

**Table 6-8 – Summary of Classroom Presentations**

	<b>Number of Classroom Presentations Performed by Livermore Water Resources Division staff**</b>				
<b>Year</b>	<b>2005-06</b>	<b>2006-07</b>	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>
<b>Day Care</b>	4	3	4	4	9
<b>Grades K-8th</b>	10	9	0	3	8
<b>High School</b>	6	3	5	0	2
<b>Total</b>	20	15	9	7	19

\*\* All classroom presentations listed included a water conservation segment.

In addition to classroom presentations, Water Resources Division staff and the California Water Service Company conduct an annual Water Awareness Poster Contest. The poster contest is open to 3<sup>rd</sup> and 4<sup>th</sup> grade students in all Livermore Schools. There is a 3<sup>rd</sup> and 4<sup>th</sup> grade winner chosen from each school that submits posters. The winners from each school compete to be one of three city-wide winners in each grade level. The city-wide winners receive gift certificates and T-shirts with their winning poster printed on them, have their posters displayed at the Livermore Wine Country Festival, and are recognized by the Livermore City Council.

### **Steps necessary for implementation**

The School Education Program is already being implemented. Water Resources Division staff will continue to participate and provide education as described above.

### **Implementation Schedule**

Water Resources Division staff will continue to participate and provide education as described above. No additional activities are planned at this time.

### **Methods of Evaluation**

The criteria the Water Resources Division uses to measure the effectiveness of its school education program include the following:

- Number of classroom presentations and students attending
- Number of teachers and tour group leaders requesting repeat presentations or tours
- Pre and post-tests to evaluate classroom presentations

Water Resources Division staff uses event survey results, teacher and group leader evaluations and student pre- and post-test results to measure the effectiveness of the education programs. Staff utilizes results from the teacher and group leader evaluations to improve and adjust the curriculum. The classroom presentation pre-and post-tests are used to ascertain the audience knowledge base, determine subject matter needing clarification, or curriculum improvement, and determine if participants will continue to use what they learned in the program.

Zone 7 staff tracks and evaluates the regional school education program for the Tri-Valley water retailers.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

It is difficult to accurately estimate conservation savings for the school education program. Water Resources Division staff continue to provide water conservation school education programs to give children the opportunity to learn about water conservation, and to bring that knowledge home to influence their family's water conservation behavior. The Water Resources Division believes that it is important to educate children in water conservation and will continue, along with Zone 7, to provide the School Education Program.

## **I. Conservation Programs for Commercial, Industrial, and Institutional (CII) Accounts**

The Water Resources Division continues to provide water conservation programs to the Commercial, Industrial and Institutional sector using several approaches and outreach methods. These methods include public information and outreach efforts described in DMM G-Public Education Programs and participation with Zone 7 in the following:

- Ecoblue Cube Incentive Program;
- Direct Install Toilet and Urinal Replacement Program;
- School Indoor and Outdoor Audit Support Services;
- Large Landscape Irrigation Survey and through.

## **Ecoblue Cube Incentive Program**

### **Year of Implementation (or date scheduled for implementation)**

This program started in 2009.

### **Comprehensive Description**

The Ecoblue Cube Incentive Program is being offered by water wholesaler Zone 7 with the Tri-Valley water retailers' support to encourage the use of the Ecoblue Cube technology in urinals. This program is designed to support qualifying commercial, industrial and institutional property owners to implement this water conservation strategy by converting their water-using urinals to waterless by using the Ecoblue Cube microbial technology.

### **Steps necessary for implementation**

Water Resources Division will continue to work with Zone 7 to identify and contact qualified and interested candidates for participation in this program.

### **Implementation Schedule**

This program, which is coordinated by Zone 7, is already underway.

### **Methods of Evaluation**

As the agency administering the program, Zone 7 is responsible for evaluation of the Ecoblue Cube incentive program.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

The Ecoblue Cube technology claims to be capable of reducing flushing water by up to 99 percent. Savings will depend on the number of urinals converted, the efficiency of implementation by property owners, and the actual effectiveness of the Ecoblue Cube technology.

## **Direct Install Toilet and Urinal Replacement Program**

### **Year of Implementation (or date scheduled for implementation)**

This program is scheduled for implementation in 2011

### **Comprehensive Description**

Water Resources Division staff is working with water wholesaler Zone 7 and the other Tri-Valley water retailers on the Direct Install Toilet and Urinal Replacement Program for residential, commercial and industrial customers. The intent of the program is to encourage owners to install certain types of water-efficient plumbing fixtures in order to reduce water consumption and wastewater flows.

The program includes the replacement of older high volume toilets using 3.5 gallon per

flush (gpf) or more with High Efficiency Toilets that use 1.28 gpf or less; and replacement of existing urinals using 1.0 to 2.5 gpf with High-Efficiency Urinals using only 1.0 gpf or less. Zone 7 Water Agency, with funding from the Tri-Valley water retailers, will reimburse pre-qualified plumbing companies a fixed amount for the cost of purchasing and installing the qualified fixtures.

### **Steps necessary for implementation**

Water Resources Division staff will work with Zone 7 and other Tri-Valley water retailers on the implementation of this program, and encourage customer participation with various marketing strategies that include, but are not limited to, placing links to information on the City's website; placing banners in strategic locations; including a message on monthly billings; advertising; and supplying postcards to local hardware stores or at local workshops and to residents in the Livermore Municipal Water service area as deemed appropriate.

Zone 7 will be responsible for the overall implementation of this program in cooperation with the Tri-Valley Waters Retailers, which includes the City of Livermore. Based on information provided by the Tri-Valley water retailers, Zone 7 will seek out local plumbers, plumbing suppliers, and plumbing fixture design businesses that meet all of the following requirements to participate in this program:

- Maintain a current valid State of California C-36 Plumbing Contractor's License;
- Have a current established business license in one of the Tri-Valley water retailers' service areas;
- Maintain current Auto, General Liability and Worker's Compensation Insurance;
- Pay prevailing wages; and
- Participate in a mandatory "Kick-Off" meeting (March 2011)

The City, other Tri-Valley water retailers, and Zone 7 will provide a pre-qualifying application to their respective water customers by mail, and also provide a downloadable application from the agencies' websites. Water Resources Division staff will review and approve completed, qualifying applications for the Livermore Municipal Water service area.

### **Implementation Schedule**

This program is scheduled to begin in July 2011.

### **Methods of Evaluation**

Zone 7 will track and provide the Water Resources Division with data for this program.

- Number of customers taking part in the program will be tracked
- Usage reports from the customers taking part in the program will be compared pre and post participation to determine water savings and effectiveness of program.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce**

**Demand (if available)**

The goal is to replace approximately 1,500 fixtures (urinals and toilets) in the Tri-Valley over the next two years. Based on the replacement of the approximately 1,500 fixtures, Zone 7 has estimated a total water savings of 119 million gallons over the lifespan of the fixtures.

**School Indoor and Outdoor Audit Support Services****Year of Implementation (or date scheduled for implementation)**

This program began implementation in 2010.

**Comprehensive Description**

With funding and support from the Tri-Valley water retailers, this program provides 100 percent funding for large landscape surveys, irrigation hardware replacement, indoor water use surveys, and plumbing fixture replacement for schools in the Tri-Valley water retailers' service areas. While schools are eligible for all commercial, industrial and institutional programs, this is a comprehensive program specifically targeting schools. It provides additional financial support to achieve potential indoor and outdoor water savings through services and limited hardware replacement. Through this program, administered by Zone 7, potentially up to 100% of water conservation measures that are implemented will be subsidized.

This program also presents an outreach opportunity. The City, the other Tri-Valley water retailers, and water wholesaler Zone 7 believe that public agencies should be role models of water use efficiency. This program provides goodwill for participating agencies.

**Steps necessary for implementation**

This program is already in place. The Water Resources Division staff will continue to partner with Zone 7 to encourage school participation and implementation of this program within the Livermore Municipal Water service area.

**Implementation Schedule**

In fiscal year 2009-10, one outdoor audit was performed for a school in the Livermore Municipal Water service area. At this time the school has not taken part in the subsidy portion of the program. Water Resources Division staff will follow-up with the school, and will continue to partner with Zone 7 to identify and encourage participation in this program.

**Methods of Evaluation**

Zone 7 will track and provide the Water Resources Division with data for this program.

- Number of customers taking part in the program will be tracked.
- Usage reports from the customers taking part in the program will be compared pre- and post-participation to determine water savings and effectiveness of program.

**Conservation Savings Estimates and Effects on Ability to Further Reduce**

**Demand (if available)**

According to Zone 7, the potential indoor and outdoor water savings for schools from water audits and subsidized indoor/outdoor equipment retrofits range from 20 to 38 percent. In addition to water savings, high efficiency irrigation equipment upgrades can result in energy savings, reduced run-off and increased turf quality.

**Large Landscape Irrigation Survey****Year of Implementation (or date scheduled for implementation)**

Water Resources Division staff has been participating with Zone 7 and the other Tri-Valley water retailers in a Large Landscape Irrigation Survey program since 2009.

**Comprehensive Description**

This program is being administered by Zone 7 with funding and participation by the Tri-Valley water retailers, which includes the City of Livermore. Since landscape irrigation accounts for a substantial amount of water use each year, Water Resources Division staff has partnered with Zone 7 and the other water retailers to focus public education efforts on water efficient irrigation practices. Based on the water consumption data provided to Zone 7 by the Tri-Valley water retailers, the highest 20% of non-residential water users were identified and offered a free irrigation survey on their existing landscaping. The surveys are conducted according to the State Model Water Efficient Landscape Ordinance guidelines, codified in Title 23 of the California Code of Regulations (Sections 490-492), as required by the Water Conservation in Landscaping Act (Government Code, Section 65591 et seq.). Landscape plans, including irrigation system layout and scheduling, soil, precipitation, evapotranspiration (ET<sub>o</sub>), and plant hydrology are reviewed for efficiency. A list of recommended improvements is provided to the customer, along with an offer of up to \$5,000 in matching funds as an incentive to implement the recommendations.

This program not only offers an incentive for the customer to implement the recommendations, it also helps to foster customer relations by providing the customer with a direct point of contact with water retailer staff. For surveys conducted through 2010, it was determined that most water customers believed their systems to be efficient. However, the summary report of the surveys concluded that the current irrigation systems had many deficiencies. A copy of the 2009-2010 Summary Report for Zone 7 Large Landscape Auditing by Zone 7's contractor, Spot Water Management, Inc., is included in Attachment A. The report provides details for surveys conducted in the Livermore Municipal Water service area as well as in the other Tri-Valley water retailer service areas.

In 2011 an additional component will be added to the program to provide education and information to the customers through a free commercial landscape irrigation workshop for landscapers, contractors and contract managers. Large landscape surveys will be conducted for more Livermore Municipal Water service area customers, including the Livermore Area Recreation and Park District and the Springtown Home Owners Association.

## **Steps necessary for implementation**

1. Continue to work with Zone 7 to identify more customers based on the highest non-residential irrigation water users in the Livermore Municipal Water service area for participation in the program.
2. Zone 7 and Water Resources Division staff will contact large irrigation use customers regarding participation in the program.
3. Zone 7 will send contractor out to conduct survey.
4. Water Resources Division staff will participate in site visits.
5. Customers will be provided with a list of recommended improvements, accompanied by an incentive program to assist the customer in implementing the recommendations.
6. Zone 7 contractor will provide a free commercial landscape irrigation workshop for landscapers, contractors and contract managers in May 2011.

## **Implementation Schedule**

Water Resources Division staff will provide Zone 7 with a list of large irrigation water use customers in the Livermore Municipal Water service area and encourage customer participation in the program.

## **Methods of Evaluation**

Water usage reports for the participating large irrigation use customers will be compared pre- and post-survey to determine water savings and effectiveness of program.

## **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Conservation savings will vary depending on survey findings, adherence by participants to recommendations, and size and type of large landscape area. Water consumption use will be monitored up to three years post-survey.

## **Outreach and Outreach Programs**

See descriptions of DMM E –Large Landscape Audits and DMM G – Public Outreach above.

## **J. Wholesale Agency Program**

This DMM does not apply since the City of Livermore is not a water wholesale agency.

## K. Conservation Pricing

The City currently has in place an inverted tiered rate structure to encourage water conservation. Conservation pricing details and historical information are described below.

### Year of Implementation (or date scheduled for implementation)

The City has had tiered rates since 1963. In 1991, the City instituted inverted tiered rates (a declining block water rate structure) with higher rates for larger volumes of water used to encourage more efficient water use.

### Comprehensive Description

The City has had tiered water rates since its inception in 1963. However, between 1963 and 1989 the tiered rates were not set to encourage conservation, but instead offered lower rates for higher consumption. During the 1989-92 droughts, the City instituted inverted tiered rates (a declining block water rate structure) where higher usage is billed at a higher rate. The residential water rates are laid out in three rate tiers. The first tier is labeled as the lifeline rate. This tier is the least expensive and is only for a residential customer with consumption levels between 0 Hundred Cubic Feet (HCF) and 5 HCF of water. The second tier is for between 5 HCF and 35 HCF of water use. The third and most expensive tier includes all water use over 35 HCF.

The rates for commercial and industrial customers are laid out in two tiers. The first tier has a range of 0 HCF to 50 HCF and is equivalent in price to the second residential tier rate. The second commercial/industrial tier applies to all consumption over 50 HCF. This tier is the same rate as the third residential tier. These rates apply to all commercial/industrial customers in the Livermore Municipal Water service area.

There is a single rate for recycled water that is set by City Council resolution at 80% of the residential second tier rate.

The City also provides wastewater services within the city limits and for the Ruby Hill development in the City of Pleasanton.

**Table 6-9 – Tiered Conservation Pricing**

<b>Residential</b>	<b>Rate Structure</b>	<b>Year Current Rate Effective</b>
Water	Three tier conservation pricing.	2009
Sewer	Fixed monthly charge	2008
<b>Commercial/Industrial</b>		
Water	Two tier conservation pricing.	2009
Sewer	Seven User Classifications	2008
<b>Public Agency</b>		
Water	One tier pricing for all water	2009
Sewer	Schools have single rate. City exempt	2008
<b>Irrigation</b>	Pricing same as Public Agency and Commercial Rates	2009

**Steps necessary for implementation**

Conservation pricing has already been implemented.

**Implementation Schedule**

The City will continue to use inverted tiered rates. No additional activities are planned at this time.

**Methods of Evaluation**

No methods of evaluating or quantifying the effect of tiered rates on water conservation have been identified. The City will continue to review water usage at the higher tiers and adjust water rates as needed to discourage water waste and encourage water conservation.

**Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

The City's inverted tiered water rates are set to encourage water use efficiency. Sewer rates for residential users (Single-Family, Condominium, Multi-Family) are based on a flat rate and there is no conservation incentive. However, commercial and industrial sewer charges are based on metered water usage. While there are minimum charges for commercial/industrial customers, increased water usage can result in elevated sewer charges and therefore serve as an incentive to reduce water usage.

**L. Conservation Coordinator**

The Water Conservation Coordinator is responsible for the City's conservation program planning, implementation, and evaluation. Several Water Resources Division employees play key roles in the City's conservation efforts as described below.

**Year of Implementation (or date scheduled for implementation)**

The City has designated one or more staff to meet the function of Conservation Coordinator since 1988.

**Comprehensive Description**

The Water Resources Division has designated the Water Supervisor to serve as a part-time Water Conservation Coordinator. The current Water Supervisor is Randy Werner. He spends between 5 and 10% of his time as Conservation Coordinator. The time spent varies during the year, and from year to year. Mr. Werner has been the City's liaison for water conservation activities since 1988. The water conservation duties became more formalized during the 1989 to 1992 drought even though some of the same activities took place during the 1977-78 drought. Mr. Werner has extensive experience in water conservation issues and has enhanced his knowledge through numerous statewide conservation seminars, Bay Area seminars, and from being an active participant in the

Tri-Valley Water Conservation Group which consists of staff from all four Tri-Valley water retailers and water wholesale Zone 7.

The Water Resources Division has designated the Water Coordinator to serve as a part-time Water Conservation Coordinator. As a part-time Conservation Coordinator, Jim Loberg spends between an estimated 10 to 15% of his time in this capacity. Based on need and availability, the percentage of time spent varies. Mr. Loberg has been a Water Resources Division liaison for water conservation activities since 2005. Mr. Loberg holds an AWWA Water Conservation Practitioner Grade 1 Certificate and has attended numerous statewide conservation seminars, Bay Area seminars, and participates in the Tri-Valley Water Conservation Group.

Michelle Mitchell, Management Analyst in the Water Resources Division since July 2010, assists the Water Supervisor and Water Coordinator with various water conservation efforts. She has attended the two-day AWWA water conservation practitioner course and participated in a variety of water conservation related webinars. Michelle is an active member of the Tri-Valley Water Conservation Group and the Water Suppliers Council Nursery Outreach Committee.

**Table 6-10a – Actual Staff Dedicated to Water Conservation**

<b>Actual</b>	2006	2007	2008	2009	2010
Number of part-time staff	2	2	2	2	3

**Table 6-10b – Planned Staff Dedicated to Water Conservation**

<b>Planned</b>	2010	2011	2012	2013	2014
Number of part-time staff	3	3	3	3	3

**Steps necessary for implementation**

This DMM has been implemented.

**Implementation Schedule**

No additional activities are planned at this time.

**Methods of Evaluation**

The Water Resources Division will continue to provide staff time to meet the function of a Conservation Coordinator. The Division will evaluate the effectiveness of the individuals in planning and implementing programs on an ongoing basis, with consideration to the success of the programs that are planned and implemented.

**Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

It is not directly quantifiable as to the conservation savings resulting from designating staff to fill the role of Conservation Coordinator. However, through the time spent by these individuals, the Water Resources Division is able to provide a wide variety of water conservation education and programs to Livermore residents and Livermore Municipal Water customers.

## **M. Water Waste Prohibition**

A detailed description of the City and Water Resource Division's waste prohibition plans and ordinances are provided below. Copies of the 2010 Water Shortage Contingency Plan, Draft Water Conservation Ordinance, Water Efficient Landscape Ordinance, and Civic Bay-Friendly Landscaping Ordinance are included in Attachment A.

### **Water Shortage Contingency Plan**

#### **Year of Implementation (or date scheduled for implementation)**

The City first adopted a Water Shortage Contingency Plan in 1991.

#### **Comprehensive Description**

The City first adopted a Water Shortage Contingency Plan in 1991 and updated the plan in 1996 and 2005. The Water Shortage Contingency Plan has undergone a more comprehensive revision as part of the 2010 Urban Water Management Plan update to incorporate more consistent regional requirements. In March 2009, the Committee of Valley Water Retailers, comprised of council members, board of directors, and management-level representatives from each of the four Tri-Valley water retailers, approved a model Tri-Valley Water Retailers Water Shortage Contingency Plan to allow for consistent implementation of requirements within the Tri-Valley during water shortage events.

The City of Livermore has developed its latest Water Shortage Contingency Plan for the Livermore Municipal Water system in accordance to California Water Code Section 10632(a). The Plan describes the following required elements:

- Water conservation stages of action in response to shortages up to 50%;
- Estimates of the minimum 3-year water supply available;
- Actions taken to prepare for and implement during catastrophic supply interruptions;
- Mandatory prohibitions and consumption reduction methods;
- Penalties and charges for excessive use;
- Analysis of potential revenue impacts from Shortage Plan implementation;
- Mechanisms for determining water use reductions.

#### **Steps necessary for implementation**

The Livermore City Council has adopted the updated Water Shortage Contingency Plan. Modifications to the Livermore Municipal Code updating the legal authority to implement expanded conservation measures will be made based on the updated Water Shortage Contingency Plan. Council also adopted a Water Conservation Plan in 1991 which specified voluntary and mandatory conservation measures. The requirements in the 1991 Conservation Plan have been updated and incorporated into the updated Water Shortage Contingency Plan and the Water Conservation ordinance.

The updated Water Shortage Contingency Plan is intended to supersede the previous Water Shortage Contingency Plan and Water Conservation Plan.

### **Implementation Schedule**

Modification of the Livermore Municipal Code is underway. A periodic review and update of the Water Shortage Contingency Plan will be completed at least every five years as part of the Urban Water Management Plan update,

### **Methods of Evaluation**

A post-incident review will be conducted following water-shortage events resulting in activation of the Water Shortage Contingency Plan to evaluate whether the plan was able to reduce water demands to the required levels. The Water Shortage Contingency Plan will be reviewed, evaluated, and updated periodically as necessary to ensure effectiveness as well as conformance with California Water Code requirements.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

No estimates of the conservation savings from having a Water Shortage Contingency Plan are available. However, the measures identified in the plan are designed to be capable of reducing water demands by up to 50% during shortage events.

### **Water Efficient Landscape Ordinance (WELO)**

#### **Civic Bay-Friendly Landscaping Ordinance**

### **Year of Implementation (or date scheduled for implementation)**

The WELO was implemented in 1992, and the Civic Bay-Friendly Landscaping Ordinance in 2009.

### **Comprehensive Description**

The City adopted a Water Efficient Landscape Ordinance (WELO) in 1992 that establishes standards and specifications for all landscaping and landscape irrigation to encourage conservation and limit water use. The WELO was updated in December 2010 to exceed the standards in the state's Model WELO. A copy of the City's WELO is included in Attachment A.

In 2009 the City adopted a Civic Bay-Friendly Landscaping Ordinance requiring civic projects to incorporate guidelines to achieve the benefits of Bay-friendly landscaping, including the promotion of water and resource efficiency. A copy of the Civic Bay-Friendly Landscaping Ordinance is included in Attachment A.

### **Steps necessary for implementation**

The WELO and Civic Bay-Friendly Landscaping Ordinance have already been adopted and are already in effect.

### **Implementation Schedule**

The WELO and Civic Bay-Friendly Landscaping Ordinance have already been adopted

and are already in effect.

### **Methods of Evaluation**

Methods of evaluation are included in the City's WELO and Civic Bay-Friendly Landscaping Ordinance; copies of both are included in Attachment A.

### **Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)**

Conservation savings estimates and demand reduction estimates can be found in the City's WELO and Civic Bay-Friendly Landscaping Ordinance; copies of both are included in Attachment A.

## **N. Residential Ultra-Low Flush Toilet (ULFT) and High-Efficiency Toilet (HET) Replacement Program**

The Residential Ultra-Low Flush Toilet and High-Efficiency Toilet Replacement Programs are described below. There is no toilet-retrofit-upon-resale ordinance in the Tri-Valley, including the Livermore Municipal Water service area.

### **Year of Implementation (or date scheduled for implementation)**

The City and other Tri-Valley water retailers, along with water wholesaler Zone 7, have participated in a residential ULFT Program since 1994. In July of 2008 the program was upgraded to an HET replacement program. In 2010, the program was expanded to include commercial and multi-family residential customers.

### **Comprehensive Description**

In July 2008, the Ultra-Low Flush Toilet Replacement Program that was in place since 1994 was upgraded to a High-Efficiency Toilet (HET) replacement program. The HET program reflects technical advancements and the availability of toilets that use 1.28 gpf or less instead of the 1.6 gpf ultra-low flush toilets. The program was expanded to include commercial and multi-family residential customers in 2010. The toilet replacement programs are administered by Zone 7 staff.

The current HET program offers a rebate of up to \$150 for each toilet of 3.5 or more gallons per flush that is replaced with a high efficiency 1.28 gallons per flush toilet. The program initially started with residential rebates only, but progressed to include commercial and industrial customers.

A rebate application packet is provided to the Livermore Municipal Water customer. The customer submits the completed application to Zone 7. After the rebate application is processed and the old toilet is properly disposed of or recycled, the applicant receives either a rebate check or a credit on their water bill. Zone 7 reimburses the City monthly for all toilets processed during the month. As part of this program, the City partners with a local Boy Scout troop to collect and recycle toilets from the Tri-Valley that are dropped off at the Livermore Water Reclamation Plant site.

### Steps necessary for implementation

This DMM has been implemented. Zone 7, with funding and support from the Tri-Valley water retailers, is responsible for administering the toilet replacement programs.

### Implementation Schedule

This DMM has been implemented. Water Resources Division staff will continue to participate in this program. No additional activities are planned at this time.

### Methods of Evaluation

Rebates will continue to be tracked in an effort to encourage customer participation in the program. Tracking the number of rebates will assist the Water Resources Division staff in focusing on needs for increased marketing and outreach.

### Conservation Savings Estimates and Effects on Ability to Further Reduce Demand (if available)

Estimated water savings are listed in Table 6-11 below.

**Table 6-11 – Toilet Rebate Program Summary**

	2006	2007	2008	2009	2010
<b>No. of ULFT Rebates</b>	48	52	37		
<b>No. of HET Rebates<sup>1</sup></b>			40	76	55
<b>Estimated Water Savings<sup>2</sup> Gallons/Year</b>	700,600 <sup>3</sup>	749,457 <sup>3</sup>	521,362 ULFT <sup>3</sup> 553,947 HET <sup>4</sup>	1,052,500 <sup>4</sup>	762,491 <sup>5</sup>

Notes:

<sup>1</sup> In 2008 the ULFT program was upgraded to an HET replacement program.

<sup>2</sup> The water savings is based on 2 persons and two HETs per household. 1 acre foot = 325,851 gallons.

<sup>3</sup> ULFT 2006-2008 Acre feet (AF) per year is based on number of rebates x 365 days per year x 40 gallons per day ÷ 325,851. 2.15 AF/year = 700,600 gallons/year. 2.3 AF/year = 749,457 gallons /year. 1.6 AF/year = 521,362 gallons/year.

<sup>4</sup> HET 2008-2009 Acre feet per year is based on number of rebates x 365 days per year x 38 gallons per day ÷ 325,851. 1.7 AF/year = 553,947 gallons/year. 3.23 AF/year = 1,052,500

<sup>5</sup> HET 2010 Acre feet per year is based on number of rebates x 365 days per year x 21 gallons per day ÷ 325,851. 2.34 AF/year = 762,491 gallons/year.

## Demand Management Measures Not Implemented



10631(g) -- Evaluation of DMMs not currently implemented or scheduled for implementation

Livermore Municipal Water is currently implementing all of the Demand Management Measures. Selected DMMs are scheduled to be formalized, modified or expanded as discussed above under each measure

**Section 7: Climate Change (optional)-Not Prepared**

## Section 8: Completed UWMP Checklist (optional)

Table I-1 Urban Water Management Plan checklist, organized by legislation number

No.	UWMP requirement <sup>a</sup>	Calif. Water Code reference	Subject <sup>b</sup>	Additional clarification	UWMP location
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)	System Demands		Page 21
2	<i>Wholesalers:</i> Include an assessment of present and proposed future measures, programs, and policies to help achieve the water use reductions. <i>Retailers:</i> 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)	System Demands	Retailer and wholesalers have slightly different requirements	Page 32
3	Report progress in meeting urban water use targets using the standardized form.	10608.40	Not applicable	Standardized form not yet available	N/A
4	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.	10620(d)(2)	Plan Preparation		Page 8
5	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.	10620(f)	Water Supply Reliability		Page 46

6	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.	10621(b)	Plan Preparation		Page 7
7	The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).	10621(c)	Plan Preparation		Page 10
8	Describe the service area of the supplier	10631(a)	System Description		Page 13
9	(Describe the service area) climate	10631(a)	System Description		Page 14
10	(Describe the service area) current and projected population. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier.	10631(a)	System Description	Provide the most recent population data possible. Use the method described in "Baseline Daily Per Capita Water Use." See Section M.	Page 16
11	. . . (population projections) shall be in five-year increments to 20 years or as far as data is available.	10631(a)	System Description	2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Page 18
12	Describe . . . other demographic factors affecting the supplier's water management planning	10631(a)	System Description		Page 19

13	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).	10631(b)	System Supplies	The 'existing' water sources should be for the same year as the "current population" in line 10. 2035 and 2040 can also be provided to support consistency with Water Supply Assessments and Written Verification of Water Supply documents.	Page 35
14	(Is) groundwater . . . identified as an existing or planned source of water available to the supplier . . . ?	10631(b)	System Supplies	Source classifications are: surface water, groundwater, recycled water, storm water, desalinated sea water, desalinated brackish groundwater, and other.	Page 36
15	(Provide a) copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management. Indicate whether a groundwater management plan been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	10631(b)(1)	System Supplies		Page 36
16	(Provide a) description of any groundwater basin or basins from which the urban water supplier pumps groundwater.	10631(b)(2)	System Supplies		N/A
17	For those basins for which a court or the board has adjudicated the rights to pump groundwater, (provide) a copy of the order or decree adopted by the court or the board	10631(b)(2)	System Supplies		N/A

18	(Provide) a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.	10631(b)(2)	System Supplies		N/A
19	For basins that have not been adjudicated, (provide) information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.	10631(b)(2)	System Supplies		N/A
20	(Provide a) detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(3)	System Supplies		N/A
21	(Provide a) detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.	10631(b)(4)	System Supplies	Provide projections for 2015, 2020, 2025, and 2030.	N/A
22	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following: (A) An average water year, (B) A single dry water year, (C) Multiple dry water years.	10631(c)(1)	Water Supply Reliability		Page 57
23	For any water source that may not be available at a consistent level of use - given specific legal, environmental, water quality, or climatic factors - describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.	10631(c)(2)	Water Supply Reliability		Page 47

24	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	10631(d)	System Supplies		Page 36
25	Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a)), identifying the uses among water use sectors, including, but not necessarily limited to, all of the following uses: (A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof;(I) Agricultural.	10631(e)(1)	System Demands	Consider "past" to be 2005, present to be 2010, and projected to be 2015, 2020, 2025, and 2030. Provide numbers for each category for each of these years.	Page 24
26	(Describe and provide a schedule of implementation for) each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following: (A) Water survey programs for single-family residential and multifamily residential customers; (B) Residential plumbing retrofit; (C) System water audits, leak detection, and repair; (D) Metering with commodity rates for all new connections and retrofit of existing connections; (E) Large landscape conservation programs and incentives; (F) High-efficiency washing machine rebate programs; (G) Public information programs; (H) School education programs; (I) Conservation programs for commercial, industrial, and institutional accounts; (J) Wholesale agency programs; (K) Conservation pricing; (L) Water conservation coordinator; (M) Water waste prohibition;(N) Residential ultra- low-flush toilet replacement programs.	10631(f)(1)	DMMs	Discuss each DMM, even if it is not currently or planned for implementation. Provide any appropriate schedules.	Page 65
27	A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures	10631(f)(3)	DMMs		Page 65

implemented or described under the plan.

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28	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(f)(4)	DMMs		Page 65
29	An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following: (1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors; (2) Include a cost-benefit analysis, identifying total benefits and total costs; (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost; (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.	10631(g)	DMMs	See 10631(g) for additional wording.	Page 105

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30	(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.	10631(h)	System Supplies		Page 43
31	Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.	10631(i)	System Supplies		Page 37
32	Include the annual reports submitted to meet the Section 6.2 requirement (of the MOU), if a member of the CUWCC and signer of the December 10, 2008 MOU.	10631(j)	DMMs	Signers of the MOU that submit the annual reports are deemed compliant with Items 28 and 29.	N/A

33	Urban water suppliers that rely upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).	10631(k)	System Demands	Average year, single dry year, multiple dry years for 2015, 2020, 2025, and 2030.	Page 31
34	The water use projections required by Section 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in Section 50079.5 of the Health and Safety Code, as identified in the housing element of any city, county, or city and county in the service area of the supplier.	10631.1(a)	System Demands		Page 30
35	Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.	10632(a)	Water Supply Reliability		Page 59
36	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.	10632(b)	Water Supply Reliability		Page 62
37	(Identify) actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power	10632(c)	Water Supply Reliability		Page 48

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outage, an earthquake, or other disaster.

38	(Identify) additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.	10632(d)	Water Supply Reliability	Page 50
39	(Specify) consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.	10632(e)	Water Supply Reliability	Page 51
40	(Indicated) penalties or charges for excessive use, where applicable.	10632(f)	Water Supply Reliability	Page 52
41	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)	Water Supply Reliability	Page 53
42	(Provide) a draft water shortage contingency resolution or ordinance.	10632(h)	Water Supply Reliability	Page 54
43	(Indicate) a mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.	10632(i)	Water Supply Reliability	Page 55
44	Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area	10633	System Supplies	Page 37

45	(Describe) the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	10633(a)	System Supplies	Page 37
46	(Describe) the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	10633(b)	System Supplies	Page 39
47	(Describe) the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.	10633(c)	System Supplies	Page 41
48	(Describe and quantify) the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.	10633(d)	System Supplies	Page 40
49	(Describe) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.	10633(e)	System Supplies	Page 41
50	(Describe the) actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.	10633(f)	System Supplies	Page 42
51	(Provide a) plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.	10633(g)	System Supplies	Page 42

52	The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.	10634	Water Supply Reliability	For years 2010, 2015, 2020, 2025, and 2030	Page 56
53	Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.	10635(a)	Water Supply Reliability		Page 62
54	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.	10635(b)	Plan Preparation		Page 10
55	Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	10642	Plan Preparation		Page 7

56	Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.	10642	Plan Preparation	Page 9
57	After the hearing, the plan shall be adopted as prepared or as modified after the hearing.	10642	Plan Preparation	Page 10
58	An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.	10643	Plan Preparation	Page 11
59	An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies within 30 days after adoption.	10644(a)	Plan Preparation	Page 10
60	Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.	10645	Plan Preparation	Page 11
a	The UWMP Requirement descriptions are general summaries of what is provided in the legislation. Urban water suppliers should review the exact legislative wording prior to submitting its UWMP.			

- b** The Subject classification is provided for clarification only. It is aligned with the organization presented in Part I of this guidebook. A water supplier is free to address the UWMP Requirement anywhere with its UWMP, but is urged to provide clarification to DWR to facilitate review.
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# Attachment A

2010 Urban Water Management Plan Preparation Notice

Notification Letter to Alameda County Public Works, dated April 4, 2011

Public Notices

Transmittal Letter to Alameda County, dated July 1, 2011

Resolution 2011-095 adopting the UWMP

Transmittal Letter to DWR

Transmittal Letter to California State Library

Zone 7 Ground Water Management Plan CD

Executive Summary of the Phase I Recycled Water Master Plan Report

Updated 2010 Water Shortage Contingency Plan

Resolution 2011-097 adopting the 2010 Water Shortage Contingency Plan

Draft Ordinance adopting modifications to the Livermore Municipal Code addressing water conservation

Water Rates Resolution 2009-087

Water Efficient Landscape Ordinance 1399 and 1926

Civic Bay-Friendly Landscaping Ordinance 1876

2009-2010 Spot Water Management, Inc. Large Landscape Auditing Summary Report

School education program brochure



## **PREPARATION OF 2010 URBAN WATER MANAGEMENT PLAN**

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In accordance with the California Urban Water Management Planning Act (UWMP Act) and the Water Conservation Act of 2009, Livermore Municipal Water is preparing its 2010 Urban Water Management Plan (UWMP). The UWMP is a guide used to ensure adequate water supplies are available to meet existing and future water demands.

Participation in the preparation of Livermore Municipal Water's 2010 UWMP is encouraged.

The UWMP will report, describe, and evaluate Livermore Municipal Water's water deliveries and uses, water supply sources, demand management measures, and the state mandated plan to achieve a reduction of potable water use of 20% by 2020.

A draft of Livermore Municipal Water's 2010 UWMP is expected to be released for public review in April. The status of the 2010 UWMP will be posted on the City of Livermore's website at <http://www.cityoflivermore.net>. Livermore Municipal Water will notice the date and time of the public hearing to provide opportunity for comments on the draft.

Questions or comments regarding Livermore Municipal Water's UWMP should be sent to: [wrd\\_info@ci.livermore.ca.us](mailto:wrd_info@ci.livermore.ca.us).



April 4, 2011

Albert V. Lopez, Planning Director  
Alameda County Planning Department  
224 W. Winton Avenue, Room 111  
Hayward, CA 94544-1215

**Re: 2010 Update – Urban Water Management Plan – Livermore Municipal Water**

Dear Mr. Lopez:

As required by California Water code section 10621 (b), this is notification of the 2010 update of Livermore Municipal Water's Urban Water Management Plan (UWMP). The Public Hearing to receive comments on the proposed update is scheduled for **Monday, June 13, 2011** at the City of Livermore Council Chambers, 3575 Pacific Avenue, Livermore, CA 94550.

California Water Code, Part 2.6 Chapters 1 through 4 (Sections 10610 through 10656), are known and may be cited as the "Urban Water Management Planning Act". These California Water Code sections require all urban water suppliers that provide water for municipal purposes either directly or indirectly to more than 3,000 customers, or supply more than 3,000 acre-feet of water annually to prepare an UWMP as outlined and identified in those sections. This requirement applies to public and privately owned water utilities. The plan must describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation, and demand management activities. The plan must also address measures for residential, commercial, governmental, and industrial water demand management.

The act requires urban water suppliers to update their Urban Water Management Plans at least once every five years, and to file updated plans with the Department of Water Resources, the California State Library, and any city or county served by the supplier no later than 30 days after adoption.

Livermore Municipal Water is a public water utility in Alameda County, and serves approximately 35% of the incorporated City of Livermore.

As a defined urban water supplier, Livermore Municipal Water is preparing the 2010 update to its UWMP that will address water service conditions. It is Livermore Municipal Water's intent to adopt the plan and file the plan as required.

Albert V. Lopez, Planning Director  
April 4, 2011  
Page 2 of 2

A key focus of the UWMP update is the conservation requirement set forth in Senate Bill 7 (SBx7-7) as passed in November 2009. SBx7-7 mandates a statewide 20% reduction in per capita urban water use by 2020. In order to quantify the objectives and identify the means of achieving this mandated demand reduction, Livermore Municipal Water has prepared a for this demand reduction within this year's UWMP.

Livermore Municipal Water is in the process of expanding current conservation programs and developing new programs. Over the next five years, Livermore Municipal Water's conservation program expenditures are likely to increase due in large measure to recently adopted state policies, including the SBx7-7, requiring future reductions in per capita urban water use.

**SCHEDULE OF UPCOMING ACTIONS:**

On or about May 24, 2011, a copy of the Proposed UWMP will be available for review during normal business hours. If you would like to view the Proposed UWMP, it would be appreciated if you schedule an appointment. To schedule an appointment, please call (925) 960-8100, and someone will assist you.

As an alternative to coming into the office, we can send an electronic copy of the Proposed UWMP. This will be available on or about May 24, 2011. Livermore Municipal Water is also planning to place a copy on the City website at [www.cityoflivermore.net](http://www.cityoflivermore.net). The UWMP will become available on or about May 24, 2011 through June 13, 2011.

Livermore Municipal Water will receive comments on the proposed UWMP from May 24, 2011 through June 13, 2011.

If you are unable to attend the scheduled public meeting, but want to provide comments regarding the proposed UWMP, you may send your comments in writing via email to:

Randy Werner, Water Supervisor  
Livermore Municipal Water  
[rwerner@ci.livermore.ca.us](mailto:rwerner@ci.livermore.ca.us)

If you have any questions, please call me at (925) 960-8100.

Yours truly,



Randy Werner, Water Supervisor  
Livermore Municipal Water

Legal Notice

May 11, 18, 25; Jun 1, 2011

FILED APR 25, 2011 STEPHEN L. WEIR, County Clerk CONTRA COSTA COUNTY By Joseph Barton, Deputy

FILE NO. 11-2964 FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: NAIA HEALING ARTS located at 5501 PANAMA AVE. in RICHMOND, CA 94804, Contra Costa County is hereby registered by the following owner(s): CLAIRE ELISABETH 5501 PANAMA AVE. RICHMOND, CA 94804

This business is conducted by: An Individual /s/ Claire Elisabeth This statement was filed with the County Clerk of Contra Costa on date indicated by file stamp above.

Business commenced on 12/1/2007 Expires APR 25, 2016 SRVT#3994874 May 11, 18, 25; Jun 1, 2011

FILED MAY 03, 2011 STEPHEN L. WEIR, County Clerk CONTRA COSTA COUNTY By C. Garcia, Deputy

FILE NO. 11-3225 FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: LAW OFFICES OF ELIOT GORSON located at 125 RYAN INDUSTRIAL CT. SUITE 206 in DUBLIN, CA 94568, Contra Costa County is hereby registered by the following owner(s): ALBERT COTRELL 8734 SHAMROCK PL. DUBLIN, CA 94568

This business is conducted by: An Individual /s/ Albert Cottrell This statement was filed with the County Clerk of Contra Costa on date in-

Legal Notice

dicated by file stamp. Bidders must attend Pre-Bid Conference and Site Visit and sign an attendance roster as a condition to bidding. The Pre-Bid Conference and Site Visit will last approximately 2 hours. The Site Visit will be the Bidders' only opportunity to investigate conditions at the Site.

N-8 CONTRACTOR'S LICENSE CLASSIFICATION: Contractor shall possess a valid Class "A" or "C-12" Contractor license at the time of Bid Opening and for the duration of the Contract. Failure to possess the specified license shall render the bid as non-responsive and shall act as a bar to award of the Contract to any bidder not possessing said license at the time of Bid Opening.

(b) In addition, the General Contractor and any sub-contractor involved in the handling of asbestos shall possess a valid Asbestos Certification at the time of bid opening and for the duration of the Contract. Failure to possess the specified certificate(s) shall render the bid as non-responsive and shall act as a bar to award of the Contract to any bidder not possessing said certificate(s) at the time of Bid Opening.

N-9 WAGE RATE REQUIREMENTS: (a) State: In accordance with the provisions of California Labor Code Sections 1770, 1773.1, 1773.6 and 1773.7 as amended, the Director of the Department of Industrial Relations has determined the general prevailing rate of per diem wages in accordance with the standards set forth in Section 1773

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for the locality in which The Aviation Safety and Capacity Expansion Act of 1990 provides that preference be given to steel and manufactured products produced in the United States when funds are expended pursuant to a grant issued under the Airport Improvement Program (Title 49 US Code, Chapter 501).

All solicitations, contract and subcontracts resulting from projects funded under this Contract are subject to the foreign trade restriction required by 49 CFR Part 30, "Denial of Public Works Contracts to Suppliers of Goods and Services of Countries That Deny Procurement Market Access to U.S. Contractors". Bidders will be required to provide certification in accordance with 49 CFR Part 29 regarding Department, Suspension, Ineligibility and Voluntary Exclusion from participation in this transaction by any Federal Department or Agency.

BY ORDER OF THE CITY OF LIVERMORE CITY OF LIVERMORE Date: May 23, 2011 By Susan Neer, MMC

City Clerk and Ex-Officio Clerk of the City Council of the City of Livermore

State of California Toni J. Taber, CMC Deputy City Clerk City of Livermore 925-960-4208

PT/VT#4013259 May 25, June 1, 2011

WHEN YOU GOTTA FIND IT NOW CHECK THE CLASSIFIEDS

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NOTICE TO SRVT#4008900 May 25; Jun 1, 2011

2010 Urban Water Management Plan Public Hearing Notice

This is to advise that the Livermore City Council will conduct a public hearing at its meeting of June 13, 2011, to consider the following application. Hearing begins at 7:00 p.m. in the Council Chambers, 3575 Pacific Avenue.

Hearing to consider adoption of the 2010 Urban Water Management Plan, Water Use Reduction Plan, and Water Shortage Contingency Plan; and the introduction of an Ordinance adding a new Chapter 13.26, Water Conservation, to the Livermore Municipal Code.

The City Council will consider approval of the 2010 Urban Water Management Plan for the Livermore Municipal Water service area that includes a Water Use Reduction Plan to reduce per capita consumption by twenty percent by 2020 as required by the Water Conservation Bill of 2009. During the Hearing, Council will receive public comments on the economic impacts of implementing the Water Use Reduction Plan as well as the gross water use method used for determining the urban water use target. The City Council will also consider the approval of a Water Shortage Contingency Plan for the Livermore Municipal Water service area that describes actions the City will take in response to water supply shortages.

If you challenge these items in court, you may be limited to raising only those issues you or someone else raised at the public hearing, or in written correspondence delivered at, or prior to, the public hearing. Note: if these actions are subject to the Code of Civil Procedure, Section 1094.5, and you choose to challenge these actions in court, you must seek judicial review within the time specified in the Code of Civil Procedure, Section 1094.6.

Legal Notice

The City Council will also introduce by first reading, an Ordinance adding a new Chapter, 13.26, Water Conservation, to Division 1 (Water) of Title 13 (Public Works) of the Livermore Municipal Code to provide for voluntary and mandatory water conservation.

The draft 2010 Livermore Municipal Urban Water Management Plan will be available for review beginning June 1, 2011 at the following locations:

- Water Resources Division, 101 W. Jack London Blvd.
City Hall, City Clerk's Office, 1052 South Livermore Avenue
Civic Center Library, 1188 South Livermore Avenue
Rincon Library, 725 Rincon Avenue
Springtown Library, 998 Bluebell Road

The staff report and recommendation will be available for review in the City Council agenda packet from the evening of June 9, 2011, in the City Library, 1188 South Livermore Avenue as well as on the City of Livermore website at www.cityoflivermore.net. Agenda materials will also be available for review in the City Clerk's office, 1052 South Livermore Avenue. Written information regarding these agenda items must be received in the City Clerk's office by noon on Tuesday, June 7, 2011, to be included in the agenda packet.

All interested persons are invited to attend the public hearings. Dated: May 26, 2011 Susan Neer, City Clerk Publish: June 1, 2011 and June 8, 2011 PT/VT#4019871 June 1, 8, 2011

PUBLIC HEARINGS

This is to advise that the Livermore City Council will conduct public hearings at its meeting of June 13, 2011, to consider the following applications. Hearings begin at 7:00 p.m. in the Council Chambers, 3575 Pacific Avenue.

Hearing to consider a request to amend a previously approved Planned Development which authorized the construction of 70 townhomes with associated site improvements. The proposal includes amending the architect-

Legal Notice

Notice of Public Hearing

Adoption of The City of Pleasanton 2010 Urban Water Management Plan

The City of Pleasanton's Committee on Energy and Environment is holding a public hearing to discuss and encourage public comment on the City's Draft 2010 Urban Water Management Plan (UWMP). This important water supply document was released for public comment starting May 2, 2011 on the City's website (www.pleasantonwaterconservation.com). The workshop will take place Wednesday, June 8, 2011 at 6:00 p.m., at the Operations Service Center, 3333 Busch Rd., Pleasanton 94566. The public comment period will end following this workshop.

The 2010 UWMP describes the City of Pleasanton's water deliveries and uses, water supply sources, efficient water uses, and demand management measures. Additionally, it incorporates the City's plan to achieve a 20 percent reduction in potable water consumption by 2020 in accordance with the Water Conservation Bill of 2009.

The City Council will consider the adoption of the 2010 UWMP at their regularly scheduled meeting on June 21, 2011, at 7:00 p.m.

The City of Pleasanton invites the public and agencies to attend City meetings and take part in the 2010 UWMP public hearing as an opportunity to provide input on the draft before it is adopted by City Council. Send questions or comments regarding the City of Pleasanton's UWMP to Rita Di Candia at 925-931-5513, or email: rdicandia@ci.pleasanton.ca.us. PT/VT#4009666 May 25; Jun 1, 2011

OFFICIAL NOTICE OF THE DUBLIN UNIFIED SCHOOL DISTRICT REGARDING THE PARCEL TAX SENIOR/SSI EXEMPTION

An exemption application from the Dublin Unified School District's Measure L parcel tax is available to eligible senior citizens who reside in property they own within the boundary of the school district, as follows: "An exemption shall be granted on any parcel owned by one or more persons aged 65 years or older who occupy said parcel as a principal residence, upon application for exemption." Property owners who wish to apply for the 2011-12 fiscal year must complete and return the form by 5:00pm on June 30, 2011 to the Dublin Unified School District at 7471 Larkdale Ave, Dublin, CA 94568. Applications are also available on the website: http://www.dublin.k12.ca.us/ (under "Quicklinks", "Measure L Parcel Tax Senior/SSI Exemptions"). If you received your tax exemption in 2010-11 and are still the homeowner and cur-

Legal Notice

ry, will sell at public auction sale to the highest bidder for cash, cashier's check drawn by a state or national bank, a cashier's check drawn by a state or federal credit union, or a cashier's check drawn by a state or federal savings and loan association, savings association, or savings bank specified in section 5102 of the Financial Code and authorized to do business in this state. Sale will be held by the duly appointed trustee as shown below, of all right, title, and interest conveyed to and now held by the trustee in the hereinafter described property under and pursuant to the Deed of Trust. The sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the note(s) secured by the Deed of Trust, interest thereon, estimated fees, charges and expenses of the Trustee for the total amount (at the time of the initial publication of the Notice of Sale) reasonably estimated to be set forth below. The amount may be greater on the day of sale. Place of Sale: THE FALLON STREET ENTRANCE TO THE COUNTY COURTHOUSE, 1225 FALLON STREET, OAKLAND, CA Legal Description: LOT 59, AS SHOWN ON THE MAP OF TRACT 2954, VAL VISTA, UNIT 5, CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA, FILED APRIL 16, 1970 IN BOOK 63 OF MAPS, PAGES 85 TO 90, INCLUSIVE, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY. EXCEPTING THEREFROM ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER OR THAT MAY BE PRODUCED FROM A DEPTH BELOW 500 FEET FROM THE SURFACE OF SAID LAND, WITHOUT RIGHT OF ENTRY UPON THE SURFACE OF SAID LAND FOR THE PURPOSE OF MINING, DRILLING, EXPLORING OR EXTRACTING SUCH OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES OR OTHER USE OF OR RIGHTS IN OR TO ANY PORTION OF THE SURFACE OF SAID LAND TO A DEPTH OF 500 FEET BELOW THE SURFACE. THEREOF, AS RESERVED IN THE DEED FROM VOLK-MCLAN COMMUNITIES, INC., A CALIFORNIA CORPORATION. TO QUALIFIED INVESTMENTS, INC., A CALIFORNIA CORPORATION, DATED JUNE 25, 1967, RECORDED JUNE 27, 1967, REEL 1988, IMAGE 207, OFFICIAL RECORDS, INSTRUMENT NO. AZ 60836, ALAMEDA COUNTY RECORDS. Amount of unpaid balance and other charges: \$651,064.47 (estimated) Street address and other common designation of the real property: 4047 PAGE CT PLEASANTON, CA 94588 APN Number: 941-1310-068-00. The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. The property heretofore described is being sold "as is"

the land therein: PA ONE OF PARCEL 5300, IN THE CITY OF ERMORE, COUNTY ALAMEDA, STATE CALIFORNIA, FILED CEMBER 31, 1987, IN BOOK 174 AT PAGE AND 40, ALAMEDA COUNTY RECORDS EXCEPTING THEREFROM ALL OIL, GAS, MINERAL RIGHTS, OTHER HYDROCARBON SUBSTANCES BY W SOEVER NAME KN AND ALL W/ CLAIMS OR RI WITHOUT HOW ANY RIGHT TO E UPON THE SURFACE SAID LAND NOR PORTION OF THE SURFACE LYING IN LAND, AS EXCEPTED RESERVED BY DEED CORDED DECEMBER 1987, AS INSTRUMENT NO. 87-348637, OFFICIAL RECORDS A.P.N.: 0405-001 The pro heretofore described being sold "as is" street address and er common design; if any, of the real erty described abc purported to be: Railroad Avenue 1 more, CA 94550 Th dergined Trustee claims any liability any incorrectness c street address and er common design; if any, shown h Said sale will be r but without covea warrant, expresse implied, regarding possession or en brances, to pay th maining principal of the note(s) se by the Deed of with interest there provided in said n advances, if any, t the terms of the De Trust, estimated charges and exp of the Trustee and t Trust created by deed of Trust, to \$2,935,445.25 estim Accrued interest additional advanc any, will increase figure prior to sale Beneficiary under Deed of Trust heret executed and deli to the undersign written Declaratio Default and Demar Sale, and a Writte tice of Default and tion to Sell. The u signed caused sai tice of Default and tion to Sell to be re in the County v the real property cated and more three months elapsed since suc cordation, 5/13/20: delity National Company dba Fi National Default ices Rob Seidenv Vice President 43: Jolla Village Drive, 330 San Diego, Calif 92122 (877) 393 9834976 5/18, 06/01/2011 PT/VT#400147: May 18, 25; Jun 1, ; T.S. No. T11-73852- APN: 098-0394-041 TICE OF TRUSTEE'S YOU ARE IN DEF UNDER A DEED OF T DATED 6/16/2009. LESS YOU TAKE AC TO PROTECT PROPERTY, IT MA SOLD AT A PUBLIC IF YOU NEED AN EXI ATION OF THE NA OF THE PROCEE AGAINST YOU, SHOULD CONTACT LAWYER. A public tion sale to the hi

VALLEY TIMES 6/1/11

FILED MAY 05, 2011 STEPHEN L. WEIR, County Clerk CONTRA COSTA COUNTY By Joseph Barton, Deputy FILE NO. 11-2944 FICTITIOUS BUSINESS NAME STATEMENT The name of the business: PIVOT POINT DECISIONS located at 200 CHATHAM TERRACE IN DANVILLE, CA 94506, Contra Costa County is hereby registered by the following owner(s): DOMENICK TRECASSE 200 CHATHAM TERRACE DANVILLE, CA 94506 This business is conducted by: An Individual /s/ Domenick Treccase This statement was filed with the County Clerk of Contra Costa on date indicated by file stamp above. Business commenced on -- Expires APR 22, 2016 SRVT#3995007 May 11, 18, 25; Jun 1, 2011 FILED MAY 05, 2011 PATRICK O'CONNELL, County Clerk ALAMEDA COUNTY By ---, Deputy FILE NO. 451396

the City Clerk of the City of Livermore, located on the second floor of City Hall at 1052 South Livermore Avenue, Livermore, California, 94550, and shall be date and time stamped by the City Clerk's time clock before 2:30 pm on June 15, 2011 at which time they will be opened and read aloud. Bids shall be submitted in sealed envelopes marked on the outside "Bid For Rehabilitate Runway 7L-25R and Realignment of Perimeter Service Road, Project 2010-27 A.I.P. No. 03-06-123-21."

the office of Engineering/Community Development at 1052 South Livermore Ave, Livermore, CA 94550. Remittance should be made payable to City of Livermore. No refund will be made of any charges for sets of Contract Documents.

(c) At the Bidder's request and up until 10 calendar days prior to the date set for opening Bids complete sets of the Contract Documents may be mailed to the Bidder at a total cost of 75.00 dollars for each set requested. Said charge covers printing, handling, and mailing costs. No refund will be made of any charges for sets of Contract Documents.

N-12 PROJECT ADMINISTRATION: To obtain a current Planholders list or order contract documents contact the Engineering Clerk at (925) 960-4500 All communications relative to this Work shall be directed in writing to the Project Engineer James S. Vingo at the City of Livermore, 1052 South Livermore Avenue, Livermore, CA 94550 (925) 960-4500

amounts of the bids, will be presented to the Town Council of the Town of Danville, on June 21, 2011 at 7:30 p.m. in the regular meeting room of the Town Council in the Town Meeting Hall, 201 Front Street, Danville, CA.

The contractor shall possess a Class A or Class C-27 license at the time the bid is submitted.

The bids for this work shall be submitted in accordance with plans and specifications prepared by the City Engineer, as authorized by the Town Council, and as required by law.

Should you have any questions regarding this project, please call 925-314-3340.

Pursuant to Public Contract Code §20103.7, prospective bidders and builders exchanges can download copies of the plans and specifications electronically in Adobe Acrobat (\*.pdf) format from the Town of

## PUBLIC NOTIFICATION PUBLIC NOTIFICATION

### Legal Notice

### Legal Notice

FILED MAY 03, 2011  
PATRICK O'CONNELL,  
County Clerk  
ALAMEDA COUNTY  
By ---, Deputy  
FILE NO. 451283

### FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: BOSSFANTASYLEAGUES.COM located at 4858 E. BERNAL AVE. in PLEASANTON, CA 94566, Alameda County is hereby registered by the following owner(s): JOE MARSH 4858 E BERNAL AVE. PLEASANTON, CA 94566 JEFF COLLINS 1046 CATALINA CREST #49 LIVERMORE, CA 94550 This business is conducted by: a general partnership /s/ Joe Marsh This statement was filed with the County Clerk of Alameda County on date indicated by file stamp above.

Business commenced on N/A  
Expires MAY 03, 2016  
PT/VT#3994900  
May 18, 25; Jun 1, 8, 2011

FILED APR 18, 2011  
STEPHEN L. WEIR,  
County Clerk  
CONTRA COSTA COUNTY  
By Lisa Woods, Deputy  
FILE NO. 11-2767

### FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: AM HANDYMAN located at 223 E. TRIDENT DR. in PITTSBURG, CA 94565, Contra Costa County is hereby registered by the following owner(s): ANTONIO MORENO GONZALEZ 223 E. TRIDENT DR. PITTSBURG, CA 94565 This business is conducted by: An Individual /s/ Antonio Moreno Gonzalez This statement was filed

### Legal Notice

with the County Clerk of Contra Costa on date indicated by file stamp above.  
Business commenced on N/A  
Expires APR 18, 2016  
SRVT#4004779  
May 18, 25; Jun 1, 8, 2011

FILED APR 19, 2011  
PATRICK O'CONNELL,  
County Clerk  
ALAMEDA COUNTY  
By ---, Deputy  
FILE NO. 450656

### FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: CONCEPT M57 located at 3246 W LAS POSITAS BLVD in PLEASANTON, CA 94588, Alameda County is hereby registered by the following owner(s): ANNIE B. ELLIOTT 3246 W LAS POSITAS BLVD PLEASANTON, CA 94588 This business is conducted by: an individual /s/ Annie B. Elliott This statement was filed with the County Clerk of Alameda County on date indicated by file stamp above.

Business commenced on N/A  
Expires APR 19, 2016  
PT/VT#4004372  
May 18, 25; Jun 1, 8, 2011

FILED MAY 02, 2011  
PATRICK O'CONNELL,  
County Clerk  
ALAMEDA COUNTY  
By ---, Deputy  
FILE NO. 451222

### FICTITIOUS BUSINESS NAME STATEMENT

The name of the business: AM GREEN CONSTRUCTION located at 821 POLK ST. in ALBANY, CA 94706, Alameda County is hereby registered by the following owner(s): ALFREDO M. MORALES 821 POLK ST. ALBANY, CA 94706 This business is conducted by: an individual /s/ Alfredo Morales This statement was filed with the County Clerk of

### Legal Notice

Alameda County on date indicated by file stamp above.  
Business commenced on 5/2/2011  
Expires MAY 2, 2016  
PT/VT#4023043  
Jun 1, 8, 15, 22, 2011

### Legal Notice

#### 2010 Urban Water Management Plan Public Hearing Notice

This is to advise that the Livermore City Council will conduct a public hearing at its meeting of June 13, 2011, to consider the following application. Hearing begins at 7:00 p.m. in the Council Chambers, 3575 Pacific Avenue.

Hearing to consider adoption of the 2010 Urban Water Management Plan, Water Use Reduction Plan, and Water Shortage Contingency Plan; and the introduction of an Ordinance adding a new Chapter 13.26, Water Conservation, to the Livermore Municipal Code.

The City Council will consider approval of the 2010 Urban Water Management Plan for the Livermore Municipal Water service area that includes a Water Use Reduction Plan to reduce per capita consumption by twenty percent by 2020 as required by the Water Conservation Bill of 2009. During the Hearing, Council will receive public comments on the economic impacts of implementing the Water Use Reduction Plan as well as the gross water use method used for determining the urban water use target. The City Council will also consider the approval of a Water Shortage Contingency Plan for the Liver-

### Legal Notice

more Municipal Water service area that describes actions the City will take in response to water supply shortages.

The City Council will also introduce by first reading, an Ordinance adding a new Chapter, 13.26, Water Conservation, to Division 1 (Water) of Title 13 (Public Works) of the Livermore Municipal Code to provide for voluntary and mandatory water conservation.

The draft 2010 Livermore Municipal Urban Water's Urban Water Management Plan will be available for review beginning June 1, 2011 at the following locations:

- Water Resources Division, 101 W. Jack London Blvd.
- City Hall, City Clerk's Office, 1052 South Livermore Avenue
- Civic Center Library, 1188 South Livermore Avenue
- Rincon Library, 725 Rincon Avenue
- Springtown Library, 998 Bluebell Road

The staff report and recommendation will be available for review in the City Council agenda packet from the evening of June 9, 2011, in the City Library, 1188 South Livermore Avenue as well as on the City of Livermore website at [www.cityoflivermore.net](http://www.cityoflivermore.net). Agenda materials will also be available for review in the City Clerk's office, 1052 South Livermore Avenue. Written information regarding these agenda items must be received in the City Clerk's office by noon on Tuesday, June 7, 2011, to be included in the agenda packet.

If you challenge these items in court, you may

### Legal Notice

be limited to raising only those issues you or someone else raised at the public hearing, or in written correspondence delivered at, or prior to, the public hearing. Note: If these actions are subject to the Code of Civil Procedure, Section 1094.5, and you choose to challenge these actions in court, you must seek judicial review within the time specified in the Code of Civil Procedure, Section 1094.6.

All interested persons are invited to attend the public hearings.

Dated: May 26, 2011  
Susan Neer, City Clerk  
Publish: June 1, 2011 and June 8, 2011  
PT/VT#4019871  
June 1, 8, 2011

### Legal Notice

NOTICE OF TRUSTEE'S SALE Trustee Sale No. 41284CA Loan No. 0698383759 Title Order No. 366899 YOU ARE IN DEFAULT UNDER A DEED OF TRUST DATED 07-10-2006. UNLESS YOU TAKE ACTION TO PROTECT YOUR PROPERTY, IT MAY BE SOLD AT A PUBLIC SALE. IF YOU NEED AN EXPLANATION OF THE NATURE OF THE PROCEEDINGS AGAINST YOU, YOU SHOULD CONTACT A LAWYER. ON 06-15-2011 at 12:30 PM, CALIFORNIA RECONVEYANCE COMPANY as the duly appointed Trustee under and pursuant to Deed of Trust Recorded 07-14-2006, Book xx, Page xx, Instrument 2006273687, of official records in the Office of the Recorder of ALAMEDA County, California, executed by: ANGELINA VEGA, AN UNMARRIED WOMAN, as Trustor, LONG BEACH MORTGAGE

### Legal Notice

COMPANY, as Beneficiary, will sell at public auction sale to the highest bidder for cash, cashier's check drawn by a state or national bank, a cashier's check drawn by a state or federal credit union, or a cashier's check drawn by a state or federal savings and loan association, savings association, or savings bank specified in section 5102 of the Financial Code and authorized to do business in this state. Sale will be held by the duly appointed trustee as shown below, of all right, title, and interest conveyed to and now held by the trustee in the hereinafter described property under and pursuant to the Deed of Trust. The sale will be made, but without covenant or warranty, expressed or implied, regarding title, possession, or encumbrances, to pay the remaining principal sum of the note(s) secured by the Deed of Trust, interest thereon, estimated fees, charges and expenses of the Trustee for the total amount (at the time of the initial publication of the Notice of Sale) reasonably estimated to be set forth below. The amount may be greater on the day of sale. Place of Sale: THE FALLON STREET ENTRANCE TO THE COUNTY COURTHOUSE, 1225 FALLON STREET, OAKLAND, CA Legal Description: LOT 59, AS SHOWN ON THE MAP OF TRACT 2954, VAL VISTA, UNIT 5, CITY OF PLEASANTON, ALAMEDA COUNTY, CALIFORNIA, FILED APRIL 16, 1970 IN BOOK 63 OF MAPS, PAGES 85 TO 90, INCLUSIVE, IN THE OFFICE OF THE COUNTY RECORDER OF ALAMEDA COUNTY, EXCEPTING THEREFROM ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES IN AND UNDER OR THAT MAY BE PRODUCED FROM A DEPTH BELOW 500 FEET FROM THE SURFACE OF SAID LAND, WITHOUT RIGHT OF ENTRY UPON THE SURFACE OF SAID LAND FOR THE PURPOSE OF MINING, DRILLING, EXPLORING OR EXTRACTING SUCH OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES OR OTHER USE OR RIGHTS IN OR TO ANY PORTION OF THE SURFACE OF SAID LAND TO A DEPTH OF 500 FEET BELOW THE SURFACE THEREOF, AS RESERVED IN THE DEED FROM VOLK-MCLAIN COMMUNITIES, INC., A CALIFORNIA CORPORATION, TO QUALIFIED INVESTMENTS, INC., A CALIFORNIA CORPORATION, DATED JUNE 25, 1967, RECORDED JUNE 27, 1967, REEL 1988, IMAGE 207, OFFICIAL RECORDS, INSTRUMENT NO. AZ 60836, ALAMEDA COUNTY RECORDS. Amount of unpaid balance and other charges: \$651,064.47 (estimated) Street address and other common designation of the real property: 4047 PAGE CT PLEASANTON, CA 94588 APN Number: 941-1310-068-00 The undersigned Trustee disclaims any liability for any incorrectness of the street address and other common designation, if any, shown herein. The property heretofore described is being sold "as is". In compliance with California Civil Code 2923.5(c) the mortgagee, trustee, beneficiary, or authorized agent declares: that it has contacted the borrower(s) to assess their financial situation and to explore options to avoid foreclosure; or that it has made efforts to contact the borrower(s) to assess their financial situation

### Legal Notice

and to explore o to avoid foreclos one of the fo methods: by tele by United States either 1st class or fied; by overnight ery; by e-mail; by f face meeting. DA1 20-2011 CALIF RECONVEYANCE PANY, as Trustee ISAAC PACHECO, TANT SECRETARY FORNIA RECONVE COMPANY IS A COLLECTOR ATT ING TO COLLECT A ANY INFORMATION TAINED WILL BE FOR THAT PURPO ifornia Reconve Company 9200 O; Avenue Mail Stop 4379 Chatsworth 91311 800-892-690 Sales Information: www.lpsasap.com 573-1965 www.prioritypost m ASAP# 4/ 05/25/2011, 06/01 06/08/2011  
PT/VT#401078  
5/25/11, 6/1/11, 6

### Legal Notice

NOTICE OF TRU: SALE Trustee Sal 448537CA Loan 0689789006 Title No. 752700 YOU A DEFAULT UNDER A OF TRUST DATED 2005. UNLESS YOU ACTION TO PR YOUR PROPERTY, I BE SOLD AT A F SALE. IF YOU NEI EXPLANATION OF NATURE OF THE CEEDINGS AGAIN: YOU SHOULD COI A LAWYER. ON 2011 at 10:00 AM, FORNIA RECONVE COMPANY as the appointed Truste der and pursua Deed of Trust Rec 04-19-2005, Book Page N/A, Instru 2005-0136151-00, o cial records in the of the Recorder of TRA COSTA COUNTY fornia, executed

# classified

# MARKETPLACE

Place An Ad, Mon.-Fri. 8am-5pm by calling  
**1-800-733-3933** **OR** [www.contracostatimes.com/classifieds](http://www.contracostatimes.com/classifieds)



## ContraCostaTimes.com

It's how



July 1, 2011

Albert V. Lopez, Planning Director  
Alameda County Planning Department  
224 W. Winton Avenue, Room 111  
Hayward, CA 94544-1215

Enclosed is a copy of the 2010 Update of the Urban Water Management Plan for Livermore Municipal Water as required by the Urban Water Management Planning Act.

If you have any questions regarding Livermore's Urban Water Management Plan, please call Randy Werner or me at (925) 960- 8100.

Sincerely,

A handwritten signature in cursive script, appearing to read "Darren Greenwood".

Darren Greenwood  
Assistant Public Works Director  
Water Resources Division, Public Works Department

(925) 960-8100  
(925) 960-8105 Fax

cc: Dan McIntyre, Director of Public Works  
Randy Werner, Water Supervisor

Enclosures

1. 2010 Urban Water Management Plan

**IN THE CITY COUNCIL OF THE CITY OF LIVERMORE, CALIFORNIA**  
**A RESOLUTION APPROVING THE 2010 URBAN WATER MANAGEMENT**  
**PLAN UPDATE FOR THE LIVERMORE MUNICIPAL WATER SYSTEM**

The California Urban Water Management Planning Act (Water Code sections 10620-10656) requires each urban water supplier to adopt an urban water management plan, to update the plan at least once every five years, and to file any amendment to the plan with the Department of Water Resources. Elements of the plan include a review of past, current, and projected water supplies and demands, water conservation programs (demand management measures), water shortage contingency planning, and recycled water opportunities.

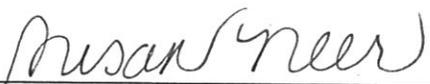
The 2010 Urban Water Management Plan for the Livermore Municipal Water System has been updated to meet the requirements of the California Urban Water Management Planning Act. City Council approval will authorize implementation of the plan as well as transmittal of the plan to the California Department of Water Resources.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Livermore that the 2010 Urban Water Management Plan for the City of Livermore Municipal Water System is approved, a copy of which is on file in the Office of the City Clerk.

On the motion of Councilmember Williams, seconded by, Vice Mayor Marchand, the foregoing resolution was passed and adopted on the 13<sup>th</sup> day of June, 2011, by the following vote:

AYES: Councilmembers Horner, Leider, Williams, Vice Mayor Marchand, Mayor Kamena  
NOES: None  
ABSENT: None  
ABSTAIN: None

ATTEST & DATE:

  
\_\_\_\_\_  
CITY CLERK  
SUSAN NEER

APPROVED AS TO FORM:

  
\_\_\_\_\_  
SPECIAL COUNSEL  
AMARA MORRISON

DATE: June 14, 2011



July 1, 2011

Department of Water Resources  
Statewide Integrated Water Management  
Water Use and Efficiency Branch  
P.O. Box 942836  
Sacramento, CA 94236-0001

Attention: Coordinator, Urban Water Management Plans

Enclosed is a copy of the 2010 Update of the Urban Water Management Plan for Livermore Municipal Water as required by the Urban Water Management Planning Act. Our plan will also be submitted electronically through the State program (DOST). We have also submitted our plan to the California State Library as required.

If you have any questions regarding Livermore's 2010 Urban Water Management Plan, please call Randy Werner or me at (925) 960- 8100.

Sincerely,

A handwritten signature in black ink, appearing to read "Darren Greenwood".

Darren Greenwood  
Assistant Public Works Director  
Water Resources Division, Public Works Department

(925) 960-8100  
(925) 960-8105 Fax

cc: Dan McIntyre, Director of Public Works  
Randy Werner, Water Supervisor

Enclosures

1. 2010 Urban Water Management Plan



July 1, 2011

California State Library  
Government Publications Section  
P.O. Box 942837  
Sacramento, CA 94237-0001

Attention: Coordinator, Urban Water Management Plans

Enclosed is a copy of the 2010 Update of the Urban Water Management Plan for Livermore Municipal Water as required by the Urban Water Management Planning Act.

If you have any questions regarding Livermore's 2010 Urban Water Management Plan, please call Randy Werner or me at (925) 960- 8100.

Sincerely,

A handwritten signature in cursive script, appearing to read "Darren Greenwood".

Darren Greenwood  
Assistant Public Works Director  
Water Resources Division, Public Works Department

(925) 960-8100  
(925) 960-8105 Fax

cc: Dan McIntyre, Director of Public Works  
Randy Werner, Water Supervisor

Enclosures

1. 2010 Urban Water Management Plan

---

## **RECYCLED WATER MASTER PLAN**

Founded in 1869, the City of Livermore (City) is framed by award-winning wineries, farm lands and ranches that reflect the Livermore valley's western heritage. As an area with rich cultural and agricultural history, the City is committed to protecting the environment, improving the quality of life for residents and visitors, and promoting sustainability. In order to fulfill this commitment, the City has developed policy objectives and initiatives ranging from Green Building ordinances for commercial and residential development to programs to reduce water and energy use within the City.

The City commitment to promoting sustainability is evident in the City's recycled water program. The City has practiced water reuse for over 25 years and last identified recycled water expansion opportunities in 2004. Many of the opportunities identified in the 2004 study have been realized and further expansion requires identification of a long term plan to maximize current and future recycled water supply.

Further expansion of the recycled water system would enable the City to offset current and future potable water use and continue to support the City's green initiatives and strategic objectives. This Recycled Water Master Plan (RWMP) presents a plan that the City can implement in a phased manner as technical, funding, partnering, and other factors align to make recycled water expansion feasible.

The objective of this RWMP is to identify an implementable action plan for achieving the following goals:

- Offsetting potable water use by supplying recycled water when and where appropriate.
- Expanding and fully subscribing the existing recycled water system.
- Optimizing the existing and future system configuration.

A two-phased process is being used to develop the RWMP. Phase I consisted of identifying numerous conceptual alternatives along with developing associated quantitative and qualitative data to evaluate the alternatives. The conceptual alternatives were then ranked to develop the top three preferred projects. Phase II of the RWMP will consist of further development of the top three preferred projects. Phase II of the RWMP is currently underway and is planned to be completed by June 2011. This report summarizes the findings of Phase I.

## **INTRODUCTION**

The RWMP study area is the City of Livermore boundary and includes City Zones 1 through 3 and the California Water Service Company (Cal Water) service area. Some areas immediately adjacent to the City such as the eastern part of Pleasanton, north Livermore,

the area surrounding the Ruby Hill Golf Club, and the vineyards to the south east of the City limits along Tesla Road were also considered.

The water purveyors in the City boundary include the Livermore Municipal Water Utility and California Water Service Company (Cal Water). Recycled water presents a sustainable resource available to offset potable water use in the region and expansion of the existing system will help diversify and strengthen the regional water supply. Irrigation of agricultural lands, including vineyards, occurs through the use of raw water purveyed by Zone 7 and limited use of private groundwater. Zone 7 is currently updating their water supply master plan to replace imported surface water supplies threatened by regulatory decisions in the delta and recycled water is currently projected to replace 2,000 acre feet per year (AFY) of these lost supplies.

## **RECYCLED WATER SUPPLY**

The source of recycled water considered in the study was the advanced tertiary treated wastewater from the Livermore Water Reclamation Plant (LWRP). The LWRP was originally built in 1958 with a design capacity of 2.5 million gallons per day (mgd). Tertiary treatment facilities were constructed in 1974. The tertiary facilities have been upgraded several times since its initial construction and currently consist of media filters and ultraviolet (UV) disinfection.

The LWRP effluent meets Title 22 disinfected tertiary recycled water standards and is suitable for irrigation of food crops, landscape irrigation, and non-restricted recreational impoundments. As part of the RWMP, effluent parameters from 2006 through 2008 were reviewed for key irrigation water quality constituents and also compared to the groundwater quality in the region. The results revealed that the LWRP effluent is suitable for irrigation use.

Currently the LWRP has a build out flow capacity of 9.5 mgd and processes on average over 7.0 mgd of wastewater. The City's recycled water distribution system consists of approximately 14 miles of pipeline and 3.8 million gallons (MG) of storage. In concert with the City's green initiatives, it was the objective of this RWMP to evaluate methods to efficiently utilize 100 percent of the available recycled water supply.

## **RECYCLED WATER DEMAND**

Over 150 potential recycled water customers were identified within the study area. These include customers in both the Livermore Municipal Water and Cal Water service areas, as well as customers near the city boundaries in the City of Pleasanton and the unincorporated county such as agricultural users in North Livermore. The customers were identified using multiple sources including previous reports, water usage data, discussions with Water Resources Division (WRD) staff and City engineering and planning staff, GIS mapping, and

meetings with various potential customer groups including the City of Pleasanton, Zone 7 Water Agency, and Cal Water.

The types of acceptable uses identified include urban irrigation (i.e. school yards, parks, cemeteries, golf courses, Home Owners Associations (HOAs)), agricultural irrigation (i.e. vineyards, miscellaneous row crops and orchards), toilet flushing, and process/commercial uses. The potential recycled water customer sites identified are shown on Figure ES.1. The recycled water use sites were then quantified to determine potential recycled water demand.

Expected landscape irrigation requirements for the Livermore area were calculated based on evapotranspiration and rainfall data. Calculated irrigation requirements were used to estimate irrigation use at the sites. The net annual average landscape irrigation requirement in the study area was found to be approximately 2.4 feet per year.

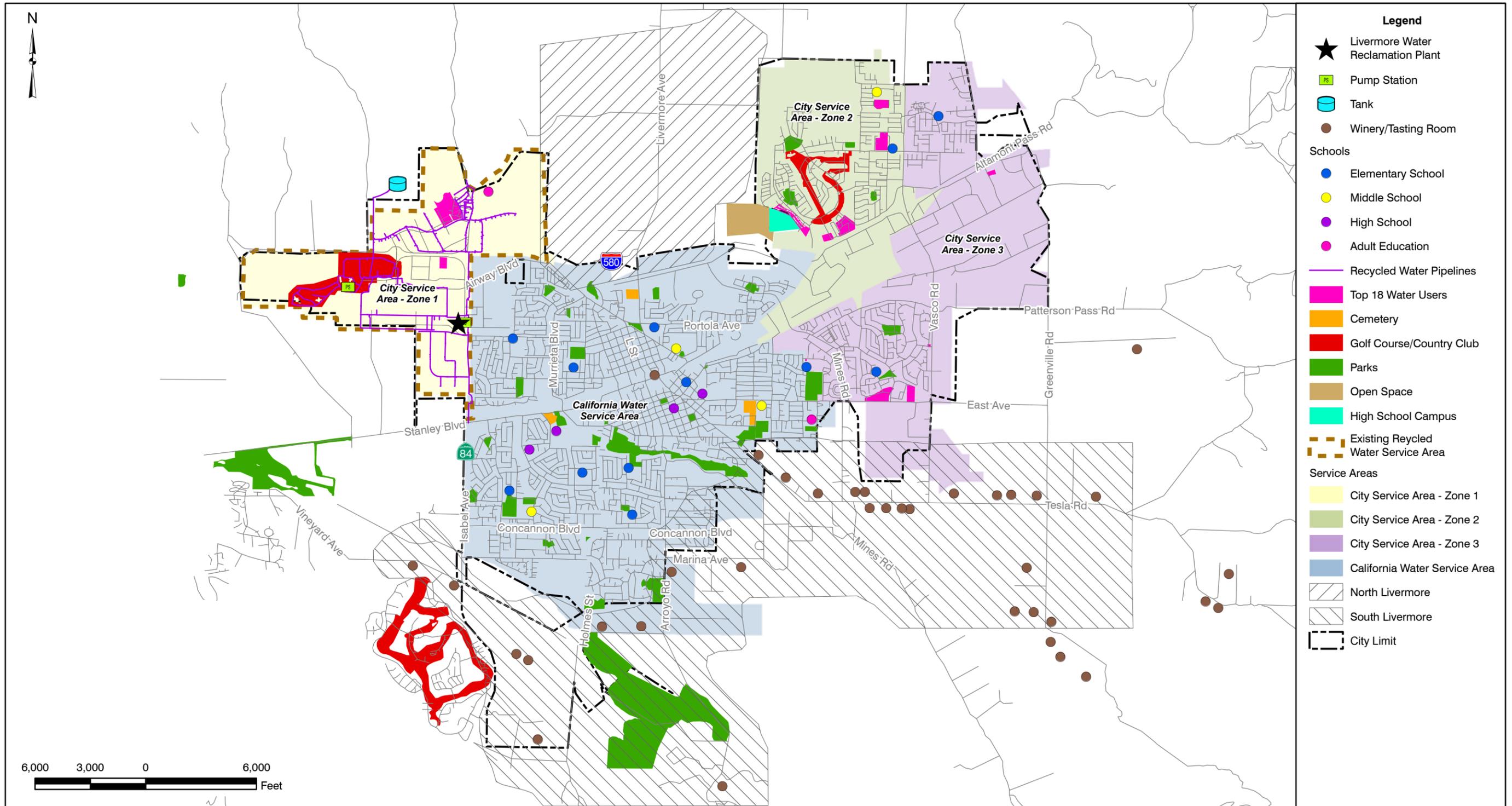
Table ES.1 presents a summary of the number of customers, the use type, the acreage irrigated, and the estimated demand for these existing and potential customers.

As seen from the table, the total estimated maximum month recycled water demand exceeds the ultimate available supply of 9.5 mgd from the Livermore WRP. During the conceptual alternatives development, customers within the various zones were combined along potential recycled water alignments to meet recycled water demands within the available supply.

## **CONCEPTUAL ALTERNATIVES DEVELOPMENT**

The identified potential customers were grouped into conceptual alternatives with the objective of maximizing the use of recycled water and serving as much of the City service area as possible. Each alternative was developed based on the availability of recycled water supply and potential customer proximity to the recycled water transmission main.

Numerous stakeholder, environmental, implementation, and funding criteria were considered in the development of the alternatives. Several small group meetings were conducted with potential recycled water customers such as golf courses, agricultural users, Home Owners Associations (HOA's), Livermore Area Recreation and Parks District (LARPD), and school districts. Meetings were also conducted with the other water service providers in the area including Zone 7 and Cal Water. The meetings provided insight to the City and WRD staff as to the possible interest and/or concerns of each stakeholder group.



**ES.1**  
**POTENTIAL RECYCLED WATER USE SITES**  
 RECYCLED WATER MASTER PLAN  
 CITY OF LIVERMORE

<b>Table ES.1 Total Potential Customer Demands Summary Recycled Water Master Plan City of Livermore</b>					
<b>Zone</b>	<b>Number of Customers</b>	<b>Type</b>	<b>Acres</b>	<b>Total Annual Demand<sup>(1)</sup> (afy)</b>	<b>Max Month Demand<sup>(1)</sup> (mgd)</b>
Zone 1					
Existing <sup>(2)</sup>	31	Parks, Schools, Golf Course, Airport, Business Parks	N/A <sup>(3)</sup>	1,131	2.5
Future <sup>(2)</sup>	13	Parks, Schools, Business Parks	N/A <sup>(3)</sup>	434	1.0
Zone 2 <sup>(2)</sup>	14	Parks, Schools, Golf Course, Multi Family Irrigation, HOAs	252	618	1.4
Zone 3 <sup>(2)</sup>	13	Parks, Schools, Process, LLNL	70	366	0.8
Cal Water Service Area	54	Parks, Schools, Cemeteries, Vineyards	639	1,193	2.7
Unincorporated City					
North Livermore <sup>(4)</sup>	2	Agricultural	10,018	12,241	27.3
South Livermore <sup>(5)</sup>	32	Vineyards, Golf Club	4,357	5,773	12.4
City of Pleasanton	5	Parks	38	481	1.1
<b>Total</b>	<b>164</b>	<b>---</b>	<b>15,375<sup>(6)</sup></b>	<b>22,237</b>	<b>49.2</b>
Notes:					
(1) Presented demand is based on estimates using net irrigation requirements. The actual measured use for existing customers is lower than presented due to unmetered use of recycled water at the LWRP as well as volume used for construction, fire, and clean out flows.					
(2) Includes one or more City of Livermore large water users.					
(3) Acreage for existing and future Zone 1 customers is not available.					
(4) North Livermore includes irrigation of 10,000 total potential acres of undeveloped land and 18 acres from another site.					
(5) Ruby Hill Golf Club is counted as part of South Livermore.					
(6) Total irrigated acreage excludes acreage of Zone 1 customers.					

Conceptual alternative analysis resulted in development of the following ten recycled water alternatives:

- Alternative 1 – Zone 1 Buildout - The City's 2004 RWMP identified potential customers within the existing water service area, Zone 1 that could be connected to the system to maximize recycled water use. Some of these customers have

connected to the system since 2004. Alternative 1 consists of connecting the additional customers.

- Alternative 2 – Ruby Hill Route - Alternative 2 is based on delivering recycled water to Ruby Hill Golf Club, one of the largest potential recycled water users, and other surrounding users. For this route, the recycled water pipeline along Kitty Hawk Road would be extended to the south across Stanley Blvd along Isabel Ave to Ruby Hill Golf Club
- Alternative 3 – North Livermore Route - The primary purpose for this route is to deliver recycled water to the currently unincorporated, undeveloped lands north of the City along North Livermore Avenue, north of Highway 580. This alternative assumes the land would be developed into a viable agricultural area.
- Alternative 4 – Springtown Route - This route was developed to deliver recycled water to the Springtown Golf Course and other potential customers in the Springtown area. This alternative could be developed as an extension of the North Livermore route or as an independent route as both extend east from the existing system along Portola Avenue.
- Alternative 5 – Cal Water East Route - This recycled water route was developed to convey flow east from the LWRP through the Cal Water service area. This route captures parks, schools, and cemeteries in the Cal Water service area and then extends to capture the parks, schools, and large volume user Lawrence Livermore National Lab.
- Alternative 6 – Cal Water South Route - This recycled water route was developed to head east and then south along an existing bike path and trail in the Cal Water service area through Robertson Park. This route connects to the existing 18-inch pipeline that terminates at the intersection of Stanley Avenue and Isabel Avenue.
- Alternative 7 – Southeast Livermore Vineyards Route (via Cal Water South Route) - This route was developed to deliver recycled water to the vineyards in south Livermore along Tesla Road. For the construction of this route, it should be noted that either Alternative 5 or Alternative 6 would need to be constructed first.
- Alternative 8 – Satellite Plant at Springtown - This alternative consists of construction of a new sewer scalping/satellite plant in the Springtown area between the proposed Catholic High School and the Springtown Golf Course.
- Alternative 9 – Groundwater Recharge - The groundwater recharge alternative consists of recharging all available effluent flow (minus onsite/LWRP recycled water use and Zone 1 build-out uses) into the groundwater basin.
- Alternative 10 – Recycled Water Partnerships - This alternative consists of entering into partnerships with regional partners such as the Zone 7 and/or the City of Pleasanton (Pleasanton). The alternative for a partnership with Zone 7 would

include the trade of potable water rights for potable water offsets achieved using recycled water. The alternative for a partnership with Pleasanton would include the sale of recycled water to Pleasanton for distribution to some of their east-area customers.

The City has determined that Alternative 1 – Zone 1 Buildout will be completed in the immediate term as the customers identified in the City's previous recycled water master plan complete connection to the existing system. Therefore, the remaining nine alternatives were developed assuming that Alternative 1 – Zone 1 Buildout is a component of the existing system. Thus, a baseline demand of 3.5 mgd was assumed, leaving a remaining potential supply of 6.0 mgd at buildout.

Recycled water demand, potable water offset, estimated capital cost, funding availability, environmental and permitting requirements, and stakeholder considerations were developed for each of the alternatives. The quantitative and qualitative parameters of each of the alternatives were summarized in Table ES.2 and Table ES.3, respectively. These summaries were used as the basis of comparison of alternatives during the conceptual alternatives screening.

## **ALTERNATIVES SCREENING AND RANKING**

Conceptual alternatives screening was conducted to identify the preferred alternatives to be further developed as part of Phase II of this study. The intent of the screening process was to identify those projects that maximize the City's water supply opportunities and are most likely to be implemented. The alternatives were categorized into near and long term projects before the screening process began.

- Near-term alternatives were defined as projects that are likely to be constructed in the next 3 to 10 years and/or projects that require construction prior to expansion of other alternatives.
- Long-term alternatives were defined as projects that are likely to be constructed after the next 10 years and/or projects that require construction of other alternatives prior to implementation.

A direct comparison method for screening was selected by the City, and was conducted in a workshop with City WRD and engineering staff/management. The screening criteria most relevant to the City were identified and categorized as quantitative and qualitative criterion. The near- and long-term alternatives were then compared to each other and ranked based on the quantitative and qualitative criterion.

The primary considerations during the screening process included the recycled water demand and the conversion from potable water customers versus that from raw water customers, the project costs, potential to promote development, likelihood of quick implementation, and support of Council policy objectives. Projects with a greater potable

**Table ES.2 Quantitative Conceptual Alternative Comparison  
Recycled Water Master Plan  
City of Livermore**

Alt No.	Alternative Name	Max Month Recycled Water Demand <sup>(1)</sup> (mgd)			Average Annual Potable Water Offsets <sup>(2)</sup> (mgd)	Untreated Water Offsets (mgd)	Estimate of Costs	
		Existing	Projected	Total			Capital Cost <sup>(3)</sup> (\$ million)	Cost per Acre Foot <sup>(4)</sup> (\$/af)
<b>APPROVED REUSE PROGRAM</b>								
0	Existing Zone 1	2.5	0.0	2.5	---	---	--	---
1	Zone 1 Buildout	--	1.0	3.5	0.4	---	0.2 <sup>(5)</sup>	34
<b>ADDITIONAL REUSE EXPANSION ALTERNATIVES</b>								
2	Ruby Hill Route	--	4.9	8.4	0.2	1.7	46.3	1,380
3	North Livermore Route <sup>(6)</sup>	--	6.0	9.5	0.1	---	52.8 to 69.0	1,573 to 2,056
4	Springtown Route <sup>(7)</sup>	--	1.7	5.2	0.7	0.04	31.9	3,168
5	Cal Water East	--	1.5	5.0	0.6	---	26.8	3,016
6	Cal Water South	--	0.8	4.3	0.3	---	13.3	1,806
7	Southeast Livermore Vineyards (Includes Cal Water South) <sup>(8)</sup>	--	5.7	9.2	0.3	1.9	59.3	1,044
8	Satellite Plant at Springtown	--	1.6	5.1	0.6	0.0	42.8	4,251
9	Groundwater Recharge	--	6.0	9.5	Up to 6.0	---	140.7	2,722
10	Recycled Water Partnerships <sup>(9)</sup>	--	0.5	4.0	0.2	---	0.1 <sup>(10)</sup>	27

**Table ES.2 Quantitative Conceptual Alternative Comparison  
Recycled Water Master Plan  
City of Livermore**

Alt No.	Alternative Name	Max Month Recycled Water Demand <sup>(1)</sup> (mgd)			Average Annual Potable Water Offsets <sup>(2)</sup> (mgd)	Untreated Water Offsets (mgd)	Estimate of Costs	
		Existing	Projected	Total			Capital Cost <sup>(3)</sup> (\$ million)	Cost per Acre Foot <sup>(4)</sup> (\$/af)

Notes:

- (1) Demand is based on customers identified and corresponding acreages. Total demand for Alternatives 2 thru 10 equals the projected demand plus Zone 1 demand of 3.5 mgd.
- (2) Potable water offsets calculated using average annual recycled water use. Offsets presented are for the alternative and does not include offsets from existing demand.
- (3) Capital costs include direct costs, 30% estimating contingency, 20% general contractor overhead and profit, 9.75% sales tax, and 30% engineering,
- (4) Capital costs are amortized at 5 percent over 30 years. Dollars per acre-foot calculated using the estimated total annual usage.
- (5) Total capital cost estimated at \$6.2M. Livermore's portion of \$200,000 provided by Joel Waxdeck, City of Livermore, January 2011. Other \$6M is planned to be paid by developers for the pipeline extension.
- (6) Acreage irrigated adjusted to 2,700 AF to ensure availability of supply during maximum month conditions for existing customers and N. Livermore customers.
- (7) Assumes independent route and does not include cost associated with including flow from the N. Livermore Route.
- (8) Assumes enlarging of the Cal Water South Route. Potable water offsets are calculated for urban customers only as the vineyards use raw water and non-potable sources do not provide potable offsets.
- (9) Recycled Water Partnership alternative assumes a portion of the existing distribution network would need to be upsized and extended.
- (10) Livermore's cost of \$100,000 for a turnout provided by Joel Waxdeck, City of Livermore, January 2011. Cost of 12" pipeline is planned to be paid by developers.

water offset received a higher ranking than projects converting untreated water usage to recycled water for a number of reasons. Projects with large potable offsets provide a greater water supply benefit and are more likely to receive Zone 7 support and funding. Also, projects to replace untreated water use can be more difficult to implement due to the extremely low cost of untreated water and the lack of incentive for users to convert to recycled water.

The results of the screening process are summarized in Table ES.4.

**Table ES.3 Qualitative Conceptual Alternative Comparison  
Recycled Water Master Plan  
City of Livermore**

Alt No.	Alternative name	Potential Funding Sources <sup>(1)</sup>	Preservation of Open Space (acres)	Regulatory Implications	Possible Long-Term Environmental Considerations	Anticipated Concerns	
						Supplier/Partner	Public/Customers
1	Zone 1 Buildout	- All except Agricultural Water Conservation and Local Groundwater Assistance (Prop 84).	N/A	See Note (4) Below.	- None Anticipated - route in existing built corridor	N/A	Cost
2	Ruby Hill Route	- All except Local Groundwater Assistance (Prop 84). - Potential cost sharing with Zone 7 and Pleasanton.	Approximately 1,400 acres	See Note (4) Below.	- Aesthetics - Cultural Resources	Cal Water Coordination	Cost and GC Board Approval
3	North Livermore Route	- All except Local Groundwater Assistance (Prop 84). - Potential cost sharing with Cal Water and wineries. - CA Department of Food And Agriculture (Farm Bill 2008). - Organic Farming Research Foundation.	Up to 2,150 acres	See Note (4) Below.	- Aesthetics - Cultural Resources - Biological Resources	Cal Water Coordination	Cost
4	Springtown Route <sup>(2)</sup>	- All except Agricultural Water Conservation and Local Groundwater Assistance (Prop 84). - Potential cost sharing with Cal Water.	Approximately 20 acres	See Note (4) Below.	- None Anticipated - route in existing built corridor	Cal Water Coordination	Cost, GC Board Approval, and HOA Board Approval
5	Cal Water East	- All except Agricultural Water Conservation and Local Groundwater Assistance (Prop 84). - Potential cost sharing with Cal Water.	N/A	See Note (4) Below.	- None Anticipated - route in existing built corridor	Cal Water Coordination	Cost
6	Cal Water South	- All except Agricultural Water Conservation and Local Groundwater Assistance (Prop 84). - Potential cost sharing with Cal Water.	N/A	See Note (4) Below.	- None Anticipated - route in existing built corridor	Cal Water Coordination and Zone 7 Acceptance	Cost
7	Southeast Livermore Vineyards (Includes Cal Water South) <sup>(3)</sup>	- All except Local Groundwater Assistance (Prop 84). - Organic Farming Research Foundation. - CA Department of Food and Agriculture (Farm Bill 2008). - Potential cost sharing with Cal Water and wineries.	Approximately 1,775 acres	See Note (4) Below.	- Aesthetics - Cultural Resources	Cal Water Coordination and Zone 7 Acceptance	Cost
8	Satellite Plant at Springtown	- All except Agricultural Water Conservation and Local Groundwater Assistance (Prop 84)	Approximately 20 acres	See Note (4) Below.	- Land Use - Aesthetics - Cultural Resources - Transportation and Traffic	Neighborhood Impacts and Additional Staff/Monitoring for New Facility	Cost
9	Groundwater Recharge	- All except Agricultural Water Conservation. - Potential cost sharing with Zone 7.	N/A	See Note (4) Below. In Addition There Are Higher Restrictions for Dilution.	- Dilution and Groundwater Flow Impacts - Aesthetics - Cultural Resources	Zone 7 Acceptance	Public Acceptance
10	Recycled Water Partnerships	- All except Agricultural Water Conservation and Local Groundwater Assistance (Prop 84). - Potential cost sharing with Pleasanton.	N/A	See Note (4) Below.	- None Anticipated - route in existing built corridor	Pleasanton Acceptance and Affordability	Cost

- Notes:
- (1) Available grants and loans include Water Recycling Program Loan, Water Recycling Program Grant (Prop 13), New Local Water Supply (Prop 82), Agricultural Water Conservation Loan Program, Integrated Regional Water Management Grants Program (Prop 84), Local Groundwater Assistance (Prop 84), USBR Title XVI, and USBR Water for America Initiative.
  - (2) Assumes independent route and does not include cost associated with including flow from the N. Livermore Route.
  - (3) Assumes enlarging of the Cal Water South Route.
  - (4) Permits and regulatory considerations include DPH approval, Caltrans Encroachment Permits, Air Quality and Construction Permits, and additional County Permits.

<b>Table ES.4 Alternatives Ranking Results Recycled Water Master Plan City of Livermore</b>	
	<b>Rank <sup>(1)</sup></b>
<b>Near-Term Alternatives</b>	
Alternative 4 - Springtown Route	4 <sup>th</sup>
Alternative 5 - Cal Water East Route	2 <sup>nd</sup>
Alternative 6 - Cal Water South Route	2 <sup>nd</sup>
Alternative 10 - Partnership with Pleasanton	1 <sup>st</sup>
<b>Long-Term Alternatives</b>	
Alternative 2 - Ruby Hill Route	1 <sup>st</sup>
Alternative 3 - North Livermore Route	3 <sup>rd</sup>
Alternative 7 - Southeast Livermore Vineyards Route	2 <sup>nd</sup>
Alternative 8 - Satellite Plant at Springtown	4 <sup>th</sup>
Alternative 9 - Groundwater Recharge	5 <sup>th</sup>
<p>Note:</p> <p>(1) Results presented above are based on the alternatives screening workshop conducted on December 1, 2010 with City WRD and engineering staff/management.</p>	

Based on the results of the ranking, two near-term alternatives and one long-term alternative were selected for further study. City staff selected two near-term alternatives that best met the evaluation criteria and are the most likely to be implemented during next 10 years. One long-term alternative was selected for further study instead of a third near term alternative primarily since the alternative meets the City Council objective of exploring agricultural water use in North Livermore.

- Near-term: Pursuing a recycled water partnership with Pleasanton (Alternative 10) that will help embark on a regional recycled water system.
- Near-term: Serving the Cal Water South customers (Alternative 6) thereby constructing distribution infrastructure that can facilitate future long-term expansion of the recycled water system.
- Long-term: Serving the north Livermore area (Alternative 3), supporting the Council priority of exploring agricultural water use in North Livermore.

The Cal Water South alternative was selected for further study although both Cal Water South and Cal Water East alternatives ranked equally. This is because the Cal Water South alternative provides the greatest future flexibility for expansion. This alternative can be extended south to serve the Southeast Livermore Vineyards or extended north to serve many of the customers along the Cal Water East alternative.

The North Livermore alternative was selected for further study due to the continued community interest in understanding the economic benefit of promoting agricultural development in North Livermore. The more highly ranked alternatives, Alternative 2 – Ruby Hill Route, and Alternative 7 – Southeast Livermore Vineyards were not selected as the long-term alternative for further study as both of these alternatives consist primarily of customers who have existing alternate, more cost effective, water supplies with limited incentive to use recycled water at this time. Thus, their demand for recycled water is uncertain at this time, and service to these areas does not support any critical Livermore policy objectives.

## **CONCLUSIONS**

At the completion of Phase I of the Livermore RWMP, ten viable recycled water alternatives were identified, screened and ranked based on quantitative and qualitative criteria. Although all the alternatives developed in Phase I are considered feasible, three alternatives were identified for further study in Phase II. The three alternatives selected for further study are consistent with the City's policy objectives, and the two near-term projects selected are the most feasible for implementation during the next 10 years.

Phase II of the RWMP is currently underway and planned to be completed by June 2011. During Phase II, the preferred projects will be further developed. The associated implementation considerations, capital, operations, and maintenance costs, and long-term financial sustainability of the three preferred projects will be evaluated. An implementation plan considering technical, regulatory, permitting, stakeholder involvement will be developed for the preferred projects to provide the City a road-map for recycled water system expansion.

# Livermore Municipal Water Water Shortage Contingency Plan

## Introduction

The City of Livermore has developed this Water Shortage Contingency Plan for the Livermore Municipal Water System as required by California Water Code Section 10632(a). The Plan describes the following required elements:

- Water conservation stages of action in response to shortages up to 50%;
- Estimates of the minimum 3-year water supply available;
- Actions taken to prepare for and implement during catastrophic supply interruptions;
- Mandatory prohibitions and consumption reduction methods;
- Penalties and charges for excessive use;
- Analysis of potential revenue impacts from Shortage Plan implementation;
- Mechanisms for determining water use reductions.

## Background

The City first adopted a Water Shortage Contingency Plan in 1991 and updated the plan in 1996 and 2005. The Water Shortage Contingency Plan has undergone a more comprehensive revision as part of the 2010 Urban Water Management Plan update to incorporate more consistent regional requirements. In March 2009, the Committee of Valley Water Retailers; comprised of Council Members, Board of Directors, or Management-level representatives from each of the four urban water retailers; approved a model Tri-Valley Retailers Water Shortage Contingency Plan to allow consistent implementation of requirements within the Zone 7 service area during water shortage events.

Also, the Livermore City Council adopted a Water Conservation Plan in 1991 which specified voluntary and mandatory conservation measures. The requirements in the 1991 Conservation Plan have been updated and incorporated into the Water Shortage Contingency Plan. Modifications to the Livermore Municipal Code updating the legal authority to implement expanded conservation measures will be made after adoption of the updated Shortage Plan. This updated Water Shortage Contingency Plan is intended to supersede the previous Water Shortage Contingency Plan and Water Conservation Plan.

The Water Shortage Contingency Plan will be reviewed and updated periodically as necessary to ensure conformance with California Water Code requirements; but at least every five years as part of the Urban Water Management Plan update process.

## Activation

The Livermore City Council may enact any stage of the Water Shortage Contingency Plan by adopting a resolution in response to local or regional water supply conditions. The Plan may be enacted based on a number of conditions, including:

- A formal water supply shortage notification by the Zone 7 Water Agency;
- A collective recommendation of the Tri-Valley Water Retailers Group;
- An actual or potential local water supply restriction or emergency affecting the Livermore Municipal Water system;

The Livermore City Council may also enact Stage I or Stage II water restrictions and conservation rates as necessary to meet the requirements of the Water Conservation Bill of 2009, which requires a reduction in baseline per capita water usage of 20% by 2020.

The Conservation Stages will normally be implemented in a progressive manner; however it may be necessary for the City to skip Stages in the use reduction plan in response to catastrophic supply reductions. In general, conservation/use reduction levels will be set according to the anticipated reduction in available water supplies.

## Stages of Action / Conservation Stages

Each Stage in the Plan is organized in the following manner:

- **Definition:** This is the condition of the water supply that would normally trigger this element of the Plan.
- **Message:** This is an example of the message that might be communicated to the public to describe the state of water availability.
- **Type:** This defines whether the stage is voluntary or mandatory on the part of the customer.
- **Expected Reduction:** This is an estimate of the range of reduction that may be required under each stage of the Plan. A specific goal will be defined when each stage of the Plan is activated.

### Normal Supply

Inclusion of “Normal Supply” in the Plan is an important level. The Water Conservation Bill of 2009 requires urban water suppliers to reduce per-capita water consumption by 20 percent by 2020. Implementing conservation during “Normal Supply” periods will play an important role in reaching the required twenty percent reduction in per-capita consumption.

- **Definition:** Water supplies are adequate to meet all the water demands of customers.
- **Message:** We can deliver all the water our customers need, recognizing that customers should practice wise water use at all times.
- **Type:** Voluntary.
- **Expected Reduction:** None targeted
- **Conservation:** Basic water conservation measures and public information promoting wise water use and Best Management Practices when using water for residential, commercial or irrigation uses.

### Stage 1- Minimal Reduction

- **Definition:** There is sufficient uncertainty concerning water supplies for this year or in the next few years that it would be prudent to conserve local water supplies so that these supplies may be used to meet water demands in the future.
- **Message:** We think we can deliver all the water our customers want, but request their help to conserve water to be sure local and imported supplies are adequate to meet future years' water demands – please conserve.
- **Type:** Voluntary.
- **Expected Reduction:** Up to 20%

### Stage 2- Moderate Reduction

- **Definition:** There are definable events that lead to a reasonable conclusion that in the current and/or upcoming water years, water supplies may not be adequate to meet all customer water demands.
- **Message:** We may not be able to deliver all the water our customers want and we need customers' help to conserve water.
- **Type:** Voluntary or Mandatory.
- **Expected Reduction:** up to 20%

### Stage 3- Severe Reduction

- **Definition:** There are definable events that lead to a firm conclusion that in the current water year, water supplies will not be adequate to meet customers' water demands.
- **Message:** We can not deliver all the water our customers need and we are requiring our customers to use less water.
- **Type:** Mandatory.
- **Expected Reduction:** 20 to 35%

### Stage 4- Critical Reduction

- **Definition:** A Stage 3 shortage has been in effect and the reduction goal is not being met or new definable events require increasing the reduction goal.
- **Message:** We can not deliver all the water our customers need and we have not been able to achieve targeted reductions so we are now have to enforce the use of less water.
- **Type:** Mandatory.
- **Expected Reduction:** 35 to 50%

### Water Emergency

A water emergency is when a specific event causes a disruption in the water supply. The disruption may affect all or part of the local Livermore Municipal Water system or the wider Zone 7, or statewide distribution system. In the event of emergency conditions affecting the water supply, the Livermore City Manager may declare a Water Emergency.

- **Definition:** There is a major failure of a supply, storage or distribution facility.
- **Message:** A very serious problem has occurred and we are unable to deliver sufficient water for human consumption, sanitation and/or fire protection.
- **Type:** Mandatory.
- **Expected Reduction:** Varies by area in response to specific situation

Table 1 below summarizes the Stages of Action that Livermore Municipal Water will use to address water supply shortages.

Table 1 – Livermore Municipal Water Stages of Action

Stage	Shortage Condition	Required Reduction	Voluntary or Mandatory
1	Up to 20%	10% to 20%	Voluntary
2	Up to 20%	20%	Voluntary or Mandatory
3	20% - 35%	35%	Mandatory
4	35% - 50%	50%	Mandatory

Actions required by each Stage of the Water Shortage Contingency Plan are cumulative; therefore if Stage 2 of the Plan is implemented, all of the reduction measures in both Stage 1 and Stage 2 shall be implemented.

The priorities for use of available water during shortages, based on Chapter 3 of the California Water Code, are as follows:

1. Health & Safety – interior residential (drinking & sanitation) and fire fighting;
2. Commercial, Industrial & Governmental – maintain jobs and economic base;
3. Annual Crops – protect jobs;
4. Existing Landscaping – especially trees and shrubs;
5. New Demands – projects without permits when shortage is declared

Table 2 below shows the types of actions or prohibitions that will be implemented by Livermore Municipal Water staff in response to each shortage Stage.

Table 2 – Stages of Actions and Consumption Reduction Methods

Stage	Expected Reduction	Consumption Reduction Methods
1	0 to 20%	<ul style="list-style-type: none"> <li>• Public Education / Outreach;</li> <li>• Minimize distribution system flushing;</li> <li>• Voluntary Conservation Practices;                             <ul style="list-style-type: none"> <li>○ Use shut-off nozzles, no runoff, over-spray, or saturation of landscaping;</li> <li>○ Sprinkler irrigation only between 9 p.m. and 6 a.m.;</li> <li>○ Pools, fountains/spas must be leak-proof;</li> <li>○ Use broom/bucket to wash pavement;</li> <li>○ Recommend recycled water for construction uses if available.</li> </ul> </li> </ul>
2	0 to 20%	<ul style="list-style-type: none"> <li>• Expanded Outreach / Voluntary cutback request;</li> <li>• Implement Stage 2 Conservation Rates;</li> <li>• Eliminate distribution system flushing;</li> <li>• Expanded Conservation Practices;                             <ul style="list-style-type: none"> <li>○ Stage 1 practices may become mandatory;</li> <li>○ Odd / Even irrigation only, twice per week;</li> <li>○ Cover pools/spas when not in use;</li> <li>○ Use bucket to wash vehicles/boats/buildings, no more than monthly, encourage commercial wash services that recycle;</li> <li>○ Require low-flow rinse nozzles at restaurants.</li> </ul> </li> </ul>

Stage	Expected Reduction	Consumption Reduction Methods
3	20 to 30%	<ul style="list-style-type: none"> <li>• Expanded Outreach / Mandatory cutback request;</li> <li>• Implement Stage 3 Conservation Rates;</li> <li>• Eliminate sewer main flushing except in the case of back-ups or overflows;</li> <li>• Expanded Conservation Practices                             <ul style="list-style-type: none"> <li>○ Hand watering on Saturday or Sunday only;</li> <li>○ Prohibit the use of potable water for street washing or flushing;</li> <li>○ Only wash vehicles at commercial establishments that recycle water;</li> <li>○ Prohibit potable water for construction uses;</li> <li>○ Require low flow nozzles at restaurants</li> </ul> </li> </ul>
4	35 to 50%	<ul style="list-style-type: none"> <li>• Aggressive Public Outreach via Livermore “communicator” system – Mandatory cutback request</li> <li>• Implementation of Stage 4 Conservation Rates</li> <li>• Mandatory use prohibitions                             <ul style="list-style-type: none"> <li>○ No turf irrigation; hand water only on Saturday or Sunday</li> <li>○ Prohibit potable water use for ornamental fountains and ponds; refill only for public health or structural needs</li> <li>○ Prohibit draining and filling of private pools; prohibit draining of public pool except for public health or structural needs</li> </ul> </li> <li>• Excessive Use Penalties as appropriate</li> </ul>

## Minimum 3 Year Water Supply

Livermore Municipal Water purchases all of its potable water supplies from the Zone 7 Water Agency and has no other source of supply. While Livermore Municipal Water relies on Zone 7 as its primary water source, the Zone 7 system consists of a variety of different sources. A summary of Zone 7 supplies includes:

- Imported Surface Water
  - State Water Project
  - Byron Bethany Irrigation District
- Local Surface Water Runoff
  - Arroyo Las Positas
  - Arroyo Mocho
- Local Storage
  - Lake Del Valle
  - Chain of Lakes
- Non-Local Storage
  - Semitropic Water Storage District
  - Cawelo Water District

Therefore, Zone 7 is able to balance its supply between a variety of different sources to adapt to shortages or limitations in any one source due to legal, environmental, regulatory, or climatic factors. Chapters 7 and 16 of the 2010 Zone 7 Water Agency Urban Water Management Plan discuss the reliability of each of the Zone's water supply sources and the overall system reliability through 2030. Excerpts from page 16-1 of the Zone 7 Urban Water Management Plan regarding system reliability during normal, singly dry years, and multiple dry years are included below:

- *Under normal water years, Zone 7 does not anticipate any difficulty in meeting projected water demands, with or without additional conservation measures, assuming Zone 7 can successfully implement planned programs and projects (Table 16-1);*
- *Under single dry years, Zone 7 does not expect shortages through 2030 with the implementation of planned programs and projects (Table 16-2). The maximum potential shortage—based on the High Water Demand scenario—could be as high as 8,700 AF between 2020 and 2030 if Zone 7 cannot implement planned programs and projects.*
- *Under multiple dry years, planned programs and projects have similarly been designed to prevent any shortages. Zone 7's analysis indicates that, without such programs and projects, shortages of up to 36,000 AF can be expected under a multiple dry year scenario ending in 2030 based on the High Water Demand scenario.*

City staff will continue to work with Zone 7 staff directly and through the Tri Valley Water Retailers Group and the Committee of Valley Water Retailers to ensure that appropriate projects and programs are implemented to meet expected water demand at build-out of the adopted Livermore General Plan.

The 2010 Zone 7 Urban Water Management Plan includes projections for the minimum water supply available during the next three years based on the driest three-year historic sequence for Zone 7's water supplies. Table 13-1 from the 2010 Zone 7 UWMP is included below. The minimum supply years vary between imported surface water and local runoff sources due to hydrologic conditions, water supply infrastructure, and other conditions<sup>1</sup>.

**Table 13-1. Three-Year Estimated Minimum Water Supply<sup>(a)</sup> (Acre-Feet Annually)**

Acre-Feet Annually		Year			
		2011	2012	2013	Normal
Imported Surface Water	SWP <sup>(b)</sup> – Table A	15,700	22,700	19,500	51,400
	SWP <sup>(b)</sup> – Yuba Accord	676	676	676	145
	BBID <sup>(c)</sup>	2,000	2,000	2,000	4,000
Local Runoff	Arroyo del Valle	350	520	150	3,440
<i>Total Water Supply</i>		18,726	25,896	22,326	58,985

<sup>(a)</sup> Based on the driest three-year historic sequence applicable for each water supply.

<sup>(b)</sup> State Water Project

<sup>(c)</sup> Byron-Bethany Irrigation District

Based on water demand projections submitted by Livermore Municipal Water to Zone 7 during preparation of the 2010 Urban Water Management Plan, Zone 7 confirmed that it would meet all of the projected demands over the 20 year planning horizon provided that water supply projects could be implemented as planned.

## Catastrophic Supply Interruptions

This section describes actions taken by Livermore Municipal Water to prepare for and to be implemented during a catastrophic interruption of water supplies. Potential catastrophic supply interruptions include but are not limited to a regional power outage, earthquake, or other disaster causing a water supply outage such as a failure of the San Joaquin Delta levee system.

Livermore Municipal Water has developed a comprehensive Emergency Response Plan (ERP) that addresses a variety of potential emergency situations directly affecting the LMW system. The goals of the ERP are to:

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

<sup>1</sup> 2010 Zone 7 Urban Water Management Plan, p 13-3

The ERP establishes “Action Plans” for different emergency conditions which outline the steps LMW staff will take to respond to, evaluate, and mitigate the emergency. Action Plans were developed for a variety of water supply interruptions, including: power outages; earthquakes; flooding; and terrorist events.

In addition to Action Plans, the LMW Emergency Response Plan includes an inventory of emergency supplies, mutual aid contacts, and lists of potential vendors of emergency supplies.

The LMW Emergency Response plan was developed 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. Due to the sensitive nature of the information contained in the Emergency Response Plan, the plan includes an Access Control section that limits distribution of the plan to “individuals directly involved in Livermore Municipal Water’s emergency planning and response activities. Therefore, excerpts from the LMW ERP are not included with the Urban Water Management Plan or Water Shortage Contingency Plan.

## **Mandatory Prohibitions**

The Water Shortage Contingency Plan includes a variety of voluntary and mandatory management practices to conserve water. The majority of the mandatory conservation practices are triggered at the Stage 3 level; corresponding to an expected reduction of 20-35% below normal use as shown above in Table 2. Some of the mandatory prohibitions are described below:

- The use of potable water for municipal activities such as street cleaning and sewer main flushing will be suspended at the Stage 3 level. Recycled water will be used for these needs in Stage 3 water shortage events, with the exception of water used for sewer line flushing during emergency sanitary sewer blockages or overflows.
- Implementation of odd/even irrigation, with no watering on the 31<sup>st</sup> of each month for residential and commercial uses is included in Stage 2 and may be implemented as a voluntary or mandatory prohibition.
- The use of sprinkler irrigation will be prohibited and the requirement to irrigate by hand-watering only on Saturday or Sunday will become mandatory at the Stage 3 level.
- The use of potable water for compaction or dust control during construction activities will be prohibited at the Stage 3 level since recycled

water is available for these uses.

- The use of potable water for filling swimming pools will become a mandatory prohibition at the Stage 4 level.
- The use of potable water for washing buildings, vehicles or boats except at facilities which capture and recycle the water will become a mandatory prohibition at the Stage 4 level.

## **Penalties for Excessive Use**

Livermore Municipal Water utilizes several financial disincentives or penalties to discourage excessive use, both during normal water conditions and during shortage events.

The primary financial “penalty” for excessive use is the ascending tier water rates used by LMW, with increasing rates for higher levels of use. Ascending tier rates are in-place during normal and water shortage conditions. In addition, LMW also utilizes conservation rates that have an ascending rate structure to further discourage excessive use.

Livermore Municipal Water also has the authority to implement a penalty for excessive use by individual customers. Livermore Municipal Water staff will develop conservation usage targets based on average per-capita consumption or a percentage of historic consumption in response to specific shortage events. These usage targets will be used to evaluate customers for potential excessive use penalties. If customers uses more than the allotted usage targets for three consecutive billing periods, the City may increase the water rates to the highest conservation tier for a period of three months.

Customers will be provided with the ability to appeal excessive use penalties if they feel their use allocation was inappropriate due to factors such as:

- A higher than average number of people in residential units;
- Medical needs that demand water-consuming devices or uses;
- Water consumed in products or activities that cannot be reduced.

Customers will also have an opportunity to appeal excessive use penalties based on economic hardship or other factors. Excessive use penalties would be implemented at the Stage IV level.

In addition to additional charges for excessive use through ascending tier rates and penalties for excessive use, LMW may also issue penalties for violating mandatory prohibitions. Livermore Municipal Water staff will be able to issue administrative citations to customers violating mandatory prohibitions starting at the Stage IV conservation level. Administrative citations carry a fine of

approximately \$100 each.

### **Analysis of Revenue Impacts**

Prolonged water shortage events and conservation practices that reduce water consumption will have impacts to water system revenues. To offset the impacts of water shortages on water system revenue, Livermore Municipal Water has developed an operating reserve and conservation rates that can be enacted in response to water shortages.

Conservation rates are updated and adopted by the Livermore City Council each time LMW water rates and service charges are adjusted. By having conservation rates previously adopted, LMW can avoid the delays associated with Proposition 218 notification and ballot procedures prior to implementing conservation rates in response to emergency water supply shortages. Conservation rates can then be implemented by Council resolution during water shortage events.

The Livermore City Council will typically implement the conservation rate corresponding to each Shortage Level; however Council may adopt conservation rates of a higher or lower Shortage Level at their discretion, based on the current status of water system revenues, progress towards compliance with water reduction targets, or other factors. Council can also declare a water shortage and implement the corresponding voluntary or mandatory use restrictions/prohibitions without implementing conservation rates.

Livermore Municipal Water has conservation rates that correspond to each Stage identified in the Water Shortage Contingency Plan, and are calculated to recover the necessary revenue based on the expected percentage reduction at each Stage. Since Livermore Municipal Water rates are comprised of both a fixed meter service charge and a variable water rate component, only a portion of the monthly charges are affected by reductions in water consumption.

Table 3 below presents a general overview of 2010 Livermore Municipal Water system revenues and expenses showing how the expected use reductions at each Stage might impact net water system revenue.

Table 3 – Impacts of Water Use Reductions on Net Water System Revenue<sup>2</sup>

	Normal	Stage 1 <sup>3</sup> 10%	Stage 2 20%	Stage 3 35%	Stage 4 50%
<b>Operating Revenue</b>					
Water Sales	\$7,879,000	\$7,091,100	\$6,303,200	\$5,121,350	\$3,939,500
Meter Service Chg	\$2,521,000	\$2,521,000	\$2,521,000	\$2,521,000	\$2,521,000
Total Revenue	\$10,400,000	\$9,612,100	\$8,824,200	\$7,642,350	\$6,460,500
<b>Gross Revenue Loss</b>					
	0	\$787,900	\$1,575,800	\$2,757,650	\$3,939,500
<b>Operating Expenses</b>					
Administration	\$1,289,150	\$1,289,150	\$1,289,150	\$1,289,150	\$1,289,150
Water Purchase	\$5,850,900	\$5,265,810	\$4,680,720	\$3,803,085	\$2,925,450
Pumping Expense	\$204,650	\$202,600	\$198,500	\$184,200	\$167,800
Transport/Distribution	\$1,688,600	\$1,688,600	\$1,688,600	\$1,688,600	\$1,688,600
Accounting/Billing	\$641,230	\$641,230	\$641,230	\$641,230	\$641,230
Conservation <sup>4</sup>	0	\$20,000	\$50,000	\$150,000	\$250,000
Total Expenses	\$9,674,530	\$9,107,390	\$8,548,200	\$7,756,265	\$6,962,230
Expense Savings	0	\$567,140	\$1,126,330	\$1,918,265	\$2,712,300
<b>Net Revenue Loss</b>					
	0	\$220,760	\$449,470	\$839,385	\$1,227,200

Livermore Municipal Water's conservation rates are designed to recover the revenue necessary to fund water system operations as well as prudent operating and renewal/replacement reserves at each Stage of Action.

Based on the estimated 2010 revenue and expense information shown in Table 3, water conservation rates would need to recover between approximately \$220,000 and \$1.2 million in net revenue lost per year, depending on the Conservation Stage implemented. This estimate of lost revenue takes into account the reduced water purchase and pumping expenses as well as increased conservation program expenses. With an estimated 2010 water sales revenue of approximately \$7.88 million from "normal" water rates, an additional \$220,000 to \$1.2 million represents an increase of between 2.8% and 15.6% in revenue, and therefore in conservation rates. However, the actual increase in conservation rates would be greater than these percentages, since the lost revenue would have to be recovered from a smaller *volume* of water sold. Also, the calculation of conservation rates is more complicated due to the ascending tier rate structure used by Livermore Municipal Water to encourage conservation during Normal supply conditions. The general water rate impacts discussed above are for example purposes only.

<sup>2</sup> Based on projected Fiscal Year 2010/2011 expenses and revenue.

<sup>3</sup> Stage 1 use reduction assumed at 10% (Stage 1 range is 0 to 20%).

<sup>4</sup> Estimated additional expenses to implement expanded public outreach, billing, monitoring and other procedures and activities to achieve use reductions associated with each Stage.

An evaluation of the potential loss in water system revenue is conducted each time normal water rates are adjusted to calculate and adopt updated conservation rates as noted above. Normal water rates and conservation rates were last adjusted in July 2009.

## **Mechanism for Determining Use Reductions**

Livermore Municipal Water has developed monitoring procedures to determine if water use reductions are being met during Stage 1-4 water shortages, as well as during critical water emergency or disaster events.

### **Normal Monitoring Procedure:**

In normal water supply conditions, purchase and sales data is checked monthly by water staff and compiled by the Water Supervisor. These totals are reported to the Water Resources Manager or the Public Works Director as requested. The totals are also logged into the annual report to the Department of Water Resources.

### **Stage 1 or Stage 2 Water Shortage:**

During a Stage 1 or Stage 2 water shortage, weekly turnout readings are reported to the Water Supervisor. The Supervisor compares the weekly purchase records to the weekly target to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Resources Manager and the Public Works Director. Monthly summary reports are also sent to the Public Works Director. If reduction goals are not met, the Water Supervisor will propose additional activities or conservation measures and advise the Water Resources Manager. The Manager will notify the Public Works Director that additional corrective actions or use-reduction measures will be implemented.

### **Stage 3 and 4 Water Shortages:**

During a Stage 3 or 4 water shortage, the procedure listed above will be followed, with the addition of a daily water purchase report being submitted to the Water Resources Manager.

### **Emergency Shortage:**

During an Emergency Shortage, a major focus will be on monitoring LMW storage tanks to ensure adequate fire protection and emergency storage. Water staff will review tank levels via the Supervisor Control and Data Acquisition (SCADA) system on an hourly or continuous basis to ensure tank levels are maintained at safe levels for as long as possible. Also, meter readings of the volume of water purchased by LMW can be reported to the Water Supervisor, Water Resources Manager or Public Works Director hourly, if needed.

IN THE CITY COUNCIL OF THE CITY OF LIVERMORE, CALIFORNIA

A RESOLUTION APPROVING A WATER SHORTAGE CONTINGENCY  
PLAN FOR THE LIVERMORE MUNICIPAL WATER SYSTEM

California Water Code section 10632 requires each urban water supplier to conduct a water shortage contingency analysis including: stages of action to be taken in response to water supply shortages; an estimate of the minimum water supply available in the next three years; actions to be taken to prepare for and implement during catastrophic water supply interruptions; additional, mandatory prohibitions against specific practices during shortages; consumption reduction methods capable of achieving a fifty percent reduction in water use; penalties and charges for excessive use; an analysis of the impacts to water system revenues and expenses of implementing the shortage plan; and mechanisms for determining reductions in water use.

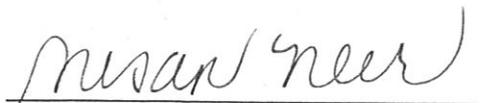
The City of Livermore first developed a water shortage contingency plan in 1991 and updated the plan in 1996 and 2005. In 2009, the Committee of Valley Water Retailers, comprised of representatives from the Livermore City Council, the Pleasanton City Council, the Dublin San Ramon Services District Board of Directors, and the California Water Service Company adopted a model water shortage contingency plan to encourage regional consistency. The Water Shortage Contingency Plan for the Livermore Municipal Water System has been updated to incorporate provisions from the model water shortage plan adopted by the Committee of Valley Water Retailers.

**NOW, THEREFORE, BE IT RESOLVED** by the City Council of the City of Livermore that the Water Shortage Plan for the City of Livermore Municipal Water System is approved, a copy of which is on file in the Office of the City Clerk.

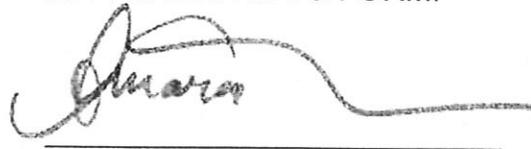
On the motion of Councilmember Williams, seconded by, Vice Mayor Marchand, the foregoing resolution was passed and adopted on the 13<sup>th</sup> day of June, 2011, by the following vote:

AYES: Councilmembers Horner, Leider, Williams, Vice Mayor Marchand, Mayor Kamena  
NOES: None  
ABSENT: None  
ABSTAIN: None

ATTEST & DATE:

  
\_\_\_\_\_  
CITY CLERK  
SUSAN NEER

APPROVED AS TO FORM:

  
\_\_\_\_\_  
SPECIAL COUNSEL  
AMARA MORRISON

DATE: June 14, 2011

RESOLUTION NO. 2011-097

**IN THE CITY COUNCIL OF THE CITY OF LIVERMORE**

**AN ORDINANCE ADDING A NEW CHAPTER 13.26, WATER CONSERVATION, TO DIVISION 1(WATER) OF TITLE 13 (PUBLIC SERVICES) OF THE LIVERMORE MUNICIPAL CODE, TO PROVIDE FOR VOLUNTARY AND MANDATORY WATER CONSERVATION**

In November 2009, the Governor of the State of California enacted the Water Conservation Bill of 2009, Senate Bill x7-7, which required urban water suppliers in California to reduce per-capita water demand by twenty (20) percent by 2020.

**NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LIVERMORE DOES ORDAIN AS FOLLOWS:**

**Section 1.** *Amendment.* Chapter 13.26 of the Livermore Municipal Code is hereby amended, as set forth in Exhibit A, attached hereto.

**Section 2.** *Environmental.* The passage of this ordinance is not a project according to the definition in the California Environmental Quality Act and, therefore, is not subject to the provisions requiring environmental review.

**Section 3.** *Severability.* If any part of this ordinance is declared invalid by a court, such invalidity shall not affect any of the remaining parts.

**Section 4.** *Publication.* This ordinance shall be published once in a newspaper of general circulation of the City of Livermore within fifteen days after its adoption.

**Section 5.** *Effective date.* This Ordinance shall take effect 30 days after its adoption.

The foregoing ordinance was introduced at the meeting of the City Council of the City of Livermore held on June 13, 2011, by the following vote:

AYES: COUNCILMEMBERS:  
NOES: COUNCILMEMBERS:  
ABSENT: COUNCILMEMBERS:  
ABSTAIN: COUNCILMEMBERS:

The ordinance was adopted at the regular meeting of the City Council held on \_\_\_\_\_, by the following vote:

AYES: COUNCILMEMBERS:  
NOES: COUNCILMEMBERS:  
ABSENT: COUNCILMEMBERS:  
ABSTAIN: COUNCILMEMBERS:

ORDINANCE NO. \_\_\_\_\_

\_\_\_\_\_  
Mayor, City of Livermore

ATTEST:

APPROVED AS TO FORM:

\_\_\_\_\_  
Susan Neer, City Clerk

\_\_\_\_\_  
Amara Morrison, Special Counsel

DRAFT

ORDINANCE NO. \_\_\_\_\_

## Chapter 13.26

### WATER CONSERVATION

#### Sections:

- 13.26.010 Authority**
- 13.26.020 Findings-Purpose**
- 13.26.030 Definitions**
- 13.26.040 Application**
- 13.26.050 Water Shortage Contingency Plan**
- 13.26.060 Water Shortage Contingency Plan Activation**
- 13.26.070 Voluntary Conservation Measures**
- 13.26.080 Conservation Measures – Stage 1 Water Shortage**
- 13.26.090 Conservation Measures – Stage 2 Water Shortage**
- 13.26.100 Conservation Measures – Stage 3 Water Shortage**
- 13.26.110 Conservation Measures – Stage 4 Water Shortage**
- 13.26.120 Water Emergency**
- 13.26.130 Use Allocations**
- 13.26.140 Demand Management Measures**
- 13.26.150 Conservation Rates**
- 13.26.160 Exemptions**
- 13.26.170 Enforcement and Penalties**
- 13.26.180 Additional Penalties**

#### **13.26.010 Authority.**

In January 2008, the Governor of the State of California declared a drought and requested a voluntary 20 percent reduction in water use by all consumers in the state. Also, the Water Conservation Bill of 2009 was enacted in November 2009, requiring urban water suppliers to reduce water demands a minimum of 20 percent by 2020. California Water Code Section 10608.20 requires urban water suppliers such as the City of Livermore to reduce per-capita water consumption by twenty percent by 2020, and to develop water use targets based on 80 percent of historic demands. One of the primary means of achieving the required reduction in water usage will be through the implementation of water conservation measures and demand management measures.

In addition to long-term use reduction goals, the provisions of this chapter will also be used to reduce water demands during water shortage events. California Water Code Section 10632(a) requires urban water suppliers to develop a Water Shortage Contingency Plan which indicates the actions the City will take in response to supply shortages in the Livermore Municipal Water system service area. California Water Code Section 10632(a)(5) allows water suppliers to 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.

### **13.26.020 Findings-Purpose.**

The City Council finds that it is in the public interest of the city's water customers and the state to enact water conservation measures to address the 20 percent reduction in per capita water use required by the Water Conservation Bill of 2009 and to establish voluntary and mandatory water conservation practices to address water supply shortages and required demand reductions.

The purpose of this chapter is to establish voluntary and mandatory water conservation measures, best management practices, and use penalties to encourage wise water use and to minimize the effect of shortages on the City's customers. This is accomplished through provisions that will significantly reduce the consumption of water over an extended period of time, thereby extending the availability of water for the City's customers while reducing the hardship to the greatest extent possible on or to the City and on or to the general public.

### **13.26.030 Definitions.**

For the purposes of this Article, the following definitions shall apply:

"Advisory notice" shall mean a written notice informing a Livermore Municipal Water customer that they are in violation of one or more provisions of this ordinance and that additional violations may result in fines or termination of service.

"City" shall mean the City of Livermore, Alameda County, California.

"City Water Service Area" shall mean the City of Livermore Municipal Water service area, excluding the portions of the City of Livermore that are served by California Water Service Company.

"Conservation Measures" shall mean activities or procedures to be used by residential and commercial water customers to reduce their water consumption.

"Conservation Water Rates" shall mean a water rate adopted and enacted by the City Council to be used during water shortage events to both encourage conservation and to recover the appropriate amount of revenue to fund water system operations from a reduced volume of water sold. Conservation rates are therefore higher than normal water rates charged during periods of adequate water supply. Conservation rates are broken down in to several "tiers" or levels which correspond to different tiers, levels or stages of water supply reduction.

"Demand Management Measure" shall mean practices, procedures and methods to reduce water demands, including but not limited to behavior change, installing high-

efficiency water fixtures, and financial incentives or penalties to encourage wise water use and discourage water waste.

“Effective Date” shall mean the date the ordinance adopting this chapter becomes effective.

“Hand-watering” shall mean the irrigation of landscaping or vegetation using a hand-held hose equipped with a positive shut-off nozzle to supply water directly to the area to be irrigated.

“Hand-watering from container” shall mean the irrigation of landscaping or vegetation using a watering can, bucket or container to pour water directly on the area to be irrigated.

“Impervious surface” shall mean a constructed or modified surface that cannot effectively infiltrate rainfall. The term includes, but is not limited to, sidewalks, driveways, gutters and roadways.

“Non-essential water use” shall mean the application or usage of water for functions or additional activities which do not have any health or safety impacts, are not required by regulation, and are not part of the core function or business process at a site. This would include but not be limited to uses such as the watering of planters and landscape at a car wash, the washing of cars on display at a car dealer, and other activities that a reasonable person would conclude will reduce extra use of water, while not affecting a given enterprise in a fundamental way.

“Positive shut-off nozzle” shall mean a device attached to the end of a hose that must be manually squeezed, pressed or otherwise held in place to allow water to flow out of the hose and which automatically shuts off the flow of water when continuous manual pressure is released.

“Urban Water Management Plan” shall mean a plan required by California Water Code Section 10621(a) for urban water suppliers to review available water supplies and water demands over a 20 year planning horizon to confirm the adequacy of water supplies.

“Water Shortage Contingency Plan” shall mean a plan developed by the City pursuant to California Water Code Section 10632(a) which outlines the steps the City will take to reduce water demands in response to water supply shortages. The plan establishes different stages or levels of water supply shortage corresponding to the expected amount of water supply reduction.

“Water Waste” shall mean uses of water which are prohibited or limited, going beyond the purpose of necessary or intended use, including area runoff, and which could reasonably be prevented.

#### **13.26.040 Application.**

This chapter shall apply within the Livermore Municipal Water system service area and to all users connected to the Livermore Municipal Water distribution system. Compliance with the provisions of this chapter shall be a condition of continued water service.

#### **13.26.050 Water Shortage Contingency Plan.**

The Livermore City Council shall adopt a Water Shortage Contingency Plan for the operation of the Livermore Municipal Water utility as required under California Water Code Section 10632(a). The Water Shortage Contingency Plan shall be adopted by Council resolution and shall be reviewed and updated periodically as needed, however no less than every 5 years in years ending in five and zero as required by California Water Code Section 10621(a).

The Water Shortage Contingency Plan shall specify stages of action corresponding to different levels of water supply shortage and identify voluntary or mandatory water conservation measures to be used by Livermore Municipal Water customers and as articulated in Section 13.26.080 through 13.26.110. This ordinance provides the legal authority to implement the water conservation measures and best management practices included in the Water Shortage Contingency Plan.

#### **13.26.060 Water Shortage Contingency Plan Activation.**

The Water Shortage Contingency Plan will be activated by Livermore City Council resolution following the Plan guidelines. Council resolutions to activate the Water Shortage Contingency Plan shall establish the stage of action necessary to address the supply shortage as well estimate the expected duration of the water shortage. When activating the Water Shortage Contingency Plan, Council may also enact Conservation Rates as specified in 13.26.150.

#### **13.26.070 Voluntary Conservation Measures.**

Water customers are requested to voluntarily limit the amount of water used to the amount absolutely necessary for health, business, and irrigation, by undertaking the following water conservation measures:

A. Lawn watering and landscape irrigation, including construction meter irrigation, is permitted only between the hours of 6 p.m. Pacific Daylight Savings Time (PDST), or 5 p.m. Pacific Standard Time (PST), and 9 a.m. the following day. Watering is permitted at any hour if a hand-held nozzle is used, a hand-held container is used, or a drip irrigation system is used.

C. Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment may be done at any hour with a bucket and a hose equipped with a positive shut-off nozzle for quick rinses. Washing is permitted at a commercial car wash, or by a mobile car wash or on-site car wash using high-pressure washing equipment. No wastewater from vehicle washing may enter the storm drain system.

D. The overfilling of swimming pools, spas, ponds, and artificial lakes is prohibited.

E. Irrigation of golf courses, parks, school grounds and recreation fields is permitted only between the hours of 6 p.m. PDST (5 p.m. PST) and 8 a.m. the following day. Tees and greens may be watered at any time.

F. The use of water from fire hydrants shall be limited to fighting and related activities, approved metered uses or other activities necessary to maintain the health, safety and welfare of the public.

G. Construction operations receiving water from a construction meter or water truck shall not use water unnecessarily for any purposes other than those required by regulatory agencies. The City has the right to inspect all construction sites using water from a City construction meter for the efficient use of water.

H. Restaurants shall not serve water to their customers except when specifically requested.

### **13.26.080 Conservation Measures - Stage 1 Water Shortage.**

The following voluntary restrictions shall be applicable during a Stage 1 activation of the Water Shortage Contingency Plan:

A. All of the prohibitions and restrictions set forth in section 13.26.070 shall be in effect.

B. Swimming pools, spas and fountains must be leak-proof. Any leak shall be repaired in a timely manner after notification by the city, but in no case after notification in excess of seventy-two (72) hours for the first violation and then every seventy-two (72) hours thereafter for the second and third violations.

C. There shall be no hose washing of sidewalks, walkways, driveways, parking areas, patios, porches or verandas, except that flammable or similarly dangerous materials may be washed from such areas by direct hose flushing for the benefit of public health and safety. A bucket and broom may be used to wash paved surfaces if necessary.

D. No potable water may be used for compacting or dust control purposes in construction activities where there is a reasonably available source of recycled or other non-potable water approved by the California Department of Public Health and appropriate for such use. This condition must be identified and specified on construction drawings submitted to the City for review.

E. No person shall cause or allow water to run off or leak from landscaped areas to adjoining streets, sidewalks, or other paved areas due to incorrectly directed or maintained sprinklers or excessive watering.

### **13.26.090 Conservation Measure - Stage 2 Water Shortage.**

The following mandatory restrictions shall be applicable during a Stage 2 activation of the Water Shortage Contingency Plan:

A. All of the prohibitions and restrictions set forth in section 13.26.070 and 13.26.080 shall be in effect and shall be mandatory prohibitions.

B. Lawn watering and landscape irrigation, including construction meter irrigation, shall be reduced to no more often than twice per week on an odd-even schedule; properties with odd street address numbers water on odd days of the month and properties with even street address numbers water on even days of the month, with no watering permitted on the 31<sup>st</sup> day of the month. Lawn watering and landscape irrigation is permitted only between the hours of 6 p.m. Pacific Daylight Savings Time (PDST), or 5 p.m. Pacific Standard Time (PST), and 9 a.m. the following day.

C. Swimming pools and spas shall be covered when not in use;

D. Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment may be done at any hour, but no more frequently than once per month with a bucket and a hose equipped with a positive shut-off nozzle for quick rinses. Washing is permitted at a commercial car wash, or by a mobile car wash or on-site car wash using high-pressure washing equipment. No wastewater from vehicle washing may enter the storm drain system;

E. Restaurant kitchens shall be equipped with low-flow rinse nozzles;

### **13.26.100 Conservation Measures - Stage 3 Water Shortage.**

The following mandatory restrictions shall be applicable during a Stage 3 activation of the Water Shortage Contingency Plan:

A. All of the prohibitions and restrictions set forth in section 13.26.070, 13.26.080 and 13.26.090 shall be in effect and shall be mandatory prohibitions.

B. All water customers other than commercial nurseries, golf courses, and other water dependent industries shall be limited in the use of outdoor watering for any shrubbery, trees, lawns, grass, groundcovers, plants, vines, gardens, vegetables, flowers, or any other landscaped or vegetated areas to hand-watering using a hose with a positive shut off nozzle on Saturday and Sunday only.

C. No person shall empty and refill a swimming pool except to prevent or repair structural damage or to comply with public health regulations.

D. Potable water shall not be used for street washing or flushing, except to meet public health and safety requirements.

E. Washing of autos, trucks, trailers, boats, airplanes, and other types of mobile equipment is permitted only at commercial car wash facilities that recycle all or part of the water.

F. No potable water may be used for compaction or dust control purposes for construction activities.

#### **13.26.110 Conservation Measures - Stage 4 Water Shortage.**

The following mandatory restrictions shall be applicable during a Stage 4 activation of the Water Shortage Contingency Plan:

A. All of the prohibitions and restrictions set forth in section 13.26.070, 13.26.080, 13.26.090 and 13.26.100 shall be in effect and shall be mandatory prohibitions.

B. The irrigation of turf or lawn using potable water is prohibited. All water customers other than commercial nurseries, golf courses, and other water dependent industries shall be limited in the use of outdoor watering for any shrubbery, trees, plants, vines, gardens, vegetables, flowers, or any other non-turf landscaped or vegetated areas to hand-watering from a container of less than five (5) gallon capacity on Saturday and Sunday only.

C. Cleaning of Structures. No person shall use water through a hose, including pressure-washing, to clean the exterior of any building or structure.

D. Fountains, Decorative Basins, Ponds, Lakes, Waterways. No person shall use water to operate or maintain levels in decorative fountains, basins, ponds, lakes, and waterways.

E. Public Health and Safety. These regulations shall not be construed to limit water use which is immediately necessary to protect public health and/or safety.

#### **13.26.120 Water Emergency.**

In the event that a Water Emergency is declared pursuant to the City's Water Shortage Contingency Plan, the City Manager or his/her designee may implement additional, mandatory conservation measures, restrictions, or best management practices as may be necessary to reduce water demands to match the available supply or to extend the length of time that current supplies will last.

### **13.26.130 Use Allocations.**

A. During water shortage events, the Public Works Director or his/her designee shall establish water use allocations for different customer classes. Water use allocations shall be based on a combination of average historical usage, per-capita water use targets, and/or other activity-specific water usage data. Water use allocations will be calculated to achieve a reduction in demand necessary to match the amount of supply available or to maximize the length of time that existing supplies will last.

B. In the event that use allocations are established, all customers shall reduce their consumption to meet the allocation within 30 days.

### **13.26.140 Demand Management Measures**

The Urban Water Planning Act includes fourteen (14) demand management measures for urban water conservation. These measures include:

- A. Water Survey Programs for single-family residential and multi-family residential customers.
- B. Residential Plumbing Retrofit Programs.
- C. System Water Audits, Leak Detection, and Repair.
- D. Metering with Commodity Rates.
- E. Large Landscape Conservation Programs.
- F. High Efficiency Washing Machine Rebate Programs.
- G. Public Information Programs.
- H. School Education Programs.
- I. Conservation Programs for Commercial, Industrial and Institutional users.
- J. Wholesale agency programs.
- K. Conservation pricing.
- L. Water Conservation Coordinator.
- M. Water waste prohibition.
- N. Residential Ultra-Low Flush Toilet Replacement

These Demand Management Measures correspond to the fourteen Best Management Practices (BMPs) listed in the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation in California (MOU). In 1991, the CUWCC developed the MOU to aid urban water suppliers in implementing water conservation programs. Although the City of Livermore is not a signatory to the 1991 California Urban Water Conservation Council MOU, the City supports the use of the Demand Management Measures to minimize water use. The Urban Water Management Plan includes a description of how the Demand Management Measures will be implemented in the Livermore Municipal Water system service area and is available on the City's website at [www.livermore.net](http://www.livermore.net) and at the Water Resources Plant located at 101 W. Jack London Boulevard, Livermore CA 94551.

### **13.26.150 Conservation Rates.**

- A. The Livermore City Council shall establish water rates and charges pursuant to Section 13.20.030 to provide funding for the operation, maintenance and renewal and replacement needs of the City water system. In addition to normal water rates and charges, the Livermore City Council shall also adopt Water Conservation Rates to be used in the event of declared water shortages and implementation of the Water Shortage Contingency Plan described in 13.26.050. Conservation Water Rates shall be calculated to recover the necessary revenue to continue to fund budgeted water system expenditures based on an expected reduction in water use at each Stage of the Water Shortage Contingency Plan.
- B. Conservation Water Rates will be implemented by Council resolution at the time of a declared water shortage event and will remain in effect until a subsequent Council resolution returning to normal water rates.
- C. Conservation Water Rates may also be implemented by Council resolution to address shortfalls in water system revenues caused by reduced water sales, or as a method to encourage water conservation in the absence of a declared shortage event.

### **13.26.160 Exemptions.**

- A. Any customer who believes that the application of the provisions of this Ordinance results in unfair treatment or causes undue hardship may seek an adjustment in the customer's allocation.
- B. Such customer shall request the adjustment in writing and shall state with specificity the reasons why the adjustment is warranted.
- C. The Public Works Director and the Administrative Services Director shall consider all requests and make a recommendation on the request to the City Manager. In formulating a recommendation, the Public Works Director and Administrative Services Director shall review particular consideration to the following:
  - 1. The reduction would cause conditions threatening to health, sanitation, fire protection or safety of the customer, the customer's dependents or the general public.
  - 2. The reduction would cause unfair economic hardship including, but not limited to loss of employment, loss of production, or loss of jobs or be unfair or result in the unnecessary loss of a business.
  - 3. Medical requirements of the customer.

4. Household size of the customer.
5. Other reasons to be judged on individual merit.

#### **13.26.170 Enforcement and Penalties.**

A. Any violation of this chapter is a misdemeanor. Upon conviction thereof, such person shall be punished by imprisonment in the county jail for not more than thirty (30) days, or by fine not exceeding One Thousand Dollars (\$1,000), or both. In addition to any other remedies which the city may have for the enforcement of this chapter, service of water shall be discontinued or appropriately limited to any customer who willfully uses water in violation of any provision of this chapter.

B. If a customer exceeds the allotted usage developed under 13.26.130 for three consecutive billing periods the City may increase the billing rate for all water used by that customer to the highest Tier Conservation Rate for a period of three (3) months. At the end of three (3) months, if the customer's use still exceeds the allotted amount, the City may continue to charge the customer at the highest conservation rate for an additional three (3) months or until the customer's usage drops to below the allocation.

#### **13.26.180 Additional Penalties.**

In addition to the penalties provided by section 13.26.170, violation of this Ordinance may result in the imposition of surcharges and/or termination of water service as set for below:

- A. First Violation - Advisory notice accompanied by a copy of this Ordinance and a City conservation information packet delivered to customer by United States mail.
- B. Second Violation (within one year) - \$100.00 surcharge.
- C. Third Violation (within one year of the first violation) - \$300.00 surcharge.
- D. Fourth Violation (within one year of the first violation)--\$500.00 surcharge and termination of service for such period as the City Council determines to be appropriate under the circumstances, following a hearing regarding said issue. Written notice of the hearing shall be mailed to the customer at least ten (10) days before the hearing.
- E. Any surcharge hereunder shall be in addition to the basic or conservation water rates and other charges of the City for the account. Receipt of payment must be made to the city's Finance Director within five (5) business days of the violation. If payment is not received within five (5) business days, the water meter will be locked off until payment is received. In addition to any surcharge, a customer violating this chapter shall be responsible for payment of the City's charges for disconnecting and/or reconnecting service per the City's rate resolution then in effect. Nonpayment shall be

subject to the same remedies as nonpayment of basic water rates.

F. The Public Works Director shall designate specified employees to act as enforcement officers, who shall have the authority to enforce the provisions of this chapter and to issue administrative citations for violations of this chapter pursuant to Chapter 1.20 of the Livermore Municipal Code.

G. In addition to the above, the City Manager or his or her designee is empowered to enact other penalties and restrictive measures including but not limited to the placement of a flow restricting device upon the water service, locking off of a water meter, removal of a water meter, and/or shutting off of a mainline.

DRAFT

IN THE CITY COUNCIL OF THE CITY OF LIVERMORE  
STATE OF CALIFORNIA

A RESOLUTION AMENDING THE  
WATER RATES AND CHARGES FOR FISCAL YEAR 2009-2010

The Public Works Department staff has completed a Fiscal Year 2009/2010 Rate Review study that augments work completed in the February 2008 *Water Rate Study for Potable and Recycled Water Services* by Utility Management Consultant, Craig Lawson.

Public notices of a public hearing for increasing water rates for Fiscal Year 2009/2010 were mailed to all property owners within Livermore Municipal Water's service area on March 26.

A public hearing on proposed increases and adjustments to water rates was held by the City Council on May 11, 2009.

The City Council determined that a majority protest to the increases to water rates did not exist at the conclusion of the public hearing.

NOW THEREFORE, BE IT RESOLVED by the Livermore City Council as follows:

Section 1. Deposits, Meter Testing Fees, Service Reconnection Fees, Water Rates and Charges. Pursuant to Chapters 13.08, 13.16 and 13.20 of the Livermore Municipal Code, the City Council establishes the following deposits, meter testing fees, service reconnection fees, water rates and charges for meters and water furnished by the City of Livermore:

DEPOSITS

The amount of deposit required for water service for an applicant who is not the owner of the premises shall be as follows:

If the application is for residential service:

5/8" meter .....	\$ 35.00
1" .....	35.00

If the application is for service other than residential:

5/8" or 3/4" meter .....	\$ 35.00
1" or 1-1/2" meter .....	35.00
2" or 3" meter .....	100.00
4" or larger .....	200.00

The amount of deposit required for the meter provided by the City in furnishing water for construction work shall be as follows:

5/8" and 3/4" meter.....	\$ 120.00
1" and larger.....	1,000.00

METER TESTING FEES

The meter testing fee shall be \$50.00.

RECONNECTION FEES

The service reconnection fee shall be \$15.00 for first-time restoration and \$25.00 for any subsequent restoration in a 12-month period. The reconnection fee will be \$100.00 if the reconnection occurs between the hours of 5:30 p.m. and 8:00 a.m. The reconnection fee shall be \$60.00 if the water meter is removed.

WATER RATES FOR SERVICE WITHIN THE CORPORATE LIMITS OF THE CITY OF LIVERMORE

Quantity Rate

For all water delivered per water meter per month:

Stage I - No Conservation Necessary

	Residential		Commercial		
	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	
Tier I	0 - 500	\$2.199	0 - 5000	\$2.636	Tier I
Tier II	500 - 3500	\$2.636	All over 5000	\$4.079	Tier II
Tier III	All over 3500	\$4.079			

Stage II - Voluntary 0 - 25% Water Conservation

	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	
Tier I	0 - 500	\$ 2.20	0 - 5000	\$3.28	Tier I
Tier II	500 - 1000	\$ 3.28	All over 5000	\$5.15	Tier II
Tier III	1000 - 3500	\$ 5.15			
Tier IV	All over 3500	\$12.77			

**Stage III - Voluntary 25% - 35% Water Conservation**

	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	
Tier I	0 – 500	\$ 2.20	0 – 1000	\$3.40	Tier I
Tier II	500 - 1000	\$ 3.40	1000 – 4000	\$5.26	Tier II
Tier III	1000 - 3500	\$ 5.26	All over 4000	\$9.71	Tier III
Tier IV	All over 3500	\$13.10			

**Stage IV - Voluntary 35% - 50% Water Conservation**

	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	<u>Cubic Feet</u>	<u>Per 100 Cubic Feet</u>	
Tier I	0 – 500	\$ 2.20	0 – 1000	\$3.40	Tier I
Tier II	500 - 1000	\$ 3.40	1000 – 4000	\$5.26	Tier II
Tier III	1000 – 3500	\$ 9.68	All over 4000	\$9.71	Tier III
Tier IV	All over 3500	\$19.21			

**Meter Service Charges: Per Meter, Per Month**

<u>Meter Size</u>	<u>Charge</u>
5/8"	\$ 13.65
3/4"	\$ 18.50
1"w/fire	\$ 17.25
1"	\$ 28.00
1-1/2"	\$ 51.85
2"	\$ 80.75
3"	\$ 171.45
4"	\$ 482.90
6"	\$ 957.60
8"	\$1,662.00
10"	\$2,632.00

**Private Fire Protection Service Charges: Per meter, per month.**

Applicable to all water service furnished for privately owned fire protection systems.

<u>Meter Size</u>	<u>Monthly Private Fire Protection Meter Rates</u>
1"	\$ 3.60
1-1/2"	\$ 5.75
2"	\$ 7.75
3"	\$11.55
4"	\$15.35
6"	\$23.40
8"	\$30.85
10"	\$38.80

Public Agency Charges

The Public Agency Rate for all water delivered per water meter per month is equal to the current Residential Tier II water rate. The Public Agency meter service charges and private fire protection service charges are the same as those for residential or commercial listed above.

Recycled Water Rate - Non-demineralized

The recycled water (non-demineralized) rate is \$2.11 per 100 cubic feet. The recycled water rate is based on a fixed percentage (80%) of the Residential Tier #2 (Stage I) water rates. Municipal divisions of the City who use recycled water will pay this rate, with the exception of the Las Positas Golf Course, which will gradually increase from the 20% to the 80% level over 10 years due to its large recycled water usage.

Section 2. Definitions. The following definitions and policies shall apply to the water rate increases:

- a) Quantity Rate – Quantity rates are charged per unit volume of water delivered as determined by metering.
- b) Service Charge – The service or demand charge is a base rate per month and the quantity rate is charged in addition to it.
- c) Private Fire Protection Service – The private fire protection service rate is the amount charged per month for each fire protection service lateral connected to the water system. Water is only delivered through the fire protection system for routine maintenance or fire emergencies. A bypass meter is read at regular intervals to verify that water is not being used through unauthorized connections to the fire system.

Section 3. In accordance with the City's current Water Shortage Contingency Plan, the Stage I water rates are implemented during this period of voluntary conservation.

Section 4. This resolution is effective July 1, 2009.

Section 5. Commencing July 1, 2009, the Water Rates and Meter Service Charges be amended as described above.

On the motion of Vice Mayor Marchand, seconded by Councilmember Leider, the foregoing resolution was passed and adopted on the 11<sup>th</sup> day of May, 2009, by the following vote:

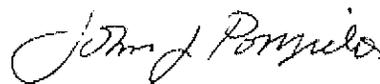
AYES: Councilmembers Horner, Leider, Vice Mayor Marchand, Mayor Kamena  
 NOES: None  
 ABSENT: Councilmember Williams  
 ABSTAIN: None

ATTEST & DATE:

APPROVED AS TO FORM:



INTERIM CITY CLERK  
SUSAN GIBBS



CITY ATTORNEY  
JOHN J. POMIDOR

DATE: May 12, 2009

**AN ORDINANCE AMENDING TITLE 13 (PUBLIC SERVICES),  
DIVISION I (WATER), BY ADDING A NEW CHAPTER 13.25  
(WATER EFFICIENT LANDSCAPE)  
OF THE LIVERMORE MUNICIPAL CODE**

THE LIVERMORE CITY COUNCIL DOES ORDAIN AS FOLLOWS:

Section 1. Title 13, Division 1, of the Municipal Code of the City of Livermore is hereby amended by adding Chapter 13.25 (Water Efficient Landscape) as follows:

"Chapter 13.25 Water Efficient Landscape

13.25.010 AUTHORITY

This chapter is enacted under the Water Conservation and Landscaping Act (Government Code Section 65591 et seq.) and is a "water efficient landscape ordinance" adopted by a local agency under that Act.

13.25.020 PURPOSE

The City Council of the City of Livermore finds and declares that the State of California is historically an arid environment with limited amounts of water resources. There are enormous costs to the citizens and ecosystem of the State of California to maintain current water resources systems and create new systems to meet current and future demands for water. Therefore, the City Council finds that it is in the public interest of the citizens of the City of Livermore and the State of California to require the wise and efficient use of a limited and costly resource through regulations that require and promote water conservation.

The purpose of this chapter is to establish standards for designing, installing, and maintaining water efficient landscapes in new and existing development projects. This is accomplished through the requirements for responsible landscape design, irrigation and management which utilize reasonable amounts of water while ensuring that aesthetic, functional, energy and environmental benefits of landscapes are achieved with the maximum amount of design freedom.

13.25.030 APPLICABILITY

- A. Except as noted in Sections 13.25.030 B, and C, below, the provisions of this chapter apply to:
1. All new and rehabilitated landscaping installed either for or by public agencies;

2. All new and rehabilitated landscaping for commercial and industrial development projects that require a permit or discretionary approval from the City;
  3. All new and rehabilitated developer installed landscaping in multi-family residential projects;
  4. All new developer-installed landscaping in single-family residential projects.
- B. Only the water budget provisions of this chapter (Section 13.25.060 B) shall apply to:
1. All new homeowner provided landscaping in single family projects. Section 13.25.060 G.2.a. requiring a separate landscaping water meter, does not apply to single family homes;
- C. The following categories of users are exempt from this chapter:
1. Cemeteries;
  2. Registered historical sites;
  3. Ecological restoration projects and mined-land reclamation projects that do not require a permanent irrigation system;
  4. Projects using reclaimed water as defined and approved by the City of Livermore;
  5. Projects that contain less than 2,500 square feet of landscape area.

13.25.040 DEFINITIONS

- A. **Amendment:** Any material added to the soil to alter the pH or improve the physical properties of the soil.
- B. **Anti-drain or check valve:** A valve, located under a sprinkler head and installed lower than the lowest head on the system, to hold water in the system so it minimizes drainage from the lower elevation sprinkler heads.
- C. **Application rate:** The depth of water applied to a given area, usually measured in inches per hour.
- D. **Applied water:** The portion of water supplied by the irrigation system to the landscape.
- E. **Automatic Controller:** A mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.
- F. **Backflow Prevention Device:** A safety device used to prevent pollution or contamination of the water supply due to the reverse flow of water from the irrigation system.

- G. **Bubbler:** An irrigation head that delivers water to the root zone by "flooding" the planted area, usually measured in gallons per minute. Bubblers exhibit a trickle, umbrella, or short stream pattern.
- H. **Conversion factor:** A number that converts the maximum landscape water allowance from square feet to gallons per square foot per year.
- I. **Cycle:** The complete operation of an irrigation controller station.
- J. **Drip irrigation:** Surface or subsurface irrigation systems which apply water through low volume emitters.
- K. **Ecological restoration project:** A project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.
- L. **Established landscape:** The point in time at which plants in the landscape have developed roots into the soil adjacent to the root ball.
- M. **Establishment period:** The first year after installing the plant in the landscape.
- N. **Estimated Applied Water Use:** It is the annual total amount of water estimated to be needed to keep the plants in the landscape healthy.
- O. **ET adjustment factor:** A factor of 0.7 applied to reference evapotranspiration, that adjusts for plant factors and irrigation efficiency, the two major influences upon the amount of water that needs to be applied to the landscape.
- P. **Evapotranspiration:** The quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time, expressed in inches per day, month or year.
- Q. **Flow rate:** The rate at which water flows through pipes and valves (gallons per minute or cubic feet per second).
- R. **Grading:** Earthwork performed to alter the natural contours of an area.

- S. **Hydrozone:** A portion of the landscaped area having similar microclimate, and soil conditions, and plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or non-irrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established is a non-irrigated hydrozone.
- T. **Hardscape:** Includes paving, decks, patios, and other hard, non-porous surfaces.
- U. **Infiltration rate:** The rate of water entry into the soil expressed as a depth of water per unit of time (inches per hour).
- V. **Irrigation efficiency:** 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.
- W. **Irrigated landscape area:** The entire parcel less the building footprint, driveways, non-irrigated portions of parking lots, and other hardscape areas. Landscape areas encompass all portions of a development site to be improved with planting and irrigation. They include water bodies such as fountains, swimming pools, and ponds. Natural open spaces without irrigation systems are not included.
- X. **Irrigation system:** A complete connection of system components, including the water source, the water distribution network, controller and the necessary irrigation equipment.
- Y. **Landscape irrigation audit:** A process to perform site inspections, evaluate irrigations systems, and develop efficient irrigation schedules.
- Z. **Lateral line:**The water delivery pipeline that supplies water from the source to the emitters or sprinklers from the valve or outlet.
- AA. **Low-Water-Use or Extra Drought-Tolerant Plant:** A plant that can survive without irrigation throughout the year once established, although supplemental water may be desirable during drought periods for improved appearance and disease resistance. Plants in Water-Conserving-Plants and Landscape for the Bay Area (second edition), published by East Bay Municipal Utility district, that can tolerate "no water after second year" are examples of such plants.

- BB. **Main line:** The pressurized pipeline that delivers water from the water source to the valve or outlet.
- CC. **Maximum Applied Water Allowance or Water Budget:** For design purposes, it is the upper limit of annual applied water for the established landscaped area. It is based upon the area's reference evapotranspiration, the ET Adjustment Factor, and the size of the landscaped area.
- DD. **Median:** A planted area which separates two roadways or divides a portion of a road into two or more lanes.
- EE. **Moderate Water Using or Semi-Drought-Tolerant Plant:** A plant that can survive throughout the year with occasional irrigation.
- FF. **Mined-Land Reclamation Projects:** Any surface mining operation with a reclamation plan approved in accordance with the Surface Projects: Mining and Reclamation Act of 1975.
- GG. **Mulch:** Materials such as leaves, bark, straw, or sawdust, left loose and applied to the soil surface to retain moisture, retard weed growth, or prevent erosion.
- HH. **High-Water-Use or Non-drought tolerant plant:** A plant that will require regular irrigation for adequate appearance, growth, and disease resistance.
- II. **Operating pressure:** The pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.
- JJ. **Overspray:** Water which is delivered beyond the landscaped area, wetting pavements, walks, structures, or other non-landscaped areas.
- KK. **Plant factor:** A factor that when multiplied by reference evapotranspiration estimates the amount of water used by plants.
- LL. **Point of connection:** The point at which an irrigation system connects into public water system. This is usually that point at which the meter and back-flow prevention device is located or will be installed.
- MM. **Precipitation rate:** The rate of water arriving at the soil surface via rainfall or an irrigation system discharge, expressed as a depth of water per unit of time (inches per hour).

- NN. Rain Sensing device:** A device wired to the automatic controller that shuts off the irrigation system when it rains.
- OO. Recreational area:** Areas of active play or recreation such as sports fields, school yards, picnic grounds, or other areas with intense foot traffic.
- PP. Recycled water or reclaimed water:** Treated or recycled waste water of a quality Reclaimed Watersuitable for nonpotable uses such as landscape irrigation; not intended for human consumption.
- QQ. Reference evapotranspiration:** The evapotranspiration rate for a particular geographical area, such as the City of Livermore.
- RR. Rehabilitated landscape:** Any planting area in which at least 50% of the landscape area is replaced or modified. Examples include a change of landscape, installations of a new irrigation system, and grading modifications.
- SS. Remote control valve:** A valve in an irrigation system which is activated by an automatic electric controller via an electric control wire.
- TT. Run off:** Water which is not absorbed by the soil to which it is applied. Runoff usually occurs when water is applied at too great a precipitation rate, when water is applied to saturated soils, or when water is applied to a steep slope.
- UU. Site Plan:** A base sheet that includes the basic information that will appear on all plans, such as natural features, roads, buildings, or other structures to remain on site.
- VV. Soil Moisture Sensor:** An instrument for measuring the moisture content of the soil and capable of interruption of the irrigation cycle sensor when excessive or inadequate moisture is detected.
- WW. Soil texture:** The classification of soil based on the percentage of sand, silt, and clay in the soil.
- XX. Spray head:** An irrigation head that sprays water through a nozzle.
- YY. Stream head:** An irrigation head that projects water through a rotor in single or multiple streams.

- ZZ. Static water pressure:** The pipeline or municipal water supply pressure when water is not flowing.
- AAA. Station:** An area served by one valve or a set of valves that operate simultaneously.
- BBB. Turf:** A surface layer of earth containing mowed grass with its roots. Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue are cool-season grasses. Bermudagrass, Kikuyugrass, Seashore paspalum, St. Augustinegrass, Zoysiagrass, and Buffalo grass are warm-season grasses.
- CCC. Valve:** A device used to control the flow of water in the irrigation system.
- DDD. Water conservation concept statement:** A one page checklist and a narrative summary of the project.

13.25.050 LANDSCAPE DOCUMENTATION PACKAGE REQUIRED

- A. For projects subject to all of the provisions of this chapter, the property owner must submit a Landscape Documentation Package to the City in compliance with the requirements of this chapter in order to be eligible for the issuance of a building permit. No building permits will be issued for projects that include incomplete Packages, or that include plans which are inconsistent with the provisions of this chapter. The Package must be prepared by an architect or landscape architect licensed by the State of California and it must include the following items. The items listed in this section are described in more detail in Section 13.25.060.
1. Water Conservation Concept Statement
  2. Calculation of Maximum Applied Water Allowance
  3. Calculation of the Estimated Applied Water Use
  4. Landscape design plan
  5. Irrigation design plan
  6. Irrigation schedule
  7. Maintenance schedule
  8. Landscape irrigation audit schedule
  9. Grading plan
  10. Soil analysis
  11. Certification of Substantial completion (to be submitted after installation of the project)
  12. Architect or Landscape Architect stamp
- B. The property owner shall submit items 1-6, 9, 10, and 12 from part A above for review and approval concurrently with submittal of the Design Review Committee application for the project. The irrigation plan for this submittal may be

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conceptual in nature, that is, it may consist of a written description and diagram that depicts what types of irrigation equipment (drip, spray sprinklers, stream sprinklers etc.) shall be used in what areas of the plan.

13.25.060 ELEMENTS OF A LANDSCAPE DOCUMENTATION PACKAGE

A. Water Conservation Concept Statement

Each Landscape documentation package shall include a cover sheet referred to as the Water Conservation Concept Statement. It shall serve as a checklist to verify that the elements of the landscape documentation package have been completed and shall include a narrative summary of the project.

B. The Maximum Applied Water Allowance (Water Budget)

1. A project's Maximum Applied Water Allowance shall be calculated using the following formula:

MAWA = (LA)(20.5) where:

MAWA = Maximum Applied Water Allowance (gallons per year)

LA = Landscaped Area (square feet)

20.5 = Conversion Factor (square feet to gallons per square foot per year) The conversion factor is made up of the Reference Evapotranspiration (47.2) multiplied by the ET Adjustment Factor (0.7) multiplied by .62 to convert square feet to gallons per square foot per year.

2. An example calculation of the Maximum Applied Water Allowance is:

Landscaped area of 10,000 square feet in Livermore.

MAWA = (LA)(20.5)

= (10,000 square feet)(20.5)

= 205,000 gallons per year

= 274 100 cubic feet per year

(205,000/748 = 274)

3. Portions of landscaped areas in public and private projects such as parks, playgrounds, sports fields, golf courses, or school yards where turf provides a playing surface or serves other recreational purposes are permitted to request an increase in the Maximum Applied Water Allowance. A statement shall be included with the landscape design plan, designating areas to be used for such purposes and specifying any needed amount of additional water above the Maximum Applied Water Allowance because of high plant factors (but not due to

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irrigation inefficiency). Such requests shall be evaluated and, if the plan uses water efficiently throughout the project, approved by the Planning Director.

C. Estimated Applied Water Use

1. The Estimated Applied Water Use shall not exceed the Maximum Applied Water Allowance.
2. A calculation of the Estimated Applied Water Use shall be submitted with the Landscape Documentation Package. It shall be calculated by summing the amount of water recommended in the irrigation schedule, or calculated from the following formula:
3. The Estimated Total Water Use of the entire landscaped equals the sum of the Estimated Water Use of all hydrozones in that landscaped area.

$$\text{EWU (hydrozone)} = \frac{(47.2)(\text{PF})(\text{HA})(0.62)}{(\text{IE})}$$

EWU = Estimated Water Use, per hydrozone (in gallons per year)  
47.2 = Reference Evapotranspiration Rate for Livermore (in inches per year)  
PF = Plant Factor  
HA = Hydrozone Area (in square feet)  
0.62 = Conversion Factor (from inches to gallons)  
IE = Irrigation Efficiency

4. Precipitation may not be used as a source of water in this calculation.

D. Plant Factors

For the purpose of this chapter, the following Plant Factors shall be used for each type of plant material. These figures are based on average plant densities and average microclimate conditions. For the purpose of this ordinance, plants are divided into high, medium and low water requirement categories. A list of plants within each of these categories is on file with the planning department. That list is not comprehensive, and is designed to assist the designer in choosing appropriate plant materials. The designer is encouraged to use plants not on the list provided that appropriate information is provided to

substantiate the water requirements of those plants. Such information might consist of reference material from a published source or other data acceptable to the Director of Planning.

Plant Type	Plant Factor
Recirculating Water Features	1.0
Uncovered Pools and Spas	0.8
Cool Season Grasses	0.8
Warm Season Grasses	0.7
High Water Using Trees, Shrubs & Groundcovers	0.7
Moderate Water Using Trees, Shrubs & Groundcovers	0.5
Covered Pools and Spas	0.5
Low Water Using Trees, Shrubs & Groundcovers	0.2

E. Irrigation Efficiency

For the purpose of this chapter, the following irrigation efficiency numbers shall be used for each of the following irrigation equipment categories.

<u>Irrigation Equipment Type</u>	<u>Irrigation Efficiency</u>
Drip Emitters (both above and below ground)	0.9
Bubblers	0.85
Stream sprinklers in planter strips 10 feet or wider	0.75
Spray sprinklers in planter strips 10 feet or wider	0.625
Sprinklers in planter strips less than 10 feet wide	0.4

F. Landscape Design Plan

A landscape design plan shall be submitted as part of the landscape documentation package.

1. Plant Selection and Grouping

- a. Any plants may be used in the landscape, providing the Estimated Applied Water Use recommended does not exceed the maximum Applied Water Allowance and that the plants meet the specifications set forth in subsections b, c, and d below.
- b. Plants having similar water use shall generally be grouped together in distinct hydrozones.

- c. Plants having nearly similar water use may be grouped together, that is, high and medium water using plants may be grouped, or medium and low water using plants may be grouped together. However, high and low water using plants shall not be grouped together in the same hydrozone. For mixed plant hydrozones, the more water intensive plant factor (higher number) shall be used for the entire hydrozone.

2. Water Features

- a. Recirculating water shall be used for all decorative water features.

3. Landscape Design Plan Specifications

The landscape design plan shall be drawn on project base sheets at a scale that accurately and clearly identifies the following:

- a. Designation of hydrozones.
- b. Landscape materials, trees, shrubs, ground cover, turf, and existing vegetation. Planting symbols shall be clearly drawn and plants labeled by botanical name, common name, container size, spacing and quantities of each group of plants indicated.
- c. Property lines and street names.
- d. Streets, driveways, walkways, and other paved areas.
- e. Pools, spas, ponds, water features, fences and retaining walls.
- f. Existing and proposed buildings and structures including the location of windows and doorways.
- g. Natural features, including but not limited to, rock outcroppings.
- h. Soil, planting, and irrigation details.
- i. A calculation showing the square footage of each hydrozone and the total landscaped area.
- j. Designation of special recreational areas such as playgrounds, or sports fields where turf serves as a playing surface.

G. Irrigation Design Plan

An irrigation design plan meeting the following conditions shall be submitted as part of the Landscape Documentation Package.

1. Irrigation Design Criteria

- a. **Point of Connection.** All irrigation equipment must be connected to the landscape water meter for a project. No portion of the irrigation system may be connected to the domestic water meter, unless only one water meter is required for the property.
- b. **Runoff and Overspray.** The irrigation system shall deliver water at a rate compatible with the soil types and infiltration rates of the site. All irrigation systems shall be designed to avoid runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways or structures. Proper irrigation equipment and schedules, including such features such as repeat cycles, shall be used to closely match maximum application rates to infiltration rates.

2. Equipment

- a. **Water Meters.** Separate landscape water meters shall be installed for all newly installed or renovated projects subject to this chapter (except single family homes). All irrigation equipment throughout all projects must be connected to the landscape water meter.
- b. **Controllers.** Automatic electronic controllers shall be required for all irrigation systems and must be able to accommodate all aspects of the design. At a minimum the controller shall have the capability to create two independent programs, include three cycle start times per program, have a battery backup to protect the program in the case of power failure, and contain a rain switch to interrupt the program in the case of rain.
- c. **Valves.** Electronic valves are required for all irrigation systems. A valve may irrigate a maximum of one hydrozone of plants with similar water use as described in the Plant Selection and Grouping section.
- d. **Sprinkler Heads and Emitters.** Heads and emitters shall have compatible application rates within each control valve circuit. Sprinkler heads shall be selected for proper area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance.
- e. **Antidrain (Check) Valves.** Antidrain valves shall be installed at strategic low points throughout the plan to avoid low-head drainage.

- f. **Rain Sensing Override Devices.** Rain sensing override devices are recommended on all irrigation systems and are required on all projects that contain at least 10,000 square feet of landscape area.
- g. **Soil Moisture Sensing Devices.** Soil moisture sensing devices are recommended on all irrigation systems.

3. Irrigation Design Plan Specifications

The irrigation system shall be designed to be consistent with the planting design hydrozones. The irrigation design plan shall be drawn on project base sheets. It should be separate from, but use the same format as, the landscape design plan. The scale shall be the same as that used for the landscape design plan.

The irrigation design plan shall accurately and clearly identify:

- a. Location and size of separate water meters for landscape irrigation.
- b. Location, type, and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, emitters, moisture sensing devices, rain sensing devices, quick couplers, 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 (psi) for each station.

H. Irrigation Schedules

Irrigation schedules satisfying the following conditions shall be submitted as part of the Landscape Documentation Package.

- 1. An annual irrigation program with monthly irrigation schedules shall be required for the plant establishment period, for the established landscape, and for any temporarily irrigated areas.
- 2. The irrigation schedule shall:
  - a. Include run time (in minutes per cycle) suggested number of cycles per day, and frequency of irrigation for each station; and

- b. Provide the amount of applied water (in hundred cubic feet and gallons) recommended on a monthly and annual basis.
3. The total amount of water for the project shall include water designated in the Estimated Total Water Use calculation including any water needed for any water features.
4. Recreational areas designated in the landscape design shall be highlighted and the irrigation schedule shall indicate if any additional water is needed above the Maximum Applied Water Allowance because of high plant factors (but not due to irrigation inefficiency).
5. Whenever possible, irrigation scheduling shall incorporate the use of evapotranspiration data such as those from the California Irrigation Management System (CIMIS) weather stations to apply the appropriate levels of water for different climate.
6. Landscape irrigation shall normally be scheduled during non-daylight hours to reduce irrigating during times of high wind or high temperature.

#### I. Maintenance Schedules

A regular maintenance schedule satisfying the following conditions shall be submitted as part of the Landscape Documentation Package:

1. Landscaping shall be maintained to ensure water efficiency. A regular maintenance schedule shall include but not be limited to checking, adjusting, and repairing irrigation equipment resetting the automatic controller aerating and dethatching turf areas, replenishing mulch; fertilizing; pruning, and weeding in all landscaped areas.
2. Repair of irrigation equipment shall be done with the originally specified materials or their equivalents.

#### J. Landscape Irrigation Audit Schedules

A schedule of landscape irrigation audits, for all but single family residences, satisfying the following conditions shall be submitted to the city as part of the Landscape Documentation Package.

1. At a minimum, audits shall be in accordance with the State of California Landscape Water Management Program as described in the Landscape Irrigation Auditor Handbook.
2. The schedule shall provide for landscape irrigation audits to be conducted by certified landscape auditors once every five years. This requirement shall be waived if, in the last five years, the project has not at any time used more water on an annual basis than permitted by the Maximum Applied Water Allowance.
3. An audit shall also be required if the project's water use exceeds its Maximum Applied Water Allowance by 10% or more on an annual basis or by 20% or more on a monthly basis.

K. GRADING DESIGN PLAN

Grading design plans satisfying the following conditions shall be submitted as part of the submittal requirements.

1. A grading design plan shall be drawn on project base sheets. For clarity, it may be separate from but use the same format as the landscape design plan.
2. The grading plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade. It should also include existing spot elevations at the base of each existing shrub or tree that will remain, including proposed elevation changes within their drip lines.

L. SOILS

1. A soil analysis satisfying the following conditions shall be submittal as part of the submittal requirements.
  - a. Determination of soil texture, indicating the percentage of organic matter.
  - b. An approximate soil infiltration rate (either measured or derived from soil texture/infiltration rate tables). A range of infiltration rates shall be noted where appropriate.
  - c. Measure of pH, and total soluble salts.

ORDINANCE NO. 1399

2. A mulch of at least three (3) inches shall be applied to all planting areas except turf.

M. CERTIFICATION

The city shall not grant a final Certificate of Occupancy for any project subject to the provisions of this chapter until the property owner submits a certificate of substantial completion to the city planning department consistent with this section.

1. Upon completing the installation of the landscaping and the irrigation system, an irrigation audit shall be conducted by a architect, landscape architect or licensed contractor prior to the final field inspection by the city.
2. A licensed architect, landscape architect or contractor shall conduct a final field observation and shall provide a Certificate of Substantial Completion to the city planning department. The Certificate shall specifically indicate that plants were installed as specified, that the irrigation audit has been performed, along with a list of any observed deficiencies, and documentation that those deficiencies have been corrected. A sample of such a form is available in the city planning department.

13.25.070 PUBLIC EDUCATION

A. Publications

1. The City of Livermore shall provide information to owners of all new, single family residential homes explaining their Maximum Applied Water Allowance (water budget) and regarding the design, installation, and maintenance of water efficient landscapes.
2. The City shall also provide information about the efficient use of landscape water to all water users throughout the city.
3. The City shall also recognize those projects that are the most efficient users of landscaping water based on a comparison to their water budget.

B. Model Homes

All model home complexes that include landscaping shall demonstrate the principles of water efficient landscapes as described in this chapter.

1. The project developer shall make available to all visitors of the model home complex a brochure depicting the landscape plan for each model, identifying all plant material by both common and botanical name, identifying whether each plant is a low, medium or high water using plant, describing hydrozones within the plan, describing the irrigation equipment used, and describing any other features which contribute to the overall water efficiency of the landscape plan.
2. For at least one model home in each project, the developer shall place signs to:
  - a. Identify it as a water efficient landscape;
  - b. Identify all plant materials within the plan by both common and botanical name, including their relative water use;
  - c. Identify hydrozones, irrigation equipment, and any other features which contribute to the overall water efficiency of the plan.
3. All model homes are strongly encouraged to be more water efficient than the minimum required by this chapter, especially for the model home with signs."

Section 2. This Ordinance or a comprehensive summary thereof shall be published once in a newspaper of general circulation of the City of Livermore within fifteen days after its adoption and shall take effect and be in force thirty days from and after its adoption.

The foregoing Ordinance was introduced and read at the regular meeting of the City Council of the City of Livermore held on the 14th day of December, 1992, and finally adopted at the regular meeting of said Council held on the 21st day of December, 1992, by the following vote:

AYES: COUNCILMEMBERS Reitter, Stein, Vargas, Wieskamp & Mayor Brown

NOES: NONE

ABSENT: NONE

ORDINANCE NO. 1399

Cathie Brown  
MAYOR, CITY OF LIVERMORE, CALIFORNIA

ATTEST:

Audrey Gray, Deputy  
CITY CLERK

APPROVED AS TO FORM:

Norman Perry  
CITY ATTORNEY

ORDINANCE NO. 1399  
-18-

**IN THE CITY COUNCIL OF THE CITY OF LIVERMORE, CALIFORNIA**

**AN ORDINANCE AMENDING CHAPTER 13.25 (WATER EFFICIENT  
LANDSCAPE) OF THE LIVERMORE MUNICIPAL CODE**

**(Municipal Code Amendment 09-005)**

In September 2009, the California Department of Water Resources adopted a final updated model water efficient landscape ordinance.

The City initiated an application for Municipal Code Amendment 09-005 to amend its water efficient landscape ordinance to be consistent with the updated State model ordinance.

The Planning Commission held a public hearing on October 19, 2010, considered the staff recommendations, and heard and considered public testimony.

A Public Hearing Notice was duly published in a newspaper of local circulation.

The City Council held a public hearing on November 22, 2010, considered the Planning Commission and staff recommendations, and heard and considered public testimony.

**NOW, THEREFORE**, the City Council of the City of Livermore does ordain as follows:

**Section 1. Environmental Review.** The City Council has considered the staff report, along with comments received during the public review process. The Council hereby finds, on the basis of the whole record before it (including the staff report and comments received), that the project is exempt from the California Environmental Quality Act (CEQA) per the General Rule in CEQA Guidelines Section 15061(b)(3) of the CEQA Guidelines, because it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment. This is because the proposed ordinance will not decrease and, in some cases, will increase measures to promote water efficiency in landscaping as compared to the 1992 City Water Efficient Landscaping Ordinance, and it is at least as effective as the 2009 State Model Water Efficient Landscape Ordinance in promoting landscape water efficiency. The City Clerk is directed to file a Notice of Determination with the Alameda County Clerk.

**Section 2. Findings and Declaration.**

The City Council finds and declares that the state of California is historically an arid environment with limited amounts of water resources subject to ever increasing demands. There are enormous costs to the residents and ecosystem of the state to maintain current water resources systems and create new systems to meet current and

future demands for water. The State's, region's, and City's continued economic prosperity is dependent on continued water availability. Landscapes are essential to our quality of life, for example by providing areas for passive recreation and enhancing the environment by cleaning air and water and preventing erosion. Landscape design, installation, maintenance, and management can be water efficient. Therefore, the City Council finds that it is in the public interest of the residents of the city and the state to require the wise and efficient use of a limited and costly resource through regulations that require and promote water conservation.

**Section 3. Planning Commission Recommendation.** The City Council has considered and is satisfied with the recommendation and findings of the Planning Commission contained in Resolution 24-10 attached hereto as Exhibit A, and hereby finds it reflects the City Council's independent judgment and analysis, and the City Council hereby adopts the recommendations and findings by reference.

**Section 4. Livermore Municipal Code.**

Livermore Municipal Code (LMC) Chapter 13.25 (Water Efficient Landscape) is amended to read as set forth in Exhibit B, attached hereto.

**Section 5. Severability.** If any part of this ordinance is declared unconstitutional or invalid by a court, such unconstitutionality or invalidity shall not affect any of the remaining parts.

**Section 5. Effective date.** This ordinance shall take effect 30 days after its adoption.

**Section 6. Publication.** This ordinance or a comprehensive summary thereof shall be published once in a newspaper of general circulation of the City of Livermore within fifteen days after its adoption.

The forgoing ordinance was introduced and read at a meeting of the City Council held on November 22, 2010, by the following vote:

AYES: Councilmembers Marchand, Williams, Vice Mayor Horner, Mayor Kamena  
NOES: None  
ABSENT: Councilmember Leider  
ABSTAIN: None

The ordinance was adopted at the regular meeting of the City Council held on December 13, 2010, by the following vote:

AYES: Councilmembers Horner, Williams, Vice Mayor Marchand, Mayor Kamena  
NOES: None  
ABSENT: Councilmember Leider  
ABSTAIN: None

Marshall Kamena  
MAYOR, CITY OF LIVERMORE

ATTEST & DATE:

APPROVED AS TO FORM:

Susan Neer  
CITY CLERK  
SUSAN NEER

Jason Alcala  
ASSISTANT CITY ATTORNEY  
JASON ALCALA

DATE: December 16, 2010

**IN THE PLANNING COMMISSION  
OF THE CITY OF LIVERMORE  
STATE OF CALIFORNIA**

**A RESOLUTION RECOMMENDING ADOPTION**

Of an amended Municipal Code Chapter 13.25, the Water Efficient Landscape Ordinance, to be consistent with the updated 2009 State Model Water Efficient Landscape Ordinance

WHEREAS, the City initiated an application for Municipal Code Amendment 09-005;

WHEREAS, a Public Hearing Notice was published in a newspaper of local circulation; and

WHEREAS, the Planning Commission held a public hearing on October 19, 2010, considered the staff recommendation for recommending adoption, heard public testimony, and adopted the following findings:

1. The proposed ordinance is consistent with the General Plan. The proposed ordinance is consistent with Climate Change Element (CLI) policies, specifically to review and update the water efficient landscape ordinance (Policy CLI-1.4-P3). As the Climate Change Element states, "Water is an important and scarce resource and the importation of water to the City requires energy, which produces GHG (Greenhouse Gas) emissions. As a result, water conservation and efficiency both help to reduce GHGs." Additionally the proposed ordinance is consistent with the Infrastructure and Public Services Element (INF) which requires compliance with the mandatory state model ordinance (Policy INF-1.3-P4).
2. The proposed ordinance is consistent with the Development Code. Development Code Chapter 4.05 (Landscape Standards) references compliance with the Water Efficient Landscape Ordinance. The proposed ordinance is consistent with this provision and other provisions of the Development Code.
3. The project is exempt from the California Environmental Quality Act (CEQA) per the General Rule in Section 15061(b)(3) of the CEQA Guidelines, because it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment. The proposed ordinance will not decrease, and in some cases, will increase measures to promote water efficiency in landscaping as compared to the 1992 City water efficient landscaping ordinance and it is at least as effective as the 2009 State model ordinance in promoting landscape water efficiency.

BE IT RESOLVED by the Livermore Planning Commission that, based on the above findings, Municipal Code Amendment 09-005 is recommended to the City Council for adoption.

**EXHIBIT "A"**

Resolution No. 24-10

On the motion by Commissioner Lea, seconded by Commissioner Sarboraria, the foregoing Resolution was adopted at the Planning Commission meeting of October 19, 2010, by the following vote:

AYES: COLE, LEA, PICO, SARBORARIA, WEST, YUAN

NOES: NONE

ABSENT: STORTI

Darryl L. West, Chairperson

A handwritten signature in black ink, appearing to read "Fred Osborn", written in a cursive style.

by Fred Osborn, Planning Manager  
Secretary to the Planning Commission

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**Chapter 13.25**  
**Water Efficient Landscape**

- 13.25.010 Authority.
- 13.25.020 Findings – Purpose.
- 13.25.030 Applicability.
- 13.25.040 Definitions.
- 13.25.050 Submittal Requirements.
- 13.25.060 Landscape Design Documentation Package Elements.
- 13.25.070 Landscape Installation Certification Package Elements.
- 13.25.080 Public Education.
- 13.25.090 Water Waste Prevention.
- 13.25.100 Violation.

**13.25.010 Authority.**

This chapter is enacted under the Water Conservation in Landscaping Act (Government Code Section 65591 et seq.) and is a “water efficient landscape ordinance” adopted by a local agency under that Act.

**13.25.020 Findings – Purpose.**

A. Findings. The city council finds and declares that the state of California is historically an arid environment with limited amounts of water resources subject to ever increasing demands. There are enormous costs to the residents and ecosystem of the state to maintain current water resources systems and create new systems to meet current and future demands for water. The State's, region's, and City's continued economic prosperity is dependent on continued water availability. Landscapes are essential to our quality of life, for example by providing areas for passive recreation and enhancing the environment by cleaning air and water and preventing erosion. Landscape design, installation, maintenance, and management can be water efficient. Therefore, the city council finds that it is in the public interest of the residents of the city and the state to require the wise and efficient use of a limited and costly resource through regulations that require and promote water conservation.

B. Purpose. The purpose of this chapter is to establish standards for designing, installing, and maintaining water efficient landscapes that avoid runoff and other water waste in landscape projects. This is accomplished through the requirements for responsible landscape design, soil care, irrigation design and scheduling, and management which utilize reasonable amounts of water while ensuring that aesthetic, functional, energy and environmental benefits of landscapes are achieved with design flexibility.

**13.25.030 Applicability.**

A. Projects meeting the applicability criteria of subsection B of this section, and for which an application is deemed complete on or after the effective date of this ordinance, shall comply with the submittal requirements of section 13.25.050.

B. Except as noted in subsections C, D and E of this section, the provisions of this chapter apply to landscape projects that require a permit, as that term is defined in section 13.25.040, and are:

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1. New construction and rehabilitated landscapes for public agency projects and private non-residential development projects with a total project landscape area equal to or greater than 2,500 square feet;

2. New construction and rehabilitated landscapes which are developer-installed in single-family and multi-family projects with a total project landscape area equal to or greater than 2,500 square feet; or

3. New construction landscapes which are homeowner-provided and/or homeowner-hired in single-family and multi-family residential development projects with a total project landscape area equal to or greater than 5,000 square feet.

C. The exceptions to the requirements of subsection A of this section are that:

1. Only the water budget, irrigation evaluation, and landscape and irrigation maintenance schedule requirements shall apply to cemeteries (See sections 13.25.060(B); 13.25.070(B); and 13.25.070(D)); and

2. A separate landscape water meter is not required for a single family home.

D. Installed landscapes not meeting the criteria of subsection A of this section are subject only to the water waste prevention provisions of section 13.25.090.

E. The following categories of uses are exempt from this chapter:

1. Rehabilitated landscape projects that are homeowner-provided landscaping;

2. Agricultural and horticultural commerce (for example commercial activities such as farming of grains, wine grapes, vegetables, fruit and nut trees and other agricultural crop production; greenhouses; nurseries; and floriculture facilities);

3. Plant collections, as part of botanical gardens and arboretums open to the public;

4. Registered historical sites;

5. Ecological restoration projects and mined-land reclamation projects that do not require a permanent irrigation system; and

6. Community gardens open to the public.

F. Other related ordinances. Project applicants shall be required to consult other applicable ordinances, policies, and regulations with landscaping related requirements applicable in the City including but not limited to:

1. Tree Preservation ordinance (see Livermore Municipal Code chapters 12.20 (Article II);

2. The landscape sections of any checklists or scorecards which may be required by City ordinance including but not limited to the Civic Green Building ordinance; Civic Residential and Non-Residential Green Building ordinance; and Civic Bay-Friendly Landscaping ordinance (see Livermore Municipal Code chapters 15.32, 15.76, and 15.80, respectively);

3. The current Alameda Countywide Clean Water Program requirements and published associated technical guidance;

4. City of Livermore Design Standards and Guidelines

5. The current California Building Standards applicable in the City of Livermore; and

6. Any applicable specific plan.

#### **13.25.040 Definitions.**

1. "Amendment" means any material added to the soil to alter the pH or improve the natural physical properties of the soil, such as increased organic content, water retention, water infiltration, and drainage.

2. "Anti-drain or check valve" means a valve, located under a sprinkler head and installed

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lower than the lowest head on the system, to hold water in the system when not in use so it minimizes drainage from the lower elevation sprinkler heads.

3. "Application rate" means the depth of water applied to a given area, usually measured in inches per hour.

4. "Applied water" means the portion of water supplied by the irrigation system to the landscape.

5. "Automatic controller" means a mechanical or solid state timer, capable of operating valve stations to set the days and length of time of a water application.

6. "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.

7. "Bay-Friendly" is a holistic approach to gardening and landscaping developed and espoused by StopWaste.Org that works in harmony with the natural conditions of the San Francisco Bay watershed. Bay-Friendly practices foster soil health, conserve water and other valuable resources while reducing waste and preventing pollution.

8. "Bay-Friendly Landscape Guidelines" means the most recent version of the guidelines developed by StopWaste.Org for use in the professional design, construction and maintenance of landscapes.

8. "Bubbler" means an irrigation head that delivers water to the root zone by flooding the planted area, usually measured in gallons per minute. Bubblers exhibit a trickle, umbrella, or short stream pattern.

9. "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.

10. "CIMIS" means the California Irrigation and Management Information System, which is a network of weather stations located around the state which collects reference evapotranspiration data and managed by the California Department of Water Resources.

11. "Compost" is an organic amendment that is the product of controlled biological decomposition of organic materials, often including urban plant debris and food waste. It is an organic matter resource that has the unique ability to improve the chemical, physical and biological characteristics of soils or growing media. It contains plant nutrients but is typically not characterized as a fertilizer.

12. "Conversion factor" means a number that converts the maximum landscape water allowance from inches per square feet to gallons per square foot per year.

13. "Cycle" means the complete operation of an irrigation controller station.

14. "Director" means the Community Development Department Director or his or her designee.

15. "Department" means the Community Development Department.

16. "Distribution Uniformity, lower quarter" means a measure of the uniformity of applied irrigation water over an area. It is a ratio of the average of the lowest twenty-five percent measurements to the overall average measurement, gathered through the use of distributed catch cans, commonly used to evaluate the uniformity of coverage of one or more irrigation sprinkler heads.

17. "Drip irrigation" means surface or subsurface irrigation systems which apply water through low volume emitters.

18. "Drought resistant soil" means soil that has been supplemented, for example by addition of an amendment such as compost and by covering with mulch, to maximize rainfall infiltration, increase the soil's capacity to hold water, and allow for plant roots to penetrate and proliferate such that the landscape can survive with less than the Maximum Applied Water Allowance.

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19. "Drought tolerant, extra." "Extra drought tolerant" refers to a plant or landscape that can survive without irrigation throughout the year once established, although supplemental water may be desirable during drought periods for improved appearance and disease resistance. Plants in *Water-Conserving-Plants and Landscape for the Bay Area* (latest edition), published by East Bay Municipal Utility District, that can tolerate "no water after second year" are examples of such plants. Also known as "xeric" or "xeriscape" plants or landscapes.

20. "Ecological restoration project" means a project where the site is intentionally altered to establish a defined, indigenous, historic ecosystem.

21. "Emitter" means a drip irrigation emission device that delivers water slowly from the system to the soil.

22. "Established landscape" means the point in time at which plants in the landscape have developed roots into the soil adjacent to the root ball. Typically most plants are established after one or two years of growth.

23. "Establishment period" means the first year after installing the plant in the landscape or the first two years if irrigation will be terminated after establishment.

24. "Estimated applied water use" means the annual total amount of water estimated to be needed to keep the plants in the landscape healthy.

25. "ET adjustment factor" (ETAF) means a factor of 0.7 applied to reference evapotranspiration, that establishes the amount of water available to maintain the landscape and that will influence plant selection and take into account irrigation efficiency. See "reference evapotranspiration."

26. "Evapotranspiration" means the quantity of water evaporated from adjacent soil surfaces and transpired by plants during a specific time, expressed in inches per day, month or year. See, too, "reference evapotranspiration."

27. "Fertilizer" means a substance added to soil to provide it nutrients.

28. "Flow rate" means the rate at which water flows through pipes and valves (gallons per minute or cubic feet per second).

29. "Grading" means earthwork performed to alter the natural contours of an area.

30. "Grasses, cool-season." Cool-season grasses means grasses that green up and grow more during the spring, sets seed in early summer, then go dormant during warmer seasons until fall, when they begin growing again; e.g., Annual bluegrass, Kentucky bluegrass, Perennial ryegrass, Red fescue, and Tall fescue.

31. "Grasses, warm-season." Warm-season grasses mean grasses that green up and grow more during the summer, set seed in fall, and go dormant during cold seasons, e.g., Seashore paspalum, St. Augustine grass, Zoysiagrass, Bahiagrass. and Buffalo grass.

32. "Green roof" means a roof of a structure is partially or completely covered with vegetation and a growing medium, typically planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems.

33. "Grey water" means wastewater generated from on-site activities such as laundry, bathroom wash basins, and bathing, which can be recycled and treated so it becomes suitable for uses such as landscape irrigation and constructed wetlands, and which meets all applicable local, state, and federal regulations and is approved for such uses by the city. Greywater does not include toilet water, waste water from kitchen sinks, and laundry water from soiled diapers.

34. "Hardscape" means and includes paving, decks, patios, and other hard, nonporous surfaces.

35. "High flow sensors" or "flow meters" detect and report high flow conditions created by system damage or malfunction.

36. "High water using plant" means a plant that will require regular irrigation for adequate

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appearance, growth and disease resistance. The primary initial reference which shall be consulted for determining the water use category of a plant is the plant list in the Water Use Classification of Landscape Species (see definition of "WUCOLS").

37. "Homeowner-provided landscaping" means any landscaping either installed by a private individual for an owner-occupied detached or attached single family residence or installed by a licensed contractor hired by a homeowner.

38. "Hydrozone" means a portion of the landscaped area having similar microclimate, and soil conditions, and plants with similar water needs that are served by a valve or set of valves with the same schedule. A hydrozone may be irrigated or nonirrigated. For example, a naturalized area planted with native vegetation that will not need supplemental irrigation once established in a nonirrigated hydrozone.

39. "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). This value depends to a great extent on the texture of the soil and whether the soil is overly compacted.

40. "Invasive plant species" means species of plants not historically found in California that spread outside cultivated areas and can also damage environmental or economic resources. Their growth habits tend to be aggressive and they typically have high reproductive capacity and tendency to overrun the ecosystem they inhabit. Invasive species may be regulated by county agricultural agencies as noxious weeds. "Noxious weeds" means any weed designated by the Weed Control Regulations in the Noxious Weed Control Act and identified on a Regional District noxious weed control list. Lists of invasive plants include but are not limited to the California Invasive Plant Council inventory; the USDA invasive and noxious weeds database; and California Department of Food and Agriculture database.

41. "Irrigated" means supplied with equipment that can apply water from an irrigation system.

42. "Irrigation efficiency" 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 from management practices. An example of how estimating can be done is by comparing water meter readings to estimated water need over a period of time such as a billing period.

43. "Irrigation system" means a complete connection of system components, including the water source, the water distribution network, controller and the necessary irrigation equipment.

44. "Landscape architect" means a person licensed to practice landscape architecture in the state of California Business and Professions Code, Section 5615 whose license is in good standing.

45. "Landscape area" means the total cumulative area of the portions of a project development site to be improved with planting and irrigation. It includes water bodies supplied with water such as fountains, swimming pools and ponds. It is the area subject to the Maximum Applied Water Allowance calculation. Natural open spaces and non-irrigated stormwater treatment areas (e.g., a detention pond, or non-irrigated bio-swales), building footprints, walkways, decks, patios, driveways, non-irrigated synthetic turf, nonirrigated portions of parking lots, and other non-irrigated hardscape areas are not included.

46. "Landscape contractor" means a person licensed by the state of California to construct, maintain, repair, install, or subcontract the development of landscape systems whose license is in good standing.

47. "Landscape irrigation audit" means an in-depth evaluation of the performance of an irrigation system conducted by a professional qualified to be a Certified Landscape Irrigation Auditor. An irrigation audit includes, but is not limited to, site inspections, verification of proper

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equipment, proper installation and proper adjustment, evaluation of irrigations systems (e.g., system test with distribution uniformity, reporting and recommending mitigations for overspray or runoff that causes overland flow and development of efficient irrigation schedules).

48. "Landscape 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.

49. "Landscape irrigation water use analysis" means an analysis of water use data based on meter readings and billing data.

50. "Landscape project" means the landscape area subject to the provisions of this chapter per section 13.25.030.

51. "Lateral line" means the water delivery pipeline that supplies water from the source to the emitters or sprinklers from the valve or outlet.

52. "Low water using plant" means a plant that can survive throughout the year with little irrigation and is semi-drought tolerant. The primary initial reference which shall be consulted for determining the water use category of a plant is the plant list in the Water Use Classification of Landscape Species (see definition of "WUCOLS").

53. "Low volume irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low-volume emitters which may include but are not limited to drip, drip lines, micro-sprayers, and bubblers and which target small volumes of water at or near the root zone of plants.

54. "Main line" means the pressurized pipeline that delivers water from the water source to the valve or outlet.

55. "Matched precipitation rate" means that the emitter or sprinkler heads in a system or zone have similar precipitation rates.

56. "Maximum applied water allowance" or "water budget" means the calculated annual upper limit of annual applied water for the established landscaped area, based upon the area's reference evapotranspiration (ET), the ET adjustment factor, and the size of the landscaped area.

57. "Median" means a planted area which separates two roadways or divides a portion of a road into two or more lanes.

58. "Micro-spray" means spray irrigation through micro tubing to a series of nozzles attached to risers delivering water in small volumes and which such risers may be fixed or designed to pop-up.

59. "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, slope, or proximity to reflective surfaces.

60. "Mined-land reclamation projects" means any surface mining operation with a reclamation plan approved in accordance with the Surface Projects: Mining and Reclamation Act of 1975.

61. "Moderate water using or semi-drought-tolerant plant" means a plant that can survive throughout the year with occasional irrigation. The primary initial reference which shall be consulted for determining the water use category of a plant is the plant list in the Water Use Classification of Landscape Species (see definition of "WUCOLS").

62. "Mulch" means materials such as leaves, arbor or wood chips, recycled wood waste, straw, compost, sawdust, or inorganic mineral materials such as rocks, gravel, and decomposed granite left loose and applied to the soil surface to retain moisture, retard weed growth, moderate soil temperature, or prevent erosion.

63. "New construction" means, for the purposes of this ordinance, a new building with a landscape or other new landscape, such as a park, playground, streetscape landscaping

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such as median or planter strip, or greenbelt without an associated building.

64. "Operating pressure" means the pressure at which a system of sprinklers is designed to operate, usually indicated at the base of a sprinkler.

65. "Overspray" means water which is delivered beyond the landscaped area, wetting pavements, walks, structures, or other nonlandscaped areas.

66. "Permit" means an authorization issued by the City for new construction or rehabilitated landscapes and can include but not be limited to a building or landscape permit, plan check, land use entitlement, design review, encroachment permit, or capital improvement project approval.

67. "Permeable" has the same meaning as pervious.

68. "Pervious" means any surface or material that allows the substantial passage of water through the material and into the underlying soil such that runoff is substantially avoided.

69. "Plant factor" means a factor that when multiplied by reference evapotranspiration estimates the amount of water used by plants.

70. "Point of connection" means the point at which an irrigation system connects into the public water system and is usually the point at which the meter and back-flow prevention device is located or will be installed.

71. "Precipitation rate" means the rate of water arriving at the landscape surface via rainfall or an irrigation system discharge, expressed as a depth of water per unit of time (inches per hour).

72. "Project development site" means the area of land under common ownership and use which contains the landscape area subject to a permit, and which may contain other features including but not be limited to buildings, structures, and/or circulation routes.

73. "Rain sensor" or "Rain sensing shutoff device" means a device in wired or wireless communication with the automatic controller that shuts off the irrigation system when it rains.

74. "Record drawing" or "as built" drawings means a set of construction plans or computer file including the original design and noting all design deviations approved by the director. These drawings should also show the location of all major underground components, dimensioned from permanent features.

75. "Recreational area" means areas designed for passive or active physical activity or recreation such as parks, sports fields, school yards, golf courses, picnic grounds, or other similar areas where turf typically provides all or a portion of the landscape surface; turf areas in private residential non-street-frontage yards; decorative water features (e.g., fountains) open to public access; pools designed for human swimming; and hot tubs.

76. "Recycled water" means treated or recycled wastewater of a quality suitable for non-potable uses such as landscape irrigation and water features not intended for human consumption, and which is provided by the water purveyor or may be provided on site as grey water if approved for landscape irrigation use via an approved grey water irrigation system.

77. "Reference evapotranspiration" or "ET<sub>o</sub>" means the evapotranspiration rate for a particular geographical area, such as the city. Reference evapotranspiration means a standard measurement of environmental parameters that acts as a reference point for establishing relative differences in the water use of plants. For purposes of this ordinance it is expressed in inches per year. Reference evapotranspiration is used as the basis of determining the maximum applied water allowance so that regional differences in climate can be accommodated.

78. "Registered Historical Site" means a site that is listed in a national, state or local register or inventory of historic resources or is zoned with a historic preservation (HP) combining district overlay.

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79. "Rehabilitated landscape" means any existing planting area in which at least 50 percent of the landscape area is substantially redesigned, which may include but not be limited to new plant palette, substantially replaced irrigation system, and substantial grading modifications, but excludes replacement of plants like for like as part of ongoing or routine maintenance.

80. "Remote control valve" means a valve in an irrigation system which is activated by an automatic electric controller via a wired or wireless signal.

81. "Runoff" means water which is not absorbed by the surface to which it is applied. Runoff usually occurs when water is applied at too great a precipitation rate (e.g., application rate exceeds soil infiltration rate), when water is applied to saturated soils, or when water is applied to a steep slope.

82. "Smart irrigation controller" means an electronic automatic irrigation controller that is weather- or soil- moisture based with a timing device used to operate remote control valves that operate an irrigation system, which schedules irrigation events using evapotranspiration (weather-based) data such as that from the California Irrigation and Management Information System (see definition of CIMIS) and/or data from an integral or auxiliary soil-moisture or rain sensor, and which may also include a high flow sensor for high flow damage or malfunction control.

83. "Soil moisture sensor" means an instrument for measuring the moisture content of the soil and capable of interruption of the irrigation cycle sensor when excessive moisture is detected.

84. "Soil texture" means the classification of soil based on the percentage of sand, silt, and clay in the soil. Soil texture largely determines the amount of water that can be stored in a soil as well as the soil infiltration rate.

85. "Special Landscape Area" (SLA) means areas of the landscape irrigated with recycled water; water features using recycled water; areas dedicated solely to edible plants; recreational areas as that term is defined in this section; and areas necessary for stormwater treatment such as bioswales which are irrigated.

86. "Sprinkler" means irrigation that projects pressurized water through the air (e.g., spray heads and rotors).

87. "Sprinkler, rotor head" means a sprinkler head that projects a rotating stream or streams of water.

88. "Sprinkler, spray head" means a sprinkler head that sprays water through a spray nozzle.

89. "Static water pressure" means the pipeline or municipal water supply pressure when water is not flowing.

90. "Station" means an area served by one valve or a set of valves that operate simultaneously.

91. "Temporarily irrigated area" means a hydrozone which will be irrigated for only the plant establishment period, not to exceed two years from the date of planting.

92. "Topsoil" means the top approximately 6 to 8 inches of undeveloped site soil.

93. "Turf" means a surface layer of earth containing mowed grass with its roots. See definitions of "grasses, warm-season" and "grasses, cool-season."

94. "Valve" means a device used to control the flow of water in the irrigation system.

95. "Very low water using plant" means a plant that can survive throughout the year with little or no irrigation and is generally extra drought tolerant. The primary initial reference which shall be consulted for determining the water use category of a plant is the plant list in the Water Use Classification of Landscape Species (see definition of "WUCOLS").

96 "Water conserving plant species" means a plant species identified as having a low plant factor.

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97. "Water feature" means a design element where artificially applied open water performs an aesthetic or recreational function, including ponds, lakes, waterfalls, fountains, artificial streams, spas, and swimming pools. Constructed wetlands such as bioswales used for on-site wastewater treatment or stormwater best management practices that are not irrigated and used primarily for water treatment or stormwater retention or detention are not water features and, therefore, are not subject to the water budget calculation.

98. "Water purveyor" means the public or private owner or operator of the water supplying an approved water supply which provides the water that will be used to irrigate a landscape project.

99. "WUCOLS" means the most recent (2000 or later edition) Water Use Classification of Landscape Species published by the University of California Cooperative Extension, the Department of Water Resources and the Bureau of Reclamation.

### **13.25.050 Submittal requirements.**

A. For projects subject to the provisions of this chapter, the property owner or property owner's authorized agent must submit a landscape design documentation package meeting the requirements of subsection B of this section prior to issuance of a permit and a landscape installation certification package meeting the requirements of subsection C of this section following landscape installation.

B. Landscape design documentation package: The property owner shall submit a landscape design documentation package consisting of items 1 through 6 below for review and approval with any permit application for the project. A complete landscape design documentation package must be submitted to the city in compliance with the requirements of this chapter and approved in order to be eligible for the issuance of a permit. The package must be prepared by an architect or landscape architect licensed by the state in good standing and it must include the following items which are detailed in section 13.25.060 of this chapter.

1. Landscape design documentation package checklist (See subsection 13.25.060(A) of this chapter);
2. Water budget and hydrozone calculations (see subsection 13.25.060(B) of this chapter);
3. Soil management plan (see subsection 13.25.060(C) of this chapter);
4. Landscape design plan (see subsection 13.25.060(D) of this chapter);
5. Irrigation design plan (see subsection 13.25.060(E) of this chapter); and
6. Grading plan (see section 13.25.060(F) of this chapter).

C. Landscape installation certification package: Following installation and prior to occupancy, the property owner shall submit a landscape installation certification package consisting of items 1 through 4 below for review and approval. A complete landscape installation certification package must be submitted to the city in compliance with the requirements of this chapter and approved in order to be eligible for a final inspection sign-off or certificate of occupancy. The package must be prepared by an architect, landscape architect, or landscape contractor licensed by the state in good standing and it must include the following items which are described in more detail in section 13.25.070 of this chapter.

1. Landscape installation certification and checklist (see subsection 13.25.070(A) of this chapter);
2. Irrigation evaluation (see subsection 13.25.070(B) of this chapter);

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3. Irrigation scheduling parameters (see subsection 13.25.070(C) of this chapter);
  4. Landscape and irrigation maintenance schedule (see subsection 13.25.070(D) of this chapter).

### 13.25.060 Landscape design documentation package elements.

A. Checklist and project information. Each landscape design documentation package shall include a checklist signed by a licensed architect or landscape architect on a form approved by the director and listing and verifying that all elements required by this section have been completed and submitted.

B. Water budget and hydrozone calculations. The landscape project's maximum applied water allowance, hydrozone summary, and estimated applied water use, as described below, shall be submitted with the landscape design documentation package.

1. Maximum Applied Water Allowance (MAWA, or water budget). A project's maximum applied water allowance shall be calculated using the following formula:

$$\text{MAWA} = (47.2)(0.62) \times [(0.7 \times \text{LA}) + (0.3 \times \text{SLA})]$$

MAWA = Maximum applied water allowance (gallons per year)

47.2 = Livermore reference evapotranspiration (Eto) in inches per square foot per year

0.62 = Conversion factor from inches to gallons per square foot

0.7 = Evapotranspiration (ET) Adjustment Factor (ETAF)

LA = Landscape area (square feet)

0.3 = Additional water allowance for special landscape area (SLA)

SLA = Landscape area that meets this chapter's definition of special landscape area (square feet)

a. An example calculation of the maximum applied water allowance for a hypothetical total project landscape area of 10,000 square feet, with no special landscape area, is below.

$$\begin{aligned} \text{MAWA} &= (47.2)(0.62) \times [(0.7 \times 10,000 \text{ sq ft}) + 0 \text{ sq ft}] \\ &= (29.264)(7,000) \text{ gallons per year} \\ &= 204,848 \text{ gallons per year} \end{aligned}$$

b. An example calculation of the maximum applied water allowance for a hypothetical total project landscape area of 10,000 square feet, including 2,000 square feet of special landscape area, is below.

$$\begin{aligned} \text{MAWA} &= (47.2)(0.62) \times [(0.7 \times 10,000 \text{ sq ft}) + (0.3 \times 2,000 \text{ sq ft})] \\ &= 29.264 \times [(0.7 \times 10,000 \text{ sq ft}) + (0.3 \times 2,000 \text{ sq ft})] \\ &= 29.264 \times (7,000 + 600) \text{ gallons per year} \\ &= 29.264 \times 7,600 \text{ gallons per year} \\ &= 222,406 \text{ gallons per year} \end{aligned}$$

c. An example calculation of the maximum applied water allowance for a hypothetical total project landscape area of 10,000 square feet, all of which is special landscape area, is below.

$$\begin{aligned} \text{MAWA} &= (47.2)(0.62) \times [(0.7 \times 10,000 \text{ sq ft}) + (0.3 \times 10,000 \text{ sq ft})] \\ &= 29.264 \times (7,000 + 3,000) \text{ gallons per year} \\ &= 29.264 \times 10,000 \text{ gallons per year} \\ &= 292,640 \text{ gallons per year} \end{aligned}$$

2. Estimated Applied Water Use. The total estimated applied water use shall not exceed the maximum applied water allowance. Precipitation may not be used as a source of water in calculating total estimated applied water use. The total estimated applied water use shall be the sum of the estimated applied water use calculated for each of the landscape design plan hydrozones using the following formula.

$$EAWU = EAWU \text{ (non-SLA hydrozones)} + EAWU \text{ (SLA)}$$

EAWU = Total project estimated applied water use in gallons per year

EAWU (non-SLA hydrozones) =  $[(47.2)(0.62)] \times [(PF \times HA)/IE]$  calculated separately for each hydrozone not meeting the definition of special landscape area (SLA), then added together for all such hydrozones.

$$EAWU \text{ (SLA)} = [(47.2)(0.62)] \times (SLA)$$

47.2 = Livermore reference evapotranspiration (Eto) in inches per square foot per year

0.62 = Conversion factor from inches to gallons per square foot

HA = Hydrozone area (in square feet)

PF = Hydrozone plant factor selected per subsection (B)(4) of this section

IE = Hydrozone irrigation efficiency elected per subsection (B)(5) of this section

SLA = Landscape area that meets this chapter's definition of special landscape area (square feet)

3. Hydrozone summary. A summary table form of the landscape and irrigation design plan's hydrozones (see subsections D and E of this section) shall be submitted and which shall include at a minimum for each hydrozone:

- a. Its area in square feet and a designation (e.g., a number or letter) matching each hydrozone to the corresponding landscape and irrigation design plan hydrozones.
- b. The highest water requirement category of its plant material and corresponding plant factor selected from the list of plant factors in subsection (B)(4) of this section; and
- c. Its proposed type of irrigation equipment and corresponding irrigation efficiency number selected from the list of irrigation efficiency numbers in subsection (B)(5) of this section.

4. Plant Factors. For the purpose of this chapter, the following plant factors shall be used for each type of plant material. These figures are based on average plant densities and general microclimate conditions of Livermore. For the purpose of this chapter, plants are divided into high (H), moderate (M), low (L) and very low (VL) water requirement categories. The initial reference which shall be consulted for determining the category of a plant is the plant list in the Water Use Classification of Landscape Species (WUCOLS), as defined in section 13.25.040 of this chapter, a copy of which is on file with the Department. Project applicants may request an alternate plant factor number for a specific plant species provided the request is substantiated by reference material from a published source or other data submitted to and approved by the director. As to plant selection, that list is not comprehensive, and the designer may use plants not on the list, provided that appropriate information is provided to substantiate the water requirements of those plants, such as reference material from a published source or other data acceptable to the director.

Plant Type	Plant Factor
Recirculating water features (use surface area)	1.0

Uncovered pools and spas	0.9
Cool season grasses	0.8
High water using trees, shrubs and groundcovers	0.8
Warm season grasses	0.7
Moderate water using trees, shrubs and groundcovers	0.5
Covered pools and spas	0.5
Low water using trees, shrubs and groundcovers	0.3
Temporarily irrigated areas	0.3
Very Low or extra drought tolerant water using trees, shrubs and groundcovers	0.09

5. Irrigation Efficiency. For the purpose of this chapter, the following irrigation efficiency numbers shall be used for each of the following irrigation equipment categories. Project applicants may request an alternate irrigation efficiency number for specific equipment provided the request is substantiated by reference material from a published source or other data such as manufacturer specifications submitted to and approved by the director.

Irrigation Equipment Type	Irrigation Efficiency
Drip irrigation (both above and below ground)	0.9
Bubblers and/or micro spray	0.85
Rotor head sprinklers in planter areas 8 feet or wider	0.75
Rotor head sprinklers in planter areas less than 8 feet wide	0.71
Spray head sprinklers in planter areas 8 feet or wider	0.71
Spray head sprinklers in planter areas less than 8 feet wide	not permitted
Water features	Applicant to propose based on how water applied

6. If requested by the local water purveyor, the city shall require the project applicant to submit a copy of the water budget calculations required by this section to the water purveyor.

C. Soil Management Plan.

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1. The purpose of this section is to improve the soil's ability to absorb and retain water; have generally drought resistant soil; reduce runoff and erosion; and promote healthy plant growth.

2. If mass grading is proposed that will remove a foot or more of existing grade, submittal of the soils analysis report required by subsections (C)(3) and (C)(4) of this section may be deferred until after rough grading is completed at the discretion of the director, provided that the requirements of subsections (C)(3) and (C)(4) of this section are completed and made available with resulting recommendations to the project landscape professional and incorporated into the landscape design plan in the final approved construction plans. Soil analysis shall analyze sample(s) of topsoil preserved per grading requirements of subsection (F)(2)(b) of this section and other soils likely to be planted.

3. A soil analysis report using adequate sampling depth for the intended plants satisfying the following conditions shall be submitted as part of the submittal requirements.

- a. Determination of soil texture, indicating the percentage of organic matter;
- b. An approximate soil infiltration rate (either measured or derived from soil texture/infiltration rate tables). A range of infiltration rates shall be noted where appropriate;
- c. Measure of pH, and total soluble salts;
- d. Any recommended amendments to the soil to meet the purpose of this section.
- e. Fertilizers if used shall be specified as either organic and non-synthetic, or controlled release (slower release) if synthetic.
- f. Recommendations shall be tailored to recycled water if applicable.

4. Additional requirements for larger landscapes: In addition to the requirements of subsection (C)(3) of this section, the following soil analysis report requirements shall apply to project development sites with a total landscape area of 10,000 square feet or more, and are recommended for smaller landscape areas. The soil analysis shall also identify:

- a. Measurement of essential nutrients;
- b. Identification of critical soil limitations including but not limited to, compacted, water logged, or thin soils;
- c. Areas of quality topsoil to be preserved;
- d. Actions to mitigate identified critical soil limitations;
- e. Amendment of soils designed to promote healthy water and air access to the root zone of trees to be planted within 5 feet of any pavement or other compacted area; and
- f. The amount of compost to achieve a minimum 3.5% organic matter content by dry weight unless the soil report recommends an alternative percent of organic matter tailored to the plant materials specified in the landscape design plan.

5. Mulch.

- a. A mulch of at least three inches shall be applied to all planting areas except turf.
- b. Stabilizing mulch products shall be applied to slopes of 3 to 1 or greater (where 3 to 1 means 1 foot of vertical elevation change for every 3 feet of horizontal length).
- c. The mulching portion of the seed/mulch slurry in hydroseed applications shall meet the requirement of at least 3 inches of mulch.

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D. Landscape Design Plan. A landscape design plan satisfying the following conditions

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shall be submitted as part of the landscape design documentation package.

1. Plant Selection and Grouping. Any plants may be used in the landscape, with water conserving plant species encouraged, subject to the following conditions.

a. Water budget compliance. The estimated applied water use recommended does not exceed the maximum applied water allowance.

b. Use of hydrozones. Plants having similar water use shall generally be grouped together in distinct hydrozones (see subsection (B)(3) of this section). Other considerations for establishing hydrozones may include sun exposure, soil condition, and slope. Plants having nearly similar water use may be grouped together, that is, high and medium water using plants may be grouped, or medium and low water using plants may be grouped together. However, high and low water using plants shall not be grouped together in the same hydrozone. For mixed plant hydrozones, the more water intensive plant factor (higher number) shall be used for the entire hydrozone.

c. Amount of turf. Total irrigated areas specified as turf shall be limited to 50% for residential uses and 25% for non-residential uses, with turf bioswales necessary for stormwater treatment and recreational areas exempted.

d. Invasive plant species. Plants listed as invasive (A, B, and C rated) by the California Department of Food and Agriculture (CDFA), or listed as invasive (high or moderate rated) by the California Invasive Plant Council's (IPC) database of invasive species, shall not be used, except a turf plant rated C by CDFA or rated Moderate by Cal-IPC shall be permitted for use on sports fields and high traffic recreation areas. Project applicants may request to use other plant specie(s) rated C by CDFA or rated Moderate by Cal-IPC provided the request is substantiated by evidence submitted to and approved by the director that clearly establishes that due to plant or site characteristics the use of the requested plant will not have detrimental ecological effects on parks, greenbelts, water bodies, water ways, agriculture, and open spaces.

e. Fire prone areas. Landscapes in fire prone wildland areas shall be designed to comply with any applicable Fire Department regulations and to create a defensible space around a building as required by Public Resources Code Section 4291.

f. Homeowners Associations and Common Interest Developments. The covenants, codes and restrictions (i.e., CC&Rs) of a common interest development, which may include but not be limited to community apartment projects, condominiums, planned developments, stock cooperatives, or single family subdivisions governed by a Homeowners Association shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group. Further, said guidelines shall not prohibit the removal of turf, nor restrict or prohibit the reduction of turf in lieu of more water efficient alternatives.

## 2. Water Features.

a. Recycled water where it is an approved supply of water shall be used for all decorative water features.

b. Recirculating water shall be used for all decorative water features.

c. Pool and spa covers are highly recommended.

## 3. Soil erosion and runoff management.

a. The landscape and grading plans shall be coordinated to minimize irrigation and stormwater runoff and to maximize on-site retention and infiltration of irrigation water and stormwater. Examples of practices include but are not limited to directing runoff to landscape areas, bioswales, rain gardens and/or similar features.

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b. Turf shall not be specified on slopes of 4 to 1 or greater if the toe of the slope is next to an impermeable surface (where 4 to 1 means 1 foot of vertical elevation change for every 4 feet of horizontal length).

4. Landscape Design Plan Submittal Requirements. The landscape design plan shall demonstrate how it meets the requirements of sub-sections (D)(1) (plant selection and grouping), (D)(2) (water features) if applicable, and (D)(3) (soil erosion and runoff management) of this section, and shall be drawn on project base sheets at a scale that accurately and clearly identifies and includes the following:

a. Designation of hydrozones. Depict each hydrozone and its plant factor. Provide the square footage of each hydrozone and the total landscaped area that matches the square footage amounts in the hydrozone summary table required by subsection (B)(3) of this section;

b. Designation and square footage of landscape areas or features meeting this chapter's definition of special landscape area if any;

c. Landscape materials, trees, shrubs, ground cover, turf, and existing vegetation. Planting symbols shall be clearly drawn and plants labeled by botanical name, common name, container size, spacing and quantities of each group of plants indicated. Include the water requirement category of each plant material (very low (VL), low (L), moderate (M) or high (H)) as described in subsection (B)(4) (Plant Factors) of this section;

d. Natural features, including, but not limited to, rock outcroppings and existing trees. Include trunk circumference measured four and one-half feet above grade for existing trees (see Tree Preservation in LMC Chapter 12.20 Article II);

e. Soil management information (see subsection (C) (soil management plan) of this section;

f. Context information including but not limited to property lines, adjacent street name(s), existing and proposed buildings, structures, and retaining walls;

f. Impermeable surface information including but not limited to streets, driveways, walkways, and other paved areas adjacent to or integrated with the landscape project;

g. Pools, spas, ponds, and water features and the surface area in square feet of all such features;

h. Location of slopes greater than 25% (where 25% means one foot of vertical elevation change for every four feet of horizontal length);

i. Location and description of any proposed rain harvesting or catchment facilities, bioswales, green waste recycling areas, and/or green roofs; and

j. The statement, "I have complied with the criteria of Livermore Municipal Code Chapter 13.25 and have applied them for efficient use of water in the landscape design plan," and the signature of a licensed architect or landscape architect.

E. Irrigation Design Plan. An irrigation design plan meeting the following conditions shall be submitted as part of the landscape design documentation package.

1. Purposes. The purpose of an irrigation design plan shall be to apply water in a way that does not exceed the maximum applied water allowance, and that meets plant water needs while avoiding water waste such as overspray, runoff, and low head drainage. Irrigation systems shall be designed to achieve a minimum 0.71 irrigation efficiency.

2. For design review the irrigation design plan may be conceptual, consisting of a written description and diagram depicting hydrozones and what types of irrigation equipment (drip, spray sprinklers, stream sprinklers, etc.) shall be used in each hydrozone, provided that compliance with all requirements is fully documented within approved construction plans

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### 3. Irrigation Design Criteria.

a. Hydrozones. The irrigation design plan shall be zoned to implement the hydrozones identified in the summary table and the landscape design plan (subsections (B)(3) and (D)(1) of this section);

b. Point of Connection. All irrigation equipment must be connected to the landscape water meter for a project. No portion of the irrigation system may be connected to the domestic water meter, unless only one water meter is required for the property.

c. Runoff and Overspray. The irrigation system shall deliver water at a rate compatible with the soil types and infiltration rates of the site. All irrigation systems shall be designed to avoid runoff, low head drainage, overspray, or other similar conditions where water flows onto adjacent property, nonirrigated areas, walks, roadways or structures. Proper irrigation equipment and schedules, including such features such as repeat cycles, shall be used to closely match maximum application rates to infiltration rates.

d. Pressure regulation. The irrigation system shall be designed to keep dynamic pressure at each emission device within the manufacturer's recommended pressure range. Static water pressure shall be measured at the point of connection if available at the design stage, or otherwise shall be estimated. If static pressure is outside the irrigation system's required dynamic pressure range, then pressure-regulating devices such as inline pressure regulators, booster pumps, or other devices shall be specified.

e. Recycled water. If a separate landscape water meter is required and where recycled water is an approved supply of water, recycled water shall be used for landscape irrigation.

### 4. Equipment.

a. Water Meters. Separate landscape water meters shall be installed for all new construction or rehabilitation landscape projects subject to this chapter (except single-family homes). All irrigation equipment throughout all projects must be connected to the landscape water meter.

b. Controllers. Smart irrigation controllers shall be required for all irrigation systems and must be able to accommodate all aspects of the design. Individual controllers irrigating an area of 10,000 or more square feet shall be installed with a rain sensor(s) which shall be properly installed (e.g., in a location suitable for detecting rain without interference from structures and irrigation spray).

c. Valves. Electronic valves are required for all irrigation systems. A valve may irrigate a maximum of one hydrozone of plants with similar water use. Where feasible, trees shall be placed on separate valves from shrubs, groundcovers, and turf.

d. Sprinkler Heads shall have compatible application rates within each control valve circuit. Sprinkler heads shall be selected for proper and uniform area coverage, application rate, operating pressure, adjustment capability, and ease of maintenance. Riser protection devices (e.g., swing joints) shall be specified for damage prone or high traffic areas.

e. Sprinkler heads must match precipitation rates unless otherwise recommended by the manufacturer.

f. Sprinkler irrigation for any contiguous turf area that is 10,000 or more square feet in size must be designed to achieve a minimum 0.7 lower quarter distribution uniformity, to be verified by the landscape installation certification.

g. Anti-drain (Check) Valves. Anti-drain valves shall be installed at strategic low points throughout the plan to avoid low-head drainage.

h. Low volume equipment areas. Low volume irrigation shall be used in all the

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following areas, unless an alternative design having the effect of low volume irrigation (e.g., micro-sprayers) and which will avoid runoff and erosion is approved by the director as part of the landscape design documentation package and verified by the landscape installation certification.

1. Landscape areas less than 8 feet in width in any direction;
2. Mulched areas;
3. Within 24 inches of a non-permeable surface unless no runoff occurs or the adjacent non permeable surface drains entirely to permeable surfaces capable of admitting and retaining the irrigation runoff;
4. On slopes greater than 25% (where 25% means one foot of vertical elevation change for every four feet of horizontal length); and
  - i. Irrigation of slopes greater than 25% shall not exceed an application rate of 0.75 inches per hour, unless an alternative design avoiding overspray and runoff is approved by the director (e.g., the toe of the slope drains entirely to permeable surfaces).
  - j. Grey water use for landscape irrigation shall comply with California Building Standards.

5. Irrigation Design Plan Submittal Requirements. The irrigation design plan shall bear the signature of an architect, landscape architect, or landscape contractor licensed by the state in good standing. The irrigation design plan shall demonstrate how it meets the requirements of sub-sections (E)(3) (irrigation design criteria) and (E)(4) (equipment) of this section, and shall be drawn on project base sheets at a scale that accurately and clearly identifies and includes the following:

- a. Location and size of separate water meters for landscape irrigation;
- b. Location, type, and size of all components of the irrigation system, including automatic controllers, main and lateral lines, valves, sprinkler heads, emitters, moisture sensing devices, rain sensing devices, quick couplers, 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 (psi) for each station;
- e. Each area to be irrigated by each valve;
- f. Location of soil moisture or rain sensor(s) if any; and
- g. The statement, "I have complied with the criteria of Livermore Municipal Code Chapter 13.25 and have applied them for efficient use of water in the landscape design plan," and the signature of an architect, landscape architect, or landscape contractor licensed by the state in good standing.

F. Grading Design Plan. Grading design plans satisfying the following conditions shall be submitted as part of the landscape design documentation package.

1. Grading design purposes. Grading of a project landscape area shall be designed to minimize soil erosion; avoid compaction of and protect topsoil where space allows stockpiling topsoil; maximize on-site retention and infiltration of water; confine runoff to the property; direct runoff to permeable surfaces; and avoid soil compaction in landscape areas. If applicable, the grading design plan shall also comply with any best management practice guidelines, stormwater ordinances, stormwater management plans and any other related requirements that have been adopted by any federal, State of California, regional and/or city agency for any activity, operation or facility which may cause or contribute to stormwater pollution.

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2. Grading Design Submittal Requirements. The grading design plan shall meet the purposes of 13.25.060(F)(1), may be separate from but use the same format as the landscape design plan, and shall be drawn on project base sheets at a scale that accurately and clearly identifies and includes the following:

a. The grading plan shall indicate finished configurations and elevations of the landscaped area, including the height of graded slopes, drainage patterns, pad elevations, and finish grade. It should also include existing spot elevations at the base of each existing shrub or tree that will remain, including proposed elevation changes within their drip lines.

b. The grading plan shall include specifications to avoid topsoil compaction. Additionally, if storage space exists, the grading plan shall indicate areas to stockpile topsoil for reincorporation into planting areas and specify to the grading contractor to remove and store topsoil prior to rough grading, and protect it from wind and rain erosion.

### **13.25.070 Landscape Installation Certification Package Elements.**

A. Signed certification. The city shall not grant a final inspection sign-off or certificate of occupancy for any project until the property owner submits a landscape installation certification package to the Department consistent with this section for review and approval by the director. A licensed architect, landscape architect, or landscape contractor shall prepare the package. The landscape installation certification package shall consist of a signed certification on a form approved by the director and attachments 1-5 below and attachment 6 below, if applicable. The certification shall specifically indicate that the landscape project was installed per the landscape design documentation package and that the irrigation evaluation has been performed, along with a list of any observed deficiencies, and documentation that those deficiencies have been corrected. A sample of such a form is available in the Department.

1. An irrigation evaluation per the requirements of subsection B of this section;
2. A summary of controller setting parameters per the requirements of subsection C of this section;
3. A maintenance schedule per the requirements of subsection D of this section;
4. Verification of implementation of soil management recommendations meeting the requirements of subsection 13.25.060(C) of this chapter; and
5. The statement, "The landscape project has been installed substantially in accordance with the approved landscape documentation package," and signature of the person preparing the certification.
6. Record drawings of the irrigation system if irrigation system installation deviated, with approval of the director, from the design submitted and approved with the landscape design documentation package.

B. Irrigation Evaluation. A landscape irrigation evaluation meeting the following conditions shall be submitted with the landscape certification package.

1. Audit or survey requirement. For newly installed irrigation systems, a landscape irrigation survey, as that term is defined in 13.25.040, shall be conducted. For projects relying on a pre-existing irrigation system, a landscape irrigation audit, as that term is defined in section 13.25.040 of this chapter, shall be conducted. The landscape design plan, irrigation design plan, and irrigation schedule shall be made available to the person conducting the irrigation evaluation.

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2. For projects developed into multiple saleable lots, the irrigation evaluation may be limited

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to a common area (e.g., project green space or park) and a representative sample of the lots.

3. Minimum criteria. The irrigation evaluation required by subsection (B)(1) of this section shall include but not be limited to, inspection, system test, reporting overspray or run off that causes overland flow, and documenting controller parameters, and shall at minimum verify the following.

a. That if the controller relies on soil moisture or rain sensors, that these sensors are properly installed (e.g., that a rain sensor is in a location suitable for detecting rain without interference from structures and irrigation spray) per subsection 13.25.060(E)(4)(b) of this chapter.

b. That if the landscape contains a contiguous turf area that is 10,000 square feet or more in size, that it is irrigated to achieve at least a minimum of 0.7 lower quarter distribution uniformity in accordance with subsection 13.25.060(E)(3)(f) of this chapter as verified by a distribution uniformity test of at least one representative contiguous turf area of 10,000 square feet or more in size.

c. That all areas specified in subsection 13.25.060 (E)(4)(h) of this chapter for low volume irrigation are irrigated with low volume irrigation or an approved equivalent that avoids runoff and erosion (e.g., such that overspray or runoff to adjacent permeable surfaces is negligible or completely drains to permeable surfaces).

d. That if the project contains slopes steeper than 4 to 1 (meaning 1 foot of vertical elevation change for every 4 feet of horizontal length), that per subsection 13.25.060 (E)(4)(i) of this chapter they are not irrigated with a precipitation rate exceeding 0.75 inches per hour, unless irrigation exceeding this rate is done in a way that avoids runoff, overspray and erosion (e.g., the toe of the slope drains entirely to permeable surfaces).

4. Corrective measures. The irrigation evaluation required by subsection (B)(1) of this section shall include corrective measures if necessary to meet the criteria of subsection (B)(2) of this section, and shall document that the corrective measures have been completed.

C. Irrigation Scheduling. For the efficient use of water, all irrigation schedules shall be developed and evaluated to utilize the minimum amount of water required to promote and maintain plant health. For projects developed into multiple saleable lots, submittal of irrigation schedule parameters may be limited to any park, any representative common area, and a representative sample of the lots. Irrigation schedules shall meet the following conditions.

1. Controllers. Irrigation scheduling shall be regulated by automatic irrigation controllers. Total annual applied water shall not exceed the maximum applied water allowance (MAWA). For implementation of the irrigation schedule, particular attention must be paid to irrigation run times, emission device, flow rate, and current reference evapotranspiration, so that applied water meets the total estimated applied water use including any water needed for any water features.

2. Schedule parameters. Parameters used to set the automatic controller shall be developed and submitted for:

a. At a minimum the plant establishment period; established landscape if any; and temporarily irrigated areas if any; and

b. All of the following that apply for each station:

1. Type of irrigation equipment;

2. Irrigation interval (days between irrigation);

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3. Run time (hours or minutes per cycle to avoid runoff);
  4. Suggested number of cycles per day to avoid runoff;
  5. The amount of applied water (in 100 cubic feet and gallons) recommended on a monthly and annual basis;
  6. Application rate setting;
  7. Root depth setting
  8. Plant type setting;
  9. Soil type, infiltration rate, water holding capacity, and mulch depth;
  10. Slope factor setting;
  11. Shade factor setting; and
  12. Irrigation uniformity or efficiency setting.

3. Time of operation. Overhead sprinkler irrigation shall normally be scheduled during non-daylight hours to reduce irrigating during times of high wind or high temperature.

D. Landscape and Irrigation Maintenance Schedules. A regular maintenance schedule satisfying the following conditions shall be submitted as part of the landscape installation certification package:

1. Landscaping and the irrigation system shall be maintained to ensure water efficiency. A regular maintenance schedule shall include, but not be limited to, checking, adjusting, clearing obstructions in, and repairing irrigation equipment; resetting the automatic controller; aerating and dethatching turf areas; replenishing mulch; fertilizing; and pruning and weeding in all landscaped areas.

2. Repair of irrigation equipment shall be done with the originally specified materials or their equivalents.

3. Indicate with details if green waste recycling is part of the maintenance program. Sustainable and environmentally-friendly maintenance practices, such as, integrated pest management, are also encouraged.

E. If requested by the local water purveyor, the city shall require the project applicant to submit, a copy of all or a portion of the landscape installation certification package required by this section to the water purveyor

### **13.25.080 Public education.**

#### **A. Publication.**

1. The city shall provide information upon request:

- a. To owners of all new, single-family residential homes explaining their maximum applied water allowance (water budget) and regarding the design, installation and maintenance of water efficient landscapes; and

- b. To water users about the efficient use of landscape water in the city; and

- c. About integrated pest management.

B. Model Homes. All model home complexes that include landscaping shall demonstrate the principles of water efficient landscapes as described in this chapter.

1. Information.

- a. The project developer shall make available to all visitors of the model home complex a brochure and/or diagram depicting the landscape plan for each model,

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identifying all plant material by both common and botanical name, identifying whether each plant is a low, medium or high water using plant, depicting and describing hydrozones within the plan, describing the irrigation equipment used, and describing any other features which contribute to the overall water efficiency of the landscape plan.

b. The project developer shall provide each buyer of a home in the project:

1. A copy of the information described in subsection B(1)(a) of this section;
2. A copy of the operations manual for the irrigation controller; and
3. A copy of the latest edition of "Bay-Friendly Gardening Guide" or an equivalent information source or sources describing environmentally sustainable landscape design, irrigation, soil management, and maintenance practices.

2. For each model home in each project, the developer shall place signs to:

- a. Identify it as a water efficient landscape;
- b. Identify all plant materials within the plan by both common and botanical name, including their relative water use;
- c. Identify hydrozones, irrigation equipment, and any other features which contribute to the overall water efficiency of the plan.

### **13.25.090 Water waste prevention**

A. Maintenance. Landscapes and their irrigation systems shall be maintained and managed to promote plant health with the least necessary amount of water; prevent water wastage from irrigation system breakages; and minimize runoff diversion from target landscape areas or other permeable surfaces due to low head drainage, overspray, inefficient irrigation scheduling, or other similar conditions. Environmentally-friendly maintenance practices such as those found in the "Bay-Friendly Landscape Guidelines" are encouraged (for example, integrated pest management, especially in areas that drain to bioswales, rain gardens and similar water treatment features).

B. Landscapes one acre or larger. Property owners of landscapes which do not otherwise meet the applicability criteria (e.g., type and size of project) of subsection 13.25.030(B) of this chapter and which are one acre or more in area shall:

1. Cooperate with their water purveyors who may provide water waste prevention recommendations resulting from a landscape irrigation water use analysis, landscape irrigation audit, and/or landscape irrigation survey;

2. Be subject to maintaining irrigation levels not exceeding a water budget calculated per subsection 13.25.060(B)(1) of this chapter if the site has a water meter. (Note: the aforementioned water budget requirement takes into account that prior water efficient landscape regulations (Ordinance 1399 adopted December 21, 1992) used an evapotranspiration (ET) adjustment factor of 0.7, as does this chapter.)

3. Attaining to the greatest extent practicable, taking into account the limitations of the existing irrigation system and if necessary by retrofitting sprinkler heads, a minimum of 0.7 lower quarter distribution uniformity for contiguous turf areas that are 10,000 or more square feet in area.

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C. Homeowners Associations and Common Interest Developments. The covenants, codes

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and restrictions (i.e., CC&Rs) of a common interest development, which may include but not be limited to community apartment projects, condominiums, planned developments, stock cooperatives, or single family subdivisions governed by a Homeowners Association, shall not prohibit or include conditions that have the effect of prohibiting the use of low-water use plants as a group. Further, said guidelines shall not prohibit the removal of turf, nor restrict or prohibit the reduction of turf in lieu of more water efficient alternatives. For registered historical sites only, the requirements of this subsection may be waived if it is determined by the director or Historic Preservation Commission, via referral for determination from the director, that this requirement will significantly diminish the ability of the registered historical site to convey its historic significance.

**13.25.100 Violation**

A. Violations of any provision of this Ordinance may result in the immediate suspension of any development permit previously issued for the property upon which said violation occurred, until compliance with all the requirements of this Ordinance is demonstrated to the satisfaction of the director.

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**IN THE CITY COUNCIL OF THE CITY OF LIVERMORE  
STATE OF CALIFORNIA**

**AN ORDINANCE ADDING CHAPTER 15.80 (CIVIC BAY-FRIENDLY  
LANDSCAPING) TO TITLE 15 (BUILDINGS AND CONSTRUCTION) OF THE  
LIVERMORE MUNICIPAL CODE**

The City Council of the City of Livermore does ordain as follows:

Section 1. Civic Bay-Friendly Landscaping Ordinance. Chapter 15.80 (Civic Bay-Friendly Landscaping) is added to Title 15 (Buildings and Construction), as set forth in Exhibit A, attached hereto.

Section 2. Exemptions. The designated bay-friendly landscaping compliance official(s) shall have the responsibility to grant waivers or exemptions from the requirements of this chapter.

Section 3. Severability. If any section, subsection, subdivision, paragraph, sentence, clause or phrase of this chapter, or any part thereof, is for any reason held to be unconstitutional, invalid, or ineffective by any court of competent jurisdiction, such decision shall not affect the validity or effectiveness of the remaining portions of this chapter or any part thereof. The City Council hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, clause, and phrase of this Article irrespective of the fact that one or more sections, subsections, subdivisions, paragraphs, sentences, clauses, or phrases be declared unconstitutional, invalid, or effective. To this end, the provision of this chapter are declared to be severable.

Section 4. Exemption from CEQA. The adoption of this ordinance is exempt from the California Environmental Quality Act pursuant to California Code of Regulations, Title 14, Chapter 3, Section 15308 (Class 8-actions by regulatory agencies, as authorized by local ordinance, to assure the maintenance, restoration, enhancement or protection of the environment where the regulatory process involves procedures for protection of the environment).

Section 5. Publication. This ordinance or a comprehensive summary thereof shall be published once in a newspaper of general circulation of the City of Livermore within fifteen days after its adoption.

Section 6. Effective Date. This Ordinance shall take effect thirty (30) days after its passage.

The foregoing ordinance was introduced by the following vote at the meeting of the City Council of the City of Livermore held on the 11<sup>th</sup> day of May, 2009, by the following vote:

AYES: Councilmembers Horner, Leider, Vice Mayor Marchand, Mayor Kamena  
NOES: None  
ABSENT: Councilmember Williams  
ABSTAIN: None

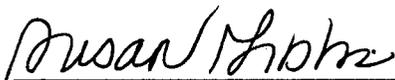
The ordinance was adopted at the meeting of the City Council of the City of Livermore held on the 8<sup>th</sup> day of June, 2009, by the following vote:

AYES: Councilmembers Horner, Leider, Williams, Vice Mayor Marchand, Mayor Kamena  
NOES: None  
ABSENT: None  
ABSTAIN: None



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MAYOR, CITY OF LIVERMORE

ATTEST & DATE:



\_\_\_\_\_  
CITY CLERK  
SUSAN GIBBS

APPROVED AS TO FORM:



\_\_\_\_\_  
CITY ATTORNEY  
JOHN J. POMIDOR

DATE: June 9, 2009

## Chapter 15.80

### CIVIC BAY-FRIENDLY LANDSCAPING

#### Sections:

**15.80.010 Purpose**

**15.80.020 Findings**

**15.80.030 Definitions**

**15.80.040 Standards for Compliance**

**15.80.050 Implementation**

#### **15.80.010 Purpose.**

To promote economic and environmental health in the City, it is essential that the City itself, through the design, construction, and maintenance of its own landscapes and the landscapes it funds, provide leadership to both the private and public sectors by incorporating bay-friendly landscaping practices. The most immediate and meaningful way to do this is to require the integration of bay-friendly landscaping strategies in City landscapes.

#### **15.80.020 Findings.**

The City Council of the City of Livermore finds that:

A. The design, construction, and maintenance of landscapes within the City can have a significant impact on the City's environmental sustainability, resource usage and efficiency, waste management, and the health of the watershed as well as the health of residents, workers, and visitors to the City.

B. Based on studies, plant debris from landscape construction, renovation and maintenance activities comprises 7% of the materials disposed in Alameda County landfills.

C. Bay-Friendly landscape design, construction, operation and maintenance can have a significant positive effect on energy, water and resource efficiency, waste and pollution generation, wildlife habitat, and the health of workers and users of the landscape and can contribute to a reduction in greenhouse gas emissions, improve air quality and enhance urban sustainability.

D. Bay-Friendly landscaping benefits are spread throughout the systems and features of the landscape, the larger San Francisco Bay area ecosystem and the Livermore community. Bay-friendly landscaping is a whole systems' approach to the design, construction and maintenance of the landscape in order to support the integrity of the San Francisco Bay watershed. Key components of bay-friendly landscaping

include reducing waste and using recycled content materials; nurturing healthy soils while reducing fertilizer use; conserving water, energy and topsoil; using Integrated Pest Management (IPM) to minimize chemical use; reducing stormwater runoff; and creating wildlife habitat.

E. Bay-friendly landscape design and construction decisions made by the City in the construction and maintenance of landscapes can result in significant cost savings to the City over the life of the projects.

F. It is critical to both the economic and environmental health of the City that the City provide leadership to both the private and public sectors in the area of bay-friendly landscaping.

G. The most immediate and meaningful way to do so is to include bay-friendly landscaping elements in City landscape projects and in landscape projects built as public-private partnerships, and to encourage private landscape projects to include green building and bay-friendly landscaping elements.

H. In Alameda County, StopWaste.Org has taken the lead in defining and promoting environmentally friendly landscaping for the commercial, institutional and residential sectors by developing the Bay-Friendly Landscape Guidelines for professional landscapers and the Bay-Friendly Gardening Guide for residents and the use of these guidelines are increasingly widespread in residential and commercial landscape construction.

I. Requiring City Projects to incorporate Bay-Friendly Landscape Guidelines is necessary and appropriate to achieving the benefits of Bay-Friendly landscaping in the City.

#### **15.80.030 Definitions.**

For the purposes of this Article, the following definitions shall apply:

A. "Bay-Friendly Landscape Guidelines" means the most recent version of guidelines developed by StopWaste.Org for use in the design, construction and maintenance of Landscapes.

B. "Bay-Friendly Landscaping Scorecard" means the most recent version of the Bay-Friendly Landscaping points system developed by StopWaste.Org.

C. "Covered Project" means all new Landscaping projects or Renovations of Landscapes that equal or exceed \$100,000 in construction costs and are owned or maintained by the City or Redevelopment Agency.

D. "Bay-Friendly Landscaping Compliance Official" means the designated staff person(s) authorized and responsible for implementing this chapter.

E. "Initiated" means officially identified and substantially funded.

F. "Landscape" means the parcel area less the building pad and includes all planted areas and hardscapes (i.e. driveway, parking, paths and other paved areas adjacent to or integral to the Landscape).

G. "Renovation" means any change, addition, or modification to an existing Landscape.

H. "Public Project" means those projects identified as such by Public Contracts Code section 20161.

#### **15.80.040 Standards for Compliance.**

A. All Covered Projects with landscapes initiated on or after the effective date of this Ordinance shall meet the minimum requirements of the most recent version of the Bay Friendly Landscape Scorecard as recommended by StopWaste.Org or its designee.

B. For the purposes of reducing operating and maintenance costs in all City facilities, projects that do not meet the threshold triggering compliance with the requirements of this ordinance (non-covered projects) are encouraged to meet as many Bay-Friendly Landscaping Scorecard points as practicable, using the Bay-Friendly Landscaping Scorecard for documentation.

C. The community development department shall regularly review the project specifications used in bidding public projects to include applicable bay-friendly landscape practices.

#### **15.80.050 Implementation.**

A. The community development director or his designee shall, within six months of this ordinance's effective date, promulgate any rules and regulations necessary or appropriate to achieve compliance with the requirements of this chapter.

B. The rules and regulations promulgated by the community development director pursuant to this section shall provide for at least the following:

1. The incorporation of the bay-friendly landscaping requirements of this chapter into the appropriate design, construction, maintenance and development agreement documents prepared for the applicable covered projects.

2. The designation of an appropriate bay-friendly landscaping compliance official(s) who shall have the responsibility to administer and monitor compliance with the bay-friendly landscaping requirements set forth in this chapter and

with any rules or regulations promulgated thereunder, and to grant waivers or exemptions from the requirements of this chapter, and to report to the city council regarding bay-friendly landscaping compliance on all covered projects.

**Summary Report for Zone 7 Large Landscape Auditing  
End of 2009-2010 Contract Year**

Provided By:  
Spot Water Management, Inc.

July, 2010



## Forward

Overall we felt the large landscape audits SWM performed for Zone 7 went well. Some of the sites were extremely large, and therefore took considerably longer to complete than expected. We were not able to complete as many audits as the initial goal of 30, but overall we were able to complete 22 of the 26 sites were asked to audit. The remaining 4 sites have been addressed to some extent, but were not completed as of the end of the contract year.

The Large Landscape Audit program has great potential for helping CII customers to save water on landscape and turf irrigation. If the final reports are read and suggested upgrades/improvements are enacted, it should be possible for the end users as well as the retailers and Zone 7 to see significant water savings in the future.

The following pages summarize the program for each of the retailers we performed audits for during the last year of the contract.

## Data Summary

Sites Provided by Zone 7 – 28

Sites Audited – 22

### Per retailer

City of Pleasanton - 11

DSRSD – 7

City of Livermore - 3

Zone 7 - 1

Sites shelved temporarily – 2

Audit & Report completed – 21

Sites unable to complete report by end of contract - 3

Potential water savings based on calculated Water Budgets in completed reports –  
80,128 CCF or 183.94 A-ft.

## Most common issues encountered in field during audits

- Overspray – It is very common to see sprinklers that spray water farther or in the wrong direction than coverage is needed.
- Arc adjustment – Sprinklers are typically adjusted to spray water over a specific arc or area. Oftentimes these settings can stray from where they were originally, or could even be adjusted improperly from the start.
- Higher pop up heads – Most of the systems we audited are older systems – 20+ years old. It was more common back then to install sprinklers that only popped up 3” or less. Over time, grass and landscape plants grow and eventually are unable to pop high enough up to spray water past the grass or landscape plants. As a result, those sprinklers distribution is affected as it’s throw of water is somewhat blocked.
- High pressure – Many of the older systems operate off of city water pressure and do not have pressure regulating valves installed, or even a pressure regulator installed on the irrigation system. Depending on the type, sprinklers are to be operated at either 30 or 50 psi ranges. We commonly found sprinkler operating pressures higher than this during our audits. As a result, the sprinkler pattern can be skewed, and much of the water applied can be misapplied due to drifting of smaller water droplets.
- Low pressure – With some older systems, it is common to actually find too low of operating pressure in the irrigation system. Low pressure is difficult to overcome without installing a booster pump. Similar to how the sprinkler pattern is distorted with high pressure as mentioned above, low pressure results in the same problems – poor application uniformity and overwatering.
- Sprinkler pattern blocked by plants – In landscaped areas, we commonly saw landscape plants that needed trimmed as they were blocking the sprinkler spray

pattern. When spray patterns get blocked significantly, the water just drops and usually runs off.

- Broken sprinkler/nozzle – We found broken sprinklers/risers/nozzles more commonly than expected on audits in the Zone 7 service territory. This can happen for a variety of reasons, but is a big waster of water.
- Conclusion – Regular checks of the irrigation systems are not done often enough by the maintenance staff. If regular system checks were done, a majority of these issues could be found and corrected.

## Retailer – City of Pleasanton

The City of Pleasanton was the retailer which we performed the most audits for their customers. A total of 11 audits were performed for City of Pleasanton CII customers. Six of these sites were office complexes, and two golf courses, two schools, and one homeowners association were audited.

The sites that had the best irrigation performance were the two golf courses we audited – Ruby Hill Golf Club and Callippe Preserve Golf Course. Both exhibited better uniformity and fewer issues with the system than other sites. Both golf systems operate from an irrigation central computer which provides the golf maintenance staff with a better tool to schedule the nightly watering. The two school sites we audited had some issues with their irrigation systems such as the typical overspray, and a few broken sprinklers, but overall, the schools irrigation systems were more efficient and in better shape than is typical for schools. The largest portions of the CII audits were performed on office complexes. These sites had the most potential for water savings and improvements in how the irrigation system is managed and maintained. It was very evident that most landscape maintenance companies are not making as much effort as they could be to properly adjust and maintain the irrigation systems at these sites. It was quite common to find problems on each site such as – overspray, misting/high pressure, mismatched sprinklers, need for higher popup sprinklers, broken sprinklers, low pressure, sprinklers blocked by plant material/plants need trimmed, low head drainage/add check valves in bottom of sprinklers.

### Pictures of typical issues found on City of Pleasanton sites



Broken device



Higher popup sprinkler needed

## Estimated cost savings for all sites audited for City of Pleasanton

### Golf Courses

The two golf courses we audited had average water budgets of approximately 200,000 CCF, yet only averaged 126,000 CCF per site. The best potential additional water savings these sites could see would be from turf reduction as they are already using significantly less water than their budget.

### Schools

The two schools we audited also had lower water use histories than their water budget. The average water budget for the schools is 9,000 CCF, and the average usage was only 7,000 CCF. Again, these sites are doing better than expected on water use, so the greatest potential water savings here would be from turf reduction or going to central control.

### Office Complexes

The office complexes we performed audits on left significant room for improvement and water savings. The average water budget for office complexes was 10,000 CCF, yet the average water use for these sites was 14,000 CCF annually. If all of these sites could reduce their water use back to water budget, a savings of approximately \$90,000 could be saved annually. These sites each had approximately 8 broken sprinklers per site. If these sprinklers were all replaced, the return on investment (ROI) of this cost could be recouped in water savings within 3 years or less.

### Other potential savings

Along with significant water savings comes energy savings. Based on typical rates for electricity in the area, we estimate an additional \$10,000-20,000 annually could be saved in electrical costs from having to pump less water throughout their territory.

## Follow up Audits

SWM did not perform any follow up audits.

## Retailer – Dublin San Ramon Services District

The Dublin San Ramon Services District was the retailer which we performed the second most audits for their customers. A total of 6 audits were performed for Dublin San Ramon Services District CII customers. 3 of these sites were parks, 1 golf course, and two schools were audited.

The site that had the best irrigation performance was the golf course we audited – Dublin Ranch Golf Course. It exhibited better uniformity and fewer issues with the system than other sites. The golf irrigation system operates from an irrigation central computer which provides the golf maintenance staff with a better tool to schedule the nightly watering. The three parks sites we audited had some issues with their irrigation systems such as the low heads, a few broken sprinklers, and some arc adjustment issues. Overall, the parks irrigation systems were typical for city parks. The two schools that were audited had significant room for improvement. Both had sprinkler pattern issues, pressure issues, and generally could use significant improvement.

### Pictures of typical issues found on Dublin San Ramon Services District sites



Misting/high pressure



Broken Sprinkler

### Estimated cost savings for all sites audited for Dublin San Ramon Services District

#### Parks

The parks we performed audits on left room for improvement and water savings. The average water budget for parks was 5,500 CCF, yet the average water use for these sites was 7,500 CCF annually. If all of these sites could reduce their water use back to water budget, a savings of approximately \$13,500 could be saved annually. These sites each had approximately 5 broken sprinklers per site. If these sprinklers were all

replaced, the return on investment (ROI) of this cost could be recouped in water savings within 2 years or less.

### Schools

The two schools we audited also had higher water use histories than their water budget. The average water budget for the schools is 6,000 CCF, and the average usage was 9,000 CCF. If these sites could reduce water use to budget, they would see a savings of \$16,000 per year.

### Golf Courses

The golf course we audited, Dublin Ranch, was under their water budgets by approximately 12,000 CCF. The best potential additional water savings this site could see would be from turf reduction as they are already using significantly less water than their budget.

### Other potential savings

Along with significant water savings comes energy savings. Based on typical rates for electricity in the area, we estimate an additional \$5,000-10,000 annually could be saved in electrical costs from having to pump less water throughout their territory.

### Follow up Audits

SWM did not perform any follow up audits.

## Retailer – City of Livermore

The City of Livermore was the retailer which we performed the least number of audits for their customers. A total of 3 audits were performed for City of Livermore CII customers. One of these sites was a business, one school, and one homeowners association were audited.

All of these sites could realize significant water savings. All three were over their water budget. The school was 2,500 CCF over budget and could save \$9,000 per year if they were to get within the water budget. The other two sites averaged a water budget of 3,200 CCF, yet averaged 9,700 CCFs of use annually. If these two sites were able to get within their annual budgets, a savings of \$24,000 could be seen.

### Pictures of typical issues found on City of Livermore sites



Broken sprinkler



Poor Sprinkler Pattern

### Estimated cost savings for all sites audited for City of Livermore

#### Home Owners Associations

The HOAs we performed an audit needs upgrading to see the greatest water savings. It was common to find poorly spaced sprinklers, poor adjustment of sprinkler arcs, and plants blocking the sprinkler nozzles. The school could see \$9,000 in water savings annually if they were to get within water budget.

#### Schools

The school we audited also had higher water use histories than their water budget. The average difference between water budget and historical use was 6,500 CCF which would equate to an annual savings of \$24,000 if they got within water budget.

## Business

The business we audited, Boomers, was significantly over their water budget and could see savings near \$24,000 a year or more if they were able to get within their budget. This site did have a number of small lakes/ponds which is likely part of the reason they use so much water.

## Other potential savings

Along with significant water savings comes energy savings. Based on typical rates for electricity in the area, we estimate an additional \$5,000-10,000 annually could be saved in electrical costs from having to pump less water throughout their territory.

All of these sites average 5 broken sprinklers or less. If replaced, the ROI would be less than 2 years for this expenditure.

## Follow up Audits

SWM did not perform any follow up audits.

## Retailer – Zone 7

We only performed one irrigation audit for Zone 7. A total of 1 audit was performed for Zone 7 CII customers. The site we did the audit for was Shadow Cliff Park.

The irrigation system for Shadow Cliff was in poor shape overall. As a result, our recommendation was to replace the irrigation system as it is difficult to control, and has many coverage issues. Pressure issues were evident throughout the site, and coverage problems stood out as a result.

### Pictures of typical issues found on Zone 7 sites



Overspray



Sprinkler pattern issues

### Estimated cost savings for all sites audited for Zone 7

#### Parks

Surprisingly, Shadow Cliff was just under their water budget, despite the aged irrigation system. If they were to replace the system as recommended, they could likely use even less water than they currently are.

#### Other potential savings

Along with significant water savings comes energy savings. Based on typical rates for electricity in the area, we estimate an additional \$2,000-5,000 annually could be saved in electrical costs from having to pump less water throughout their territory.

#### Follow up Audits

SWM did not perform any follow up audits.

## **Summary of Landscape Irrigation Seminar Presentation**

SWM participated in a Landscape seminar at the City of Livermore Public Library on March 27, 2010. The other two presenters spoke more on landscape plants to use as well as on a web site than could be used to pick out reduced water use plants. SWM spoke on irrigation efficiency and irrigation scheduling. Approximately 20-25 people attended the seminar and seemed to take away significant information from the event. Most of the attendees were homeowners. To my knowledge, a class survey was not conducted.

COP - Golf Courses avg 200,000 CCF budget and avg use 126,000 CCF

Schools avg 9,000 and use 7,000

Other avg 10,000 and use 14,000 and could save avg of \$9,000 (savings are units x tier rate)

Sites avg 5-10 broken sprinklers

Avg cost of improvements is \$20,000

DSRSD - Dublin Ranch GC under budget by 12,000 CCF

Schools avg 6,000 and use 9,000 and could save avg of \$8,000

Schools avg 5-10 leaky heads

Parks avg 5,500 and use 7,500 and could save avg of \$4,500

Parks avg 5 leaky or broken heads

Avg cost of improvements is \$7,000

COL - Leo Croce school 2,500 over budget and could save \$9,000

Others avg 3,200 and use 9,700 with whopping \$24,000 avg savings

Sites avg less than 5 broken heads, all have bad overspray.

Avg cost of improvements is \$14,000, not including Spring Valley (\$46,000 new system recommended.)

Z7 -

Rate chart for reference:

Usage Tier	Per Unit* Charge
<b>DSRSD</b>	
Up to 30 units	\$2.45
Over 31 units	\$2.60
<b>Cal Water</b>	
First 9 units	\$2.60
Next 15 units	\$2.76
Over 24 units	\$3.32
<b>Livermore</b>	
0-5 units	\$1.96
5-35 units	\$2.35
Over 35 units	\$3.64
<b>Pleasanton</b>	
Up to 30 units	\$1.55
31-75 units	\$2.05
Over 75 units	\$2.25

Most used recommendations **(all retailers)**:

Change to drip and low water use plants, use cycles and soaks, water 2-3 times per week, Install higher pop sprinkler, install low precip sprinkler, repair broken head, level head, trim plants, install check valves, install ET controllers.

# CITY OF LIVERMORE WATER RESOURCES DIVISION

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...Curious where everything goes  
when you flush the toilet?

...Want to know why all those  
marine murals are on the wastewater  
treatment plant in Livermore?

...Interested in learning about water  
pollution, conservation, and the local  
impact on the San Francisco Bay?

Take advantage of our free educational  
programs for grades K-12 and ask about:

- Classroom presentations
  - Plant Tours
  - Water Awareness Poster Contest
- 



Example poster entries  
from previous contests

City of Livermore  
Water Resources Division  
101 W. Jack London Boulevard  
Livermore, CA 94551

**FREE  
Storm Water  
& Wastewater  
Educational  
Programs!**

## City of Livermore WATER RESOURCES DIVISION

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### Free Educational Programs Wastewater & Storm Water

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Classroom Presentations  
& Wastewater Plant Tours

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## Storm Water and Wastewater Educational Programs

### PROGRAM INFORMATION

The Water Resources Division offers free classroom presentations and wastewater treatment plant tours for grades K-12.

—Scheduling is flexible.

—Groups of up to 35 students can be accommodated per presentation or tour.

—A modified version of the tour is available for handicap accessibility.

—Tours may be scheduled:

Monday — Friday  
9:00 a.m. — 4:00 p.m.

For questions or to sign up for a classroom presentation or tour, please call or email:

Phone: (925) 960-8100  
Email: wrd\_info@ci.livermore.ca.us



### PRESENTATION TOPICS

Students will learn about:

#### STORM WATER

- How individuals affect the health of the San Francisco Bay and waterways
- The importance of water conservation
- The watershed and water cycle
- Sources of pollutants and prevention
- The difference between storm drains and sewers

#### WASTEWATER

- Wastewater pollutants and treatment
- Which pollutants cannot be removed by wastewater treatment
- How pollutants affect the Bay
- A special kind of recycling — “recycled” water and its uses

#### POLLUTION PREVENTION

- How some ordinary household products are hazardous to the environment
- How to properly dispose of harmful household products
- Non-hazardous alternatives for some of these products

#### INFORMATIONAL MATERIALS

Watershed, storm water, wastewater, and pollution prevention materials will be provided to assist students in spreading the word about pollution prevention and ways they can help to protect the environment.

**TREATMENT PLANT TOUR:** During the two hour tour of the Water Reclamation Plant, students will see the primary, secondary and tertiary wastewater treatment processes, ultraviolet (UV) disinfection system, solids handling area, control room and analytical laboratory. Questions are welcome and handouts will be provided!

