Kennedy Jenks

275 Battery Street, Suite 550
San Francisco, California 94111
415-243-2150

2020 Water Shortage Contingency Plan

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Prepared for

Livermore Municipal Water
101 W. Jack London Blvd.
Livermore, CA 94551

K/J Project No. 2068015.00

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Chapter 1: Introduction

This plan documents the City of Livermore's Water Shortage Contingency Plan (WSCP) per requirements of the Urban Water Management Act, Section 10632 of the California Water Code. Livermore Municipal Water (LMW) purchases all treated potable water from Zone 7 Water Agency.

The purpose of this WSCP is to provide guidance if triggering events occur — whether from reduced supply, increased demand, or an emergency declaration — and identify corresponding actions to be taken during the various shortage levels or stages of a water shortage. The plan includes a description of shortage levels or stages which are intended to be fair to all water customers and users while having the least impact on business, employment, and quality of life for residents.

Chapter 2: Water Supply Reliability Analysis

2.1 Overview

Water Code Section 10632(a) requires that every urban water supplier prepare and adopt a Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan (UWMP). While the WSCP is a stand-alone document it is updated and adopted in concert with the UWMP. Contents of the WSCP are informed by the analysis of water supply reliability conducted pursuant to Water Code Section 10635 (contained in the UWMP). The reliability analysis of the UWMP considered “normal”, “single-dry”, and “5-year drought”. The analysis in the UWMP documents reflects that LMW has sufficient supply to meet normal and dry-year demands. An area of overlap between the UWMP and WSCP is a new requirement to prepare a Drought Risk Assessment (DRA) (Section 7.8 of the 2020 UWMP) to account for the significant duration of recent California droughts and the predictions about hydrological variability attributable to climate change. The DRA is detailed in Section 2.5.

2.2 Water Supplies

As noted earlier, LMW purchases all its potable water supplies from the Zone 7 Water Agency and has no other source of supply. Thus, the water supply assessment and reliability analysis focuses on historical supply from Zone 7 and demands from LMW. While LMW 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. Traditionally, Zone 7 has been able to supply all the water demands from Livermore even during historical drought conditions. Table 2-1 below provides the Zone 7 supply projections over the planning horizon of this document.

Table 2-1 Zone 7 Normal Year Supply Projections (Volumes are in AF)

	2025	2030	2035	2040	2045
SWP Table A	47,000	46,000	45,000	43,500	43,500
SWP Carryover	10,000	10,000	10,000	10,000	10,000
Arroyo Valle	5,500	5,500	5,500	5,500	5,500
Main Basin	9,200	9,200	9,200	9,200	9,200
SWP/Other Transfer	5,000	5,000	-	-	-
BARDP or Potable Reuse	-	5,000	5,000	5,000	5,000
Sites Reservoir Project	-	10,000	10,000	10,000	10,000
Total	**76,700**	**90,700**	**84,700**	**83,200**	**83,200**

Notes:

The values contained in this table/figure are planning level estimates and there is an uncertainty associated with each of these values

Zone 7 projects that the water agency will have surplus treated water during normal, 1-year drought, and 5-year drought water conditions. See the Zone 7 UWMP located at (insert web link) for more information.

2.3 Supply Reliability

Zone 7 has provided water system reliability data and supply projections for Water Years 2010 through 2045. Zone 7, through the application of water use efficiency (WUE), supply exchanges, and alternate water sources projects a reduction in reliance on water from the Delta Watershed. The averaged projected reduction in watershed reliance in Years 2020 through 2045 is approximately 23%, see Table 2-2 below. This projected reliability reduction does not include the projected reduction in use from water use efficiency over that time period. Additions to supply include exchanges with local contributors, local supplies via Arroyo Del Valle and groundwater wells, and groundwater banking programs.

Table 2-2 Zone 7 Reliability on the Delta Watershed

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies from the Delta Watershed	85%	59%	48%	73%	70%	61%	58%	58%
Change in Percent of Water Supplies from the Delta Watershed		-26%	-37%	-12%	-15%	-24%	-27%	-27%

Notes:

The values contained in this table/figure are planning level estimates and there is an uncertainty associated with each of these values."

In addition to diversifying water supply, Zone 7 has estimated reductions in water use due to water use efficiency measures. Projected water use efficiency figures (Water Years 2020 through 2045) showed an approximate reduction of 22% in water use when implemented. These reduction percentages can be met through implementation of WSCP shortage actions discussed further in Section 5 below. See Table 2-3 for projected water use reductions assumed by Zone 7.

Table 2-3 Zone 7 Water Use Efficiency Projections

Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	66,200	47,900	57,000	70,300	71,700	73,000	74,500	74,500
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline		25,634	17,254	15,137	19,279	21,209	22,031	22,031
Service Area Water Demands without Water Use Efficiency Accounted For	66,200	73,534	74,254	85,437	90,979	94,209	96,531	96,531
Percent reduction in demand from Water Use Efficiency		**35%**	**23%**	**18%**	**21%**	**23%**	**23%**	**23%**

Note: Data per Zone 7 updated Delta Reliance Tables provided 2/22/2021
The values contained in this table/figure are planning level estimates and there is an uncertainty associated with each of these values.

In addition to Zone 7's expected reduced reliance on the Delta, Livermore has also utilized water use efficiency measures and recycled water to limit its reliance on Delta water supplies. Appendix B of the 2020 UWMP includes DWR Tables C-1 through C-4 outlining the reduction in reliance on the Delta. Projected water use efficiency and recycled water use equates to an expected 40% reduction in Delta reliance by the year 2045.

2.4 Demand Projections

LMW Operations staff work closely with Zone 7 each year to provide up to date treated water request estimates for the next 5 years. These estimates are based on historical water use, per capita water use trends, and expected changes in land use areas and development within the service area. Water Year 2020 saw a large increase in per capita water use in comparison to previous years which can likely be attributed to increased residential water use due to the Covid-19 pandemic. Water use projections developed for Water Years 2021 through 2025 show a decrease in per capita use closer to the baseline values seen in 2017-2019 and then a linear increase to align with Zone 7 demand projections in 2025. The treated water request estimates prepared by LMW Operations may differ slightly from UWMP long-range demand projections because they are based on the historic actual water demand from the prior year. See Section 4 of the Livermore 2020 UWMP for more detailed information concerning projected demands.

2.5 Drought Risk Assessment

The DRA requires suppliers to assess water supply reliability over a 5-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five (5) consecutive dry years.

The gross water use values for 2021 -2025 presented in Table 2-4 are estimates based on Zone 7's projected water use for its entire service area. The percentage of LMW's demand during normal year conditions was utilized to project water uses from Zone 7's 2020 UWMP Table 7-5 values for the LMW service area. As noted earlier, the gross water use values may slightly differ from UWMP long-range demand projection because of a difference in methods. LMW treated water request estimates often fall below Zone 7 demand projections for the service area allowing for some conservatism in planning values for Zone 7 supplies. LMW's total water supplies were projected based on the total available supply to the entirety of Zone 7's service area adjusted for percentage of water demand from LMW.

Error! Reference source not found. provides a summary of the expected supply and demand scenarios for a 5-year drought condition from 2021-2025. It is expected that Zone 7 will be able to meet all treated water requests during this scenario. Therefore, no Water Shortage Contingency Plan actions are anticipated to be implemented. However, in the case of a shortfall in supply, the use reduction and supply augmentation measures described in Section 5 of this WSCP are available for implementation.

Table 2-4 Five-Year Drought Risk Assessment (DWR Table 7-5)

2021 (Volumes are in Million-Gallon)	Total
Gross Water Use	2,135
Total Supplies	2,135
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0
2022	**Total**
Gross Water Use [Use Worksheet]	1,994
Total Supplies [Supply Worksheet]	1,994
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0
2023	**Total**
Gross Water Use [Use Worksheet]	2,007
Total Supplies [Supply Worksheet]	2,007
Surplus/Shortfall w/o WSCP Action	0

Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0
2024	**Total**
Gross Water Use [Use Worksheet]	2,020
Total Supplies [Supply Worksheet]	2,020
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0
2025	**Total**
Gross Water Use [Use Worksheet]	2,040
Total Supplies [Supply Worksheet]	2,040
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0

Notes:

The values contained in this table/figure are planning level estimates and there is an uncertainty associated with each of these values.

Chapter 3: Annual Water Supply and Demand Assessment Procedures

California Water Code Division 1, Section 350, states:

> "The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection."

These Annual Assessment procedures described herein are one tool to be used to determine if a water shortage is to be declared.

New provisions in Water Code Section 10632.1. require that an urban water supplier such as LMW, conduct an annual water supply and demand assessment ("Annual Assessment"), on or before July 1 of each year, to be submitted to DWR. An urban water supplier that relies on imported water from the State Water Project (SWP) or the Bureau of Reclamation shall submit its Annual Assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later. The requirement to perform the Annual Assessment begins in July 2022.

3.1 Timeline and Methodology for Conducting the Annual Assessment

As described in Section 2.4, LMW Operations staff develops a 5-year treated water request schedule using the current year's water consumption as a baseline. LMW Operations staff estimates a monthly water usage for the next 5 years based on current usage trends and expected new water connections from development within the service area. Projected conservation values are calculated at 10% of average use values for reporting purposes to Zone 7. LMW treated water requests are also compared to Zone 7's projections to ensure values are similar amongst the agencies. LMW Operations staff presents the 5-year treated water request to Zone 7 in the July timeframe each year (see Table 3-1 below for an approximate timeline). In about January, Zone 7 provides a preliminary treated water request approval by analyzing the initial SWP allocation and determines if this allocation can accommodate the needs of its retailers.

If it is determined that Zone 7 cannot provide the requested volume of water for LMW, LMW will determine the percentage difference in demand versus supply and will enact a shortage level described in Chapter 4. This can be in conjunction with any demand reductions required by the State of California and/or Zone 7.

In April of each year Zone 7 finalizes the available water supply to each of its users for the coming year based on SWP allocations and other factors. This final determination informs LMW if it is in a shortage scenario and the results will be reported by LMW to the DWR by July 1st of each year.

Table 3-1 provides targets for performing the Annual Assessment. By starting to plan in June of the previous year, Livermore Municipal Water will get a snapshot of conditions and can start lining up the resources to mitigate supply and start outreach to customers to manage demand. Major actions are proposed in January, when an initial shortage level is triggered. A final annual assessment is proposed in the May-June current year timeframe.

Table 3-1 Calendar and Methodology for Performing Annual Assessment

Target Date	Action
June	Zone 7 requests 5-year water demand projection
July	LMW Distribution Operations Manager submits demands and conservation demands
January	Zone 7 responds to demand projections with available supply and preliminary approval letter LMW determines if supply is less than demand triggering a shortage event (Shortage Level 1-6)
February	LMW issues a shortage stage resolution triggering shortage response actions if necessary
April	Zone 7 issues final supply report
February -July	Continue public outreach, if necessary
	Monitor customer response to water shortage messaging and other response actions, if necessary Report final annual assessment to DWR

A sample template for synthesizing the information is provided in Appendix A.

3.2 Current Predicted Shortages Based on Annual Water Supply and Demand Assessment

While the first Annual Assessment is not required to be submitted to DWR until July 1, 2022, Suppliers are encouraged to use the procedures documented in its WSCP to prepare and include the outcome of an Annual Assessment for 2021, and to present the results in their UWMP as an example.

Further, although the Annual Assessment must be submitted to DWR on or before July 1 of every year, an early Annual Assessment allows Suppliers and customers to identify uncertainties and prepare financially and logistically for any anticipated water supply constraints in the coming months. Therefore, Suppliers are encouraged to develop procedures, including decision-making processes, that facilitate early analysis and adoption.

LWM does not predict a water supply shortage for the current water year (2021). Anticipated demands are within the planning values presented by Zone 7. Zone 7 has traditionally been able to meet all anticipated demands even during dry conditions. No shortage levels or response actions directly associated with specific shortage levels are anticipated for the current water year.

Chapter 4: Six Standard Water Shortage Stages

4.1 Water Shortage Event

A water shortage event can be anything from a single occurrence as short as twenty-four hours to a multi-year weather condition. If water shortage event triggers identified in Table 5-1 are met the City will consider enacting voluntary and/or mandatory restrictions and other drought response actions as listed in Table 5-2 targeted primarily at reducing outdoor watering activities. Any such restrictions would be enacted with an adopted resolution passed by the Livermore City Council.

Other events, besides drought, that could trigger a water shortage event include an earthquake, water system failures, fire, contamination, regional power outage, state restrictions or other causes.

4.2 Definition of Drought

The following definition was written by the California Department of Water Resources:

> *Defining when drought occurs is a function of drought impacts to water users. Drought can best be thought of as a condition of water shortage for a particular user in a particular location. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users in a different part of California or for users with a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.*
>
> *Drought is a gradual phenomenon. Although persistent drought may be characterized as an emergency, it differs from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, over a period of time. There is no universal definition of when a drought begins or ends. Impacts of drought are typically felt first by those most reliant on annual rainfall – ranchers engaged in dryland grazing, rural residents relying on wells in low-yield rock formations, or small water systems lacking a reliable water source. Criteria used to identify statewide drought conditions do not address these localized impacts. Drought impacts increase with the length of a drought, as carry-over supplies in reservoirs are depleted and water levels in groundwater basins decline.*
>
> *Source: http://www.water.ca.gov/waterconditions/background.cfm*

4.3 Natural Disaster or Failure of Water System Facilities

In the event of a natural disaster such as an earthquake, fire, toxic spill or flood, or should a catastrophic failure occur at any of Livermore System's facilities, the City can enact restrictions as described in Table 5-2 of this WSCP. Such restrictions would be based on the varying circumstances as determined necessary and appropriate by the City Council to respond to the

emergency conditions, or by the City Manager in the event the City Council cannot act in a timely manner.

4.4 Existing Water Shortage Levels

The below definitions represent the shortage stages originally described in the 2015 Urban Water Management Plan that are consistent with the current Livermore Municipal Code. A cross-reference between the existing four Livermore shortage stage definitions to the new six shortage levels required by DWR is provided in the crosswalk table in Figure 4-1 in Section 4.5.

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.

Livermore 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%

Livermore 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%

Livermore 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**: up to 35%

Livermore 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 %

4.5 Proposed Water Shortage Levels

The shortage levels are shown in the crosswalk below describing the cross-reference from LMW's four stages of shortage to the six stages of shortage as required in the DWR's 2020 guidance documents.

Livermore Water Shortage Stages				
2015 UWMP Stage	Demand Reduction Target	Crosswalk	State 2020 WSCP Standard Stage	Shortage Level
1	Up to 20% Voluntary Minimal Shortage		1	≤ 10%
2	Up to 20% Mandatory Moderate Shortage		2	10% - 20%
3	Up to 35% Mandatory Severe Shortage		3	20% - 30%
4	≥ 35% (Mandatory) Critical Shortage		4	30% - 40%
			5	40 - 50%
			6	≥ 50%

Figure 4-1 Shortage Stage Crosswalk

The shortage stages for the 2020 WSCP are shown in DWR Table 8-1 below. The mapped stage language from the 2015 WSCP with the proposed stages is reflected in **Table 5-1**. These mapped stages will help transition LMW's shortage actions in DWR Tables 8-2 and 8-3 to the proposed 2020 stages.

Table 4-1 Water Shortage Reductions DWR Table 8-1

New Shortage Level	Percent Shortage Range[1] *Numerical value as a percent*	Existing Shortage Response Actions (*Narrative description*)
Add additional rows as needed		
1	Up to 10%	Stage 1: Voluntary Minimal Reductions up to 20%
2	Up to 20%	Stage 2: Mandatory Moderate Reductions up to 20%
3	Up to 30%	Stage 3: Severe Reductions up to 35%
4	Up to 40%	Stage 3: Severe Reductions up to 35%/ Stage 4: Critical Reductions more than 35%
5	Up to 50%	Stage 4: Critical Reductions more than 35%
6	>50%	Stage 4: Critical Reductions more than 35%

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

4.6 Actions to Prepare for Catastrophic Interruption

4.6.1 Emergency Response Plan

This section describes actions taken by the City 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 City has developed a comprehensive Emergency Response Plan (ERP) that addresses a variety of potential emergency situations directly affecting the City's 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 City 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 City's 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 LMW emergency planning and response activities". Therefore, excerpts from the LMW Emergency Response Plan are not included with this UWMP.

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

Regional Power Outage – Four of the City's 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.

Water Supply Outage – After notification by Zone 7 of a regional water supply outage, City 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 City 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, City staff would implement similar procedures described above for power outages. For prolonged, regional outages, City 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 firefighting, 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.

Seismic – As part of LMW's Water Distribution System Risk and Resilience Assessment (RRA), The City of Livermore evaluated seismic risk to water facilities and identified mitigation measures to lessen the risk. This plan meets the requirements of the federal Disaster Mitigation Act of 2000 as well as the requirements of Water Code Section 10644. A copy of the 2020 LWD Water Distribution System RRA will be submitted to DWR with the adopted Water Shortage Contingency Plan (WSCP).

From the LMW 2020 Water Distribution System RRA, Livermore is between the Calaveras and Greenville faults. Per the United States Geologic Survey's (USGS's) 2007 projections, Livermore has approximately 10-20 percent chance of sustaining a rupture with a magnitude of M≥6.7 over 30 years. From another figure in the same report, that corresponds to a 0.1-1% [0.44% for Calaveras Fault] 5-year probability of the event. The Livermore area has a chance of an earthquake with M≥6.7 of approximately 7.4% over 30 years, or an annual likelihood per year of 0.0025.

In order to minimize the impact of peak ground acceleration (PGA) of 0.4-1.1g during a seismic event, the LMW has a countermeasure to replace larger rigid pipes (>= 12 inches in diameter) with flexible pipes. The pipe replacement will be carried out through the City's long-term water system renewal and replacement program. Replacing aging rigid pipes (e.g. cast-iron pipes and asbestos-cement pipes) will bring the following benefits:

- Decreases the susceptibility of the system to breaks and leaks with ground movement: Increases robustness of the system.
- Reduces susceptibility to other threats like corrosion: Increases flexibility of system to a range of threats.
- When flexible pipelines are in place, the trunk system will ensure the system is brought back online as quickly as possible: Increases the responsiveness to this threat.
- Once service is restored, flexible pipes are less likely to fail from longer-term stress brought about by minor ground movement: Recovery is enhanced.

All LMW's pump stations that are in use have at least been retrofitted since 1997, bringing them up to current codes and construction for resilience around the Bay Area faults. If the PGA of the pumping equipment exceeds that of the structure, the disabled structure could continue to function, though the structure would require replacement.

All water tanks owned by LMW are made of steel which is a flexible material compared to concreate. Three out of four water tanks were constructed after 2002, showing compliance with current seismic code. The risk calculation shows that the events that would be sufficient to rupture the tanks were large and had a low chance of occurrence. The tanks are positioned so that even a severe rupture would destroy the tank but would be very unlikely to endanger life. The Doolan Tank is about 1,800 feet from a nearby commercial/industrial area. There is adequate landscape to significantly dampen the impact of flows from the tank. One tank at the Altamont tank site was constructed in 1985. The LMW will review the initial design of the Altamont tank for seismic code compliance and conduct retrofit if necessary.

Chapter 5: Water Shortage Response Actions (by Shortage Stage)

The LMW has adapted the four-stage plan, as outlined in Chapter 13.26 Water Conservation and Chapter 13.27 Mandatory Drought Conservation Measures of Division 1 (Water) of Title 13 (Public Services) of the Livermore Municipal Code. During the 2020 WSCP, the LMW has developed a six-stage (or shortage level) contingency plan to reduce demand up to more than 50 percent during a severe or extended water shortage event. Livermore has both voluntary and mandatory stages. References to stages from this point forward are to the six shortage levels required by DWR, unless specifically identified.

Table 5-1 Water Shortage Stages and Triggers/Demand Reduction Goals

Stage	Trigger	New Demand Reduction Goal	Existing Demand Reduction Goal
Minimal			
Stage 1	Annual Supply Projection is 10% below Demand Projection	10% Voluntary	Livermore Stage 1: Up to 20% Voluntary[1]
Moderate			
Stage 2	Annual Supply Projection is between 10% and 19% below Demand Projection	Up to 20% Voluntary or Mandatory	Livermore Stage 1: Up to 20% Voluntary or Livermore Stage 2 up to 20% Mandatory[1]
Severe			
Stage 3	Annual Supply Projection is between 20% and 29% below Demand Projection	30% Mandatory	Livermore Stage 3: up to 35% Mandatory Livermore Stage 4: >=35% Mandatory[1]
Stage 4	Annual Supply Projection is between 30% and 39% below Demand Projection	40% Mandatory	
Critical			
Stage 5	Annual Supply Projection is between 40% and 49% below Demand Projection	50% Mandatory	Livermore Stage 4: >=35 Mandatory[1]
Stage 6	Annual Supply Projection is below 50% of Demand Projection	> 50% Mandatory	

[1] % Reduction from 2015 Livermore UWMP

5.1 Shortage Response Actions

The water shortage conditions in Table 5-1 are based on the Annual Assessment. Other circumstances may also be considered, including but not limited to the time of year, weather forecasts, river flow forecast, rainfall, temperature, past experience and economic feasibility, the volume of water available from Zone 7, and quality of the water produced from each source.

While each shortage level triggers specific shortage response actions, LMW continues to implement water savings strategies year-round to achieve a baseline demand reduction to assist with desired demand reduction for Zone 7 water agencies. These actions include but are not limited to:

- Monthly meter readings – LMW staff identify higher than average water usage and provide information and outreach to customers for reducing their water bills
- Baseline public outreach – LMW provides bill stuffers, social media, and web site information pertaining to local drought conditions and local water use restrictions

5.2 Demand Reduction Actions

When a shortage level is triggered based on the Annual Assessment, shortage response actions are also triggered with the associated shortage level. Table 5-2 describes the response actions and the estimated reduction in demand associated with each action. During the recent 2014-2017 drought, public information messaging which was occurring regionally and statewide was sufficient to achieve the savings mandated by the Governor's Executive Order.

Table 5-2 Demand Reduction Actions DWR Table 8-2

Shortage Level	Demand Reduction Actions.	How much is this going to reduce the shortage gap? *Include volume units used.*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement?
Add additional rows as needed				
1	Landscape - Limit landscape irrigation to specific times	2%	6 PM to 9 AM	No
1	Other - Require automatic shut off hoses	<1%		No
1[a]	Expand Public Information Campaign	32%		No
1[b]	Improve Customer Billing	2%	Enhanced data review and alert	No
1	Implement or Modify Drought Rate Structure or Surcharge	10%	Livermore Stage 1/1 Rates[d]	No
2[c]	Landscape - Limit landscape irrigation to specific days	10%	Nonconsecutive days	No

2	Implement or Modify Drought Rate Structure or Surcharge	10%	Livermore Stage 2/2 Rates[d]	No
3	Pools and Spas - Require covers for pools and spas	<1%		No
3	Other - Prohibit use of potable water for construction and dust control	<1%		No
3	Implement or Modify Drought Rate Structure or Surcharge	10%	Livermore Stage 3/3 Rates[d]	No
4	CII - Commercial kitchens required to use pre-rinse spray valves	<1%	Required to use low flow rinse nozzles	Yes
4[c]	Landscape - Limit landscape irrigation to specific days	10%	Hand water Saturday or Sunday only	Yes
4	Landscape - Restrict or prohibit runoff from landscape irrigation	<1%		Yes
4	Other - Prohibit use of potable water for washing hard surfaces	<1%	Prohibit street washing or flooding	Yes
4	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	2%	Only wash vehicles at recycled water wash facilities	Yes
4	Other water feature or swimming pool restriction	<1%	Must be leak proof	Yes
4	Implement or Modify Drought Rate Structure or Surcharge	15%	Livermore Stage 3/4 Rates[d]	Yes
5	Landscape - Prohibit certain types of landscape irrigation	2%	Prohibit turf or lawn irrigation	Yes
5	Water Features - Restrict water use for decorative water features, such as fountains	<1%	Prohibit potable water use	Yes
5	CII - Restaurants may only serve water upon request	<1%		Yes
5	Implement or Modify Drought Rate Structure or Surcharge	15%	Livermore Stage 4/5 Rates[d]	Yes

6	Implement or Modify Drought Rate Structure or Surcharge	15%	Livermore Stage 4/6 Rates[d]	Yes

NOTES: All response actions are cumulative i.e. action described in prior stages are also applicable in subsequent stages (e.g. actions described in Shortage Level 1 are also applicable in Shortage Levels 2-6). Drought rates are not additive.

[a]2014/2015 drought saw a 32% reduction in water use only from an expanded outreach campaign to customers

[b]Livermore's billing software allows them to increase the frequency of account usage reviews to weekly or daily if needed. Outreach is initiated when an account is flagged for high usage.

[c]A Statewide Analysis of Outdoor Water Savings Potential March 2018 Texas Living Waters Project

[d]The first water rates at different stages are for fiscal years through 2021-22. The second water rates are for fiscal years 2022-23 and onward.

Livermore's billing software currently analyzes customer water usage and bills customers on a monthly basis. This software has the ability to track water usage for customers on a weekly and daily basis if needed during drought conditions. LMW can use this tool to increase frequency of account water usage reviews and to initiate outreach to customers when a higher than normal usage is determined. Billing customers will remain on a monthly basis but this intermediate means of communication will help curtail water waste in between billing periods.

5.2.1 Customer Demand Reduction

Most of the shortage response actions taken by LMW in the near future will be focused on reducing demand as LMW cannot easily develop supplemental water supply. Each Stage of water shortage has accompanying water reduction measures.

The City will use a variety of methods to achieve up to more than 50% reduction in water demands in the event of serious supply shortages. One of the most important and earliest strategies will be an expanded public education and outreach campaign during the initial stages of any water shortage.

In addition, the City has conservation rates that correspond to each of the four Livermore Stages identified in the WSCP. The use of Conservation Rates recovers necessary revenue based on the reduced volume of water during water shortages and has the added benefit of 5% to 10% reduced consumption of water as Conservation Rates increase. For residential users, implementation of Shortage Stage Conservation Rates increases across all rate tiers to send an economic message to conserve water. Livermore Stage 4 Conservation Rates encourage water users to minimize water use by increasing the water rates for an average of 1.9 times of Normal Supply rates.

Each stage shall remain in effect until conditions indicate a more or less restrictive stage is necessary and action is taken by the City Council based on supply criteria in Table 5-1. The City Council may enact any stage and need not proceed in order through the stages.

1. Enacting water use restrictions:
   Shortage Levels 1-6 of the WSCP shall be enacted by the Livermore City Council declaring an emergency water restriction. Water supply conditions and goals for each restriction stage are outlined in Table 5-1.

2. Modifying and ending water use restrictions:
   For each month that customer water use restrictions are in effect at Shortage Level 4, 5, or 6 under this WSCP, the City Manager shall report to the City Council on the status of the shortage and water use changes in the Livermore Water system, including a recommendation to maintain, change or end the water use restrictions. A water shortage event can be terminated by the City Council upon determination that "normal year" supplies have been secured by rainfall, basin replenishment, or a new supply. A water shortage event involving sudden, unforeseen emergencies can be terminated by the City Manager or their designee upon a determination that the emergency no longer exists. As soon as practicably possible or at the next scheduled Council meeting, the City Manager or their designee shall share this termination decision with the City Council.

3. Water Rate Structure:
   Water rates will return to the rate structure prior to the water shortage event upon the termination of the event.

5.3 Supply Augmentation Actions

LMW does not contract for additional water sources other than purchasing water directly from Zone 7. Supply augmentation actions in Table 5-3 below represent additional methods to achieve lower demand within the service area to reduce overall demand on Zone 7's water supplies.

Table 5-3 Supply Augmentation and Other Actions DWR Table 8-3

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap? *Volume type or percentage*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
1[a]	Expand Public Information Campaign	32%	Voluntary cutbacks requested
1[b]	Improve Customer Billing	2%	
1	Implement or Modify Drought Rate Structure	10%	Implement Livermore Stage 1/1[c] Conservation Rates
2	Implement or Modify Drought Rate Structure	10%	Implement Livermore Stage 2/2[c] Conservation Rates
3	Implement or Modify Drought Rate Structure	10%	Implement Livermore Stage 3/3[c] Conservation Rates
4	Implement or Modify Drought Rate Structure	15%	Implement Livermore Stage 4/4[c] Conservation Rates
5	Implement or Modify Drought Rate Structure	15%	Implement Livermore Stage 4/5[c] Conservation Rates

6	Implement or Modify Drought Rate Structure	15%	Implement Livermore Stage 4/6[c] Conservation Rates

NOTES: All response actions are cumulative (i.e. actions described in Shortage Level 1 are also applicable in Shortage Levels 2-6). Drought rates are not additive.

[a]2014/2015 drought saw a 32% reduction in water use only from an expanded outreach campaign to customers

[b]Livermore's billing software allows them to increase the frequency of account usage reviews to weekly or daily if needed. Outreach is initiated when an account is flagged for high usage.

[c]The first water rates at different stages are for fiscal years through 2021-22. The second water rates are for fiscal years 2022-23 and onward.

5.4 Operational Changes

LMW shall comply with the restrictions similar to those implemented for the public to the extent possible. The following actions can be used by LMW as additional measures to limit operational water use within the agency.

- Limit use of potable water to irrigate newly planted street, park and/or golf course trees, street medians, and general irrigation on all LMW properties. No new plantings shall be installed by the City during Livermore Stage 3 or higher Water Shortage Events, unless necessary for erosion control.
- In Livermore Stage 3 or higher, mandatory restrictions, ornamental fountains, and waterfalls shall not be replenished unless water recirculates.
- The use of potable water for municipal activities such as street cleaning and sewer main flushing will be suspended at the Livermore Stage 4 level. Recycled water will be used for these needs in Livermore Stage 4 water shortage events, with the exception of water used for sewer line flushing during emergency sanitary sewer blockages or overflows.

5.5 Additional Mandatory Prohibitions

The WSCP includes a variety of voluntary and mandatory management practices to conserve water. The majority of the mandatory conservation practices are triggered at the Livermore Stage 2 level; corresponding to an expected reduction of 20% below normal use as shown above in Table 5-1.

5.6 Effectiveness of Shortage Response Actions (by Water Shortage Stage)

5.6.1 Public Information

Without exception, experience has shown that a well-informed public is generally more willing to heed requests to voluntarily conserve or alter water use patterns and will be more likely to comply if mandatory water use restrictions become necessary. DWR (2008) estimates that public information campaigns have alone reduced demand in the range of 5 to 20 percent, depending on the time, money, and effort spent. Public information supports voluntary and mandatory measures by educating and convincing the public that a critical water shortage exists and provides information on how water is used and how they can help. The DWR Drought

Guidebook highlights that when the public perceives the drought to be severe, they changed behaviors (such as flushing the toilet less often).

The information provided to the public should include a description of the conditions that will trigger implementation of shortage stages as well as a description of what the plan entails (restrictions, enforcement provisions, etc.). It is also advisable to provide practical "consumer" information that will help water users comply with the plan. For example, information about restrictions on lawn watering might be accompanied with information about proper lawn watering practices.

During the 2014/2015 drought, Livermore Municipal Water customers reduced demand by about 32%, with reductions as high as 42% in many months. City customers achieved this level of reduction based on outreach efforts and warning notices alone, and staff was not forced to issue fines or penalties to achieve compliance.

5.6.2 Enforcement

A study examining the effectiveness of drought management programs in reducing residential water-use (Virginia Polytechnic Institute 2006) showed considerable variation in the effectiveness of drought management programs and highlighted the importance of public information and enforcement. Results, shown in Table 5-4, indicate that overall reductions in residential water-use ranged from 0-7 percent for voluntary restrictions and from 0-22 percent for mandatory restrictions. The observed differences were statistically attributed to information efforts for voluntary restrictions and both information and enforcement efforts for mandatory restrictions.

Table 5-4 Drought Program Management Variables Effect on Residential Water-Use

Classification	Estimated change in Water-Use	Statistically Different than no effect?
Voluntary Restrictions		
Little or no information disseminated	-2%	No
Moderate level of information	-2%	No
Aggressive information dissemination	-7%	Yes
Mandatory Restrictions		
Low information and low enforcement	-5%	No
Moderate information and low enforcement	-6%	Yes
Aggressive information and low enforcement	-12%	Yes
Low information and moderate enforcement	-4%	No
Moderate information and enforcement	-9%	Yes
Aggressive information and moderate enforcement	-15%	Yes
Moderate information and aggressive enforcement	-20%	Yes

Aggressive information and enforcement	-22%	Yes

Source: Virginia Polytechnic Institute 2006

The analysis highlights the key role that public outreach and information plays in the success of drought response actions. Voluntary restriction programs with little to moderate levels of information dissemination had no appreciable effect on water-use. Voluntary restriction programs with active promotional efforts, however, reduced water-use by an estimated 7 percent from what would have otherwise occurred without any restriction program. Thus for voluntary restrictions, only the most intense programs had even a moderate level of success in reducing water-use.

Mandatory restriction programs without a significant enforcement component broadly mirrored the outcomes achieved by the voluntary programs. Programs with mandatory restrictions that invested minimal effort in information dissemination did not appreciably reduce residential water-use. Programs with no active enforcement efforts but with moderate to high levels of informational dissemination achieved 6 and 12 percent reductions in water-use, respectively. These estimated reductions are similar to those achieved by voluntary programs with aggressive informational campaigns.

The experience LMW had implementing its WSCP and successfully reaching its reduction goals supports the importance of a strong public information program locally, regionally, and statewide. Delivering accurate and timely information to water users, news media and local governments with updates on conditions, restrictions, and helpful contact information is key.

5.6.3 Restrictions on Non-Essential Water Uses

LMW's Water Shortage Response Actions focuses on public outreach to curtail water waste and non-essential water use. Outdoor water use, including washing sidewalks and watering ornamental landscapes is targeted. These uses are typically considered to be discretionary or nonessential, are highly visible, and therefore relatively easy to monitor, and often are a substantial component of water demand, particularly during the summer months when drought conditions are likely most severe.

Given the significance and visibility of lawn watering as the predominant component of seasonal use, best management practices in WSCP typically prescribe time-of-use and other restrictions on lawn watering as described in Section 5.2. This often involves placing water users on a schedule which allows for staggered lawn watering days, as well as restrictions on the times during the day when lawns can be watered.

The American Waterworks Association estimates that voluntary outdoor water use limits can result in a water savings of up to 10 percent and mandatory outdoor water limits can achieve up to a 40 percent reduction in outdoor water use (AWWA 2008).

5.6.4 Drought Surcharge Rates

LMW does not issue drought surcharges, although a conservation rate structure is available as a tool. Zone 7 maintains a drought contingency fund, which is a rate stabilization fund that can

be utilized during declared drought events to minimize impacts on water rates as a result of drought conditions. If Zone 7 implements an additional drought surcharge the City would also pass this cost on to ratepayers.

Chapter 6: Communication Protocols

Table 6-1 below briefly describes communication protocols and outreach programs already in practice by Zone 7 and Livermore Municipal Water in coordination with Tri-Valley water retailers. These programs along with public information campaigns such as shared website, development and distribution of social media, radio advertisements, and newspaper outreach materials, and providing recycled water to residentis for watering landscape have successfully reduced water consumption during past drought events.

Table 6-1 Communication Protocols

Program/Outreach	Description	Details	Date
Public Information Outreach	Livermore provides general outreach on water conservation	Examples include booths at local events, local festivals, WRP tours, paid advertising, brochures, websites, notices, etc.	2014
Tri-Valley Water Conservation Group	Monthly meetings to coordinate regional outreach efforts	Includes periodic advertising, water conservation info, media campaigns, website resources, PSAs, etc.	1980's
High Efficiency Washing Machine Rebate Program	Rebate program for installation of high-efficiency washing machines	Targeted for single-family residences	2008
Utility Billing Software	Billing software tracks volumetric usage by water meter type	Recently updated with a customer portal where customers can setup notification of high water consumption. Notifies utility billing staff for outreach purposes.	2010
Monthly Billings	Provides data on monthly water consumption compared to previous year	Billing stuffers are provided outlining water savings techniques	1991
Recycled Water Service Area	Requires recycled water for outdoor landscape irrigation	Recycled Water Master Plan Feasibility Study completed in 2013 to expand recycled water use	2003
Water-wise Gardening Program	Web based program helps visitors design a water efficient landscape	Assists users in designing landscapes, selecting water wise plants, and water saving tips	2005
School Education Program	Education program offered to schools in the City's municipal water service area	Educational materials and course outlines developed in accordance with California curriculum standards	2002
Water-Efficient Landscaping Lawn Conversion Rebate	Rebate for replacing lawns with drought-tolerant landscaping and capping sprinkler systems/ converting them to drip irrigation.	Rebate available to all customer types.	2016

Weather-Based Irrigation Controller Rebate	Rebate for replacing irrigation controller with a WaterSense weather-based irrigation controller.	Rebate available to all customer types.	2016
Water Supply Education Program	Website and presentations help residents understand their water supply	Assists participants with understanding where their water comes from and the challenges that put supply at risk	2015

Chapter 7: Penalties, Charges, Other Enforcement of Prohibitions

7.1 Excessive Use Penalties

If customer outreach and education are not sufficient, LMW can utilize 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.

LMW also has the authority to implement a penalty for excessive use by individual customers. LMW staff can 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 can be implemented at the Livermore Stage 4 level and above.

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. LMW staff will be able to issue administrative citations to customers violating mandatory prohibitions starting at the Livermore Stage 4 conservation level and above.

Chapter 8: Legal Authorities

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 LMW system;
- A proclamation from the City of Livermore of a local water supply emergency

The Livermore City Council may also enact Livermore Stage 1 or Stage 2 water restrictions and conservation rates as necessary to meet the local requirements or state requirements such as 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. The City of Livermore will inform the public of implementation of any water shortage stage and expected water shortages during drought conditions. Information will be disseminated via platforms discussed in Chapter 6: Communication Protocols as well as at City Council meetings when resolutions are adopted.

Actions required by each Stage of the WSCP are cumulative; therefore, if Stage 2 of the Plan is implemented, all 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

Chapter 9: Financial Consequences of Actions during Shortages

The stages of action to be undertaken by the urban water supplier in response to water supply shortage have impacts on the LMW'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 that monthly 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. To offset the impacts of water shortages, LMW has developed conservation rates that may 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, LMW can avoid the delays associated with Proposition 218 notification and ballot procedures prior to implementing conservation rates in response to a water shortage. These pre-approved rates were essential in maintaining revenues during the 2014/2015 drought and placed LMW in an excellent financial position compared to retailers without pre-approved rates in place. See Section 8 of Livermore's 2020 UWMP for more information concerning conservation water rates.

Conservation rates correspond to each Stage identified in the WSCP and are calculated to recover the necessary revenue based on the reduced volume of water expected to be sold and purchased in each Stage. Currently, Livermore maps the original four stage water rates to the update six shortage levels or stages as part of this WSCP utilizing the crosswalk described in an earlier section. LMW will prepare a cost-of-service study to evaluate these rates in preparation of future drought events and to align conservation rates with the six shortage stages.

9.1 Financial Consequences of Limiting Excessive Water Use

Per the California Water Code Section 365 et al., retail water suppliers are required to prohibit or discourage excessive water use as described in Section 7.1. Reporting this is not a required part of the UWMP; however, Water Code Section 10632(a)(8)(C) requires the financial consequences of these actions be reported as part of the UWMP.

Water Code Section 367 states that there are three types of drought emergencies:

- Declared statewide drought emergency
- When a supplier implements its mandatory reductions per their WSCP
- A declared local drought emergency

This topic is also addressed here in the WSCP because of the relationship between drought emergencies and implementation of the WSCP.

Water Code Section 366 states that a retail water supplier must prohibit excessive use through one of two strategies:

- Rate structure: A rate structure that includes block tiers, water budgets, or rate surcharges over and above base rates for excessive water use by a residential water customer.
- An excessive water use ordinance: An ordinance that includes a procedure to identify and address excessive water use by metered single-family residential customers and customers in multiunit housing complexes in which each unit is individually metered or submetered and may include a process to issue written warnings to a customer and perform a site audit of customer water usage prior to deeming the customer in violation.

In addition to penalties for excessive use described in Section 7.1, LMW also has the option to implement conservation rates that discourage excessive water use. Should a drought emergency occur, LMW would already have the necessary processes in place to discourage excessive use. As discouraging excessive use is already a part of LMW's actions and because of the conservation rates, the financial consequences of prohibiting excessive use would be minimal.

Additionally, LMW currently monitors customer water usage through its billing software. The billing software currently flags high water usage and contacts water users when usage is above average for a typical meter. This allows LMW to track water losses as well as inform customers when usage is encroaching on meeting a conservation rate threshold. LMW uses conservation rates as a method of water consumption reduction and as a method for financial recuperation from lost water sales during drought periods.

Chapter 10: Monitoring and Reporting

10.1 Metering

All water connections are fully metered. Water service in the City's municipal water service area is not allowed without a water meter. This requirement is further strengthened by water wholesaler rules that also do not allow service connections without a meter. All customer sectors are billed by volume of use at tiered rates. Original tiers had a declining cost structure with higher use. In 1991, the City implemented inverted tiered rates for all accounts as a means of encouraging water use efficiency. The inverted tiered rates can be found in Resolution 2017-098 in Appendix B.

Meter replacement and/or recalibration are evaluated regularly via billing software. Unusual consumption is flagged and checked for accuracy. Meters that are stuck or do not meet accuracy specifications are immediately replaced. Billing accounts with meter failures are assessed an estimated consumption rate that reflects their average usage during the period. Meters that are 3-inches and larger are proactively tested annually and recalibrated, repaired or replaced as needed. Additionally, meters are replaced within the system based on their service length with the oldest meters receiving replacement priority as funding allows.

10.2 Monitoring

In normal water supply conditions, purchase and sales data is checked monthly by water staff. 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.

Shortage Level 1, Shortage Level 2, and Shortage Level 3 Water Shortage:

During Shortage Levels 1-3 water shortage, weekly turnout readings are reported to the Water Distribution Operations Manager. The Operations Manager 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 Operations Manager will propose additional activities or conservation measures and advise the Water Resources Division Manager. The Division Manager will notify the Public Works Director that additional corrective actions or use-reduction measures will be implemented.

Shortage Level 4, Shortage Level 5, and Shortage Level 6 Water Shortage:

During Shortage Levels 4-6 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 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 Distribution Operations Supervisor, Water Resources Division Manager or Public Works Director hourly, if needed.

Chapter 11: Refinement Procedures

Each year the WSCP will be revisited for completion of the Annual Assessment. This procedure will allow LMW to refine the treated water request estimation procedures to more closely align with the next year's projected water use. Coordination with Zone 7 will assist in providing a consistently updated document that closely monitors water supply availability.

Adoption of this document will also allow for the WSCP to be updated each year as the service area continues to change in terms of population, land use, climate factors, and other factors. During the final Annual Assessment report in June/July, any adjustments to the previous year's WSCP will be discussed and documented for future use within the WSCP.

Chapter 12: Special Water Feature Distinction

LMW defines special water features for the purposes of this plan. Features that are supplied by public water from LMW include but are not limited to pools, spas, water fountains, decorative features, and others. DWR defines special water features as those other than pools and spas that could use non-potable water such as recycled water. In LMW, natural water features that do not require public potable water for recreational use such as ponds, lakes, waterfalls, and others do not fall within the special water feature distinction and therefore are not subject to water shortage stage response actions. The intent of this definition is to provide guidance for shortage response actions directed at special water features and to not provide restrictions towards natural water features within the service area.

Chapter 13: Plan Adoption Resolution or Ordinance

Upon adoption of the WSCP, the document will be made available to all customers online via the official City of Livermore website. The resolution adopting the WSCP by the City of Livermore found in Appendix C shall serve as a record of the WSCP as a separate stand-alone document.

References

Livermore Municipal Code Division 1 (Water) of Title 13 (Public Services) Chapter 13.26 Water Conservation and Chapter 13.27 Mandatory Drought Conservation Measures

The Effectiveness of Drought Management Programs in Reducing Residential Water-Use in Virginia. Virginia Polytechnic Institute and State University. 2006.

Urban Water Management Plan. Zone 7 Water Agency. 2020.

Urban Water Management Plan. Livermore Municipal Water. 2015.

Water Conservation by the Yard: A Statewide Analysis of Outdoor Water Savings Potential. Texas Living Waters Project. March 2018.

Urban Water Management Plan. Zone 7 Water Agency. 2020.

Appendix A: Annual Assessment Template

Livermore Municipal Water
Annual Water Supply and Demand Assessment
2020 Water Year
NOTE: ADJUST DATES AS NEEDED

Section 1. Water Demand Assessment

As described in the Water Shortage Contingency Plan, Livermore Operations staff develops a 5-year treated water request schedule using the current year's water consumption as a baseline. Livermore Operations staff estimates a monthly water usage for the next 5 years based on current usage trends and expected new water connections from development within the service area. Projected conservation values are calculated at 10% of average use values for reporting purposes to Zone 7. LMW treated water requests are also compared to Zone 7's projections to ensure values are similar amongst the agencies. Livermore Operations staff presents the 5-year treated water request to Zone 7, and Zone 7 provides a preliminary treated water request response by analyzing the initial SWP allocation and determining if this allocation can accommodate the needs of its retailers.

CONTRACTOR: City of Livermore
DEMAND TYPE: Without Conservation
NOTES: Monthly Schedule Amounts will be rounded to the nearest 10 AF

CONTRACTOR	REQUEST YEAR	UNITS	YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	MAX DAY (MGD)
LIVERMORE	**ACTUAL**	**AF**	**2019**														
LIVERMORE	2019	AF	2020														
LIVERMORE	2019	AF	2021														
LIVERMORE	2019	AF	2022														
LIVERMORE	2019	AF	2023														
LIVERMORE	2019	AF	2024														
LIVERMORE	2020	AF	2021														
LIVERMORE	2020	AF	2022														
LIVERMORE	2020	AF	2023														
LIVERMORE	2020	AF	2024														
LIVERMORE	2020	AF	2025														

SUBMITTED BY:_____
TITLE:_____
DATE:_____

Section 2. Water Supply Assessment

Livermore Municipal Water relies 100 percent on Zone 7 water supplies. Thus, the water supply assessment will focus on supply from Zone 7 for the current year and projected supply for the next five (5) years.

NOTE: REPLACE WITH LETTER RECEIVED FROM ZONE 7

Water Distribution Operations Manager
City of Livermore
101 W. Jack London Blvd.
Livermore, CA 94550

[Submitted Electronically]

RE: Preliminary Approval of <*2021*> Treated Water Request

Dear Mr/Ms. XXXX:

Thank you for submitting a Preliminary Delivery Schedule for years <*2021-2025*>. Zone 7 hereby acknowledges your request for <*Treated Water Request*> acre-feet of treated water in calendar year <*2021*>. As of <*December 1, 2020*>, the initial State Water Project (SWP) Allocation is 10%. However, there are several months left of the rain season and this amount may change. In the event that the <*2021*> SWP allocation remains unchanged, a 10% voluntary conservation based on your delivery request is recommended at this time.

With regard to deliveries, Zone 7 is prepared to meet all your projected <*2021*> demands under current conditions. Enclosed you will find tables showing <*2019 – 2020*> actual deliveries and 2021 projections. Please review these and let me know if you have any comments.

We will keep you apprised of our water supply outlook as the season unfolds. As before, we plan to finalize the Annual Zone 7 Sustainability Report in April when the water supply conditions are more certain. Thank you for your attention to this matter. If you have any questions, please contact me at (925) 454-5068 or via email at ssegura@zone7water.com.

Sincerely,

Sal Segura
Associate Civil Engineer

Section 3. Water Supply Reliability Assessment

Livermore Municipal Water anticipates <*Shortage Level xx/no shortage*> restrictions within its service area **are/are not** necessary at this time per analysis in Table 3-1.

Table 3-1: Supply and Demand Comparison

	Unit	Demand	Supply	Supply/Deficit
2020	**AF**			
2021	**AF**			
2022	**AF**			
2023	**AF**			
2024	**AF**			
2025	**AF**			

Section 4. Triggered Actions

<*Shortage Level xx*> triggered the following actions according to Livermore's 2020 Water Shortage Contingency Plan (WSCP):

- <*Stage x*> *of Demand Reduction Actions*
- <*Stage x*> *of Consumption Reduction Method*
- <*Stage x*> *of Penalties, Charges, other Enforcement of Prohibitions*
- *Others (e.g. Operational Changes, Supply Augmentation Actions)*

OR

<*No actions are triggered since there is no anticipated water supply deficit.*>

Section 5. Communication Actions

Livermore will follow the communication protocols to give the notice of the assessment results to its customers and within its service area.

OR

No actions are triggered since there is no anticipated water supply deficit.

CERTIFICATION

The Annual Water Supply and Demand Assessment for <*20xx*> was prepared and certified by:

Signature: _____

Printed Name: _____

Title: Water Resources Division Manager

Date: _____

Signature: _____

Printed Name: _____

Title: City Manager

Date: _____

Appendix B: Rate Ordinance

IN THE CITY COUNCIL OF THE CITY OF LIVERMORE, CALIFORNIA

A RESOLUTION AMENDING WATER RATES AND CHARGES FOR FISCAL YEARS 2017-18 THROUGH 2021-22

The City of Livermore operates the municipal water system as an Enterprise fund, with customer rates and charges providing full funding for all water storage and distribution system costs, including capital improvement projects to renew and replace water system facilities and the cost of purchasing water from the Zone 7 Water Agency.

Water rates and charges must be adjusted to provide funding to meet normal inflationary increases in the costs of goods and services used by the water utility and to provide adequate renewal/replacement funding.

Council action is also necessary to continue to pass through all costs related to the wholesale purchase of water from the Zone 7 Water Agency and to pass through any increases in Zone 7 costs beginning in January 2018 and for the next five years upon notice to customers as required by law.

The Water Resources Division staff has completed a Comprehensive Water and Wastewater Cost of Service Study in conjunction with Raftelis Financial Consultants, Inc. which identifies the revenue necessary to fund expected expenses of the Livermore Municipal Water Enterprise.

Notices of a public hearing for increasing water rates for Fiscal Years 2018-19 through 2021-22 were mailed to all property owners within the Livermore Municipal Water service area on May 12, 2017 as required by the provisions of Proposition 218.

A public hearing on proposed increases and adjustments to water rates was held by the City Council on June 26, 2017.

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 City Council of the City of Livermore 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	$ 100.00
1"	100.00

If the application is for service other than residential:

5/8" or 3/4" meter	$ 100.00
1" or 1-1/2" meter	100.00
2" or 3" meter	200.00
4" or larger	400.00

The amount of deposit required for the meter provided by the City in furnishing water for construction work shall be as follows:

5/8", 3/4", and 1" meter	$ 250.00
3" and larger	1,400.00

METER TESTING FEES

The meter testing fee shall be $100.00 for meters up to 2 inches in size and $200.00 for meters larger than 2 inches.

RECONNECTION FEES

The service reconnection fee shall be $60.00 for first-time restoration and $80.00 for any subsequent restoration in a 12-month period for all restorations occurring during normal business hours of 8:00 A.M. to 5:00 P.M., Monday through Friday. The reconnection fee shall be $100.00 if the water meter is removed during normal business hours. The reconnection fee will be $250.00 if the reconnection occurs outside of normal business hours.

WATER RATES FOR SERVICE WITHIN THE CORPORATE LIMITS OF THE CITY OF LIVERMORE

Quantity Rate

For all water delivered per water meter per month:

Normal Supply - Voluntary Conservation

Residential – Single Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.00	$ 1.07	$ 1.13	$ 1.19	$ 1.25
Tier II	Over 7	$ 1.40	$ 1.48	$ 1.57	$ 1.66	$ 1.74

Residential – Multi Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.00	$ 1.07	$ 1.13	$ 1.19	$ 1.25
Tier II	Over 7	$ 1.40	$ 1.48	$ 1.57	$ 1.66	$ 1.74

Commercial, Institutional & Public Agency

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.08	$ 1.15	$ 1.22	$ 1.29	$ 1.35

Irrigation

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.40	$ 1.48	$ 1.57	$ 1.66	$ 1.74

Recycled

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 2.64	$ 2.81	$ 2.97	$ 3.14	$ 3.30

Stage I - Voluntary 10% Water Conservation

Residential – Single Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.16	$ 1.21	$ 1.26	$ 1.32	$ 1.38
Tier II	Over 7	$ 1.62	$ 1.69	$ 1.76	$ 1.84	$ 1.92

Residential – Multi Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.16	$ 1.21	$ 1.26	$ 1.32	$ 1.38
Tier II	Over 7	$ 1.62	$ 1.69	$ 1.76	$ 1.84	$ 1.92

Commercial, Institutional, & Public Agency

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.26	$ 1.32	$ 1.38	$ 1.44	$ 1.50

Irrigation

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.62	$ 1.69	$ 1.76	$ 1.84	$ 1.92

Recycled – "Normal" recycled water rates remain in effect in all stages of conservation.

Stage II – Voluntary/Mandatory 20% Water Conservation

Residential – Single Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.29	$ 1.35	$ 1.41	$ 1.47	$ 1.53
Tier II	Over 7	$ 1.81	$ 1.89	$ 1.97	$ 2.05	$ 2.14

Residential – Multi Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.29	$ 1.35	$ 1.41	$ 1.47	$ 1.53
Tier II	Over 7	$ 1.81	$ 1.89	$ 1.97	$ 2.05	$ 2.14

Commercial, Institutional & Public Agency

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.39	$ 1.45	$ 1.51	$ 1.58	$ 1.65

Irrigation

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.81	$ 1.89	$ 1.97	$ 2.05	$ 2.14

Recycled – "Normal" recycled water rates remain in effect in all stages of conservation.

Stage III - Mandatory 35% Water Conservation

Residential – Single Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.56	$ 1.63	$ 1.70	$ 1.77	$ 1.85
Tier II	Over 7	$ 2.19	$ 2.28	$ 2.38	$ 2.48	$ 2.58

Residential – Multi Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 1.56	$ 1.63	$ 1.70	$ 1.77	$ 1.85
Tier II	Over 7	$ 2.19	$ 2.28	$ 2.38	$ 2.48	$ 2.58

Commercial, Institutional, & Public Agency

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 1.69	$ 1.76	$ 1.84	$ 1.92	$ 2.00

Irrigation

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 2.19	$ 2.28	$ 2.38	$ 2.48	$ 2.58

Recycled – "Normal" recycled water rates remain in effect in all stages of conservation.

Stage IV - Mandatory 50% Water Conservation

Residential – Single Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 2.00	$ 2.08	$ 2.17	$ 2.26	$ 2.36
Tier II	Over 7	$ 2.81	$ 2.93	$ 3.05	$ 3.18	$ 3.31

Residential – Multi Family

Rate Tier	Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Tier I	0-7	$ 2.00	$ 2.08	$ 2.17	$ 2.26	$ 2.36
Tier II	Over 7	$ 2.81	$ 2.93	$ 3.05	$ 3.18	$ 3.31

Commercial, Institutional, & Public Agency

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 2.17	$ 2.26	$ 2.36	$ 2.46	$ 2.56

Irrigation

Rate Tier Per 100 Cu ft	August 1, 2017 City Distribution Cost per 100 Cubic Feet	July 1, 2018 City Distribution Cost per 100 Cubic Feet	July 1, 2019 City Distribution Cost per 100 Cubic Feet	July 1, 2020 City Distribution Cost per 100 Cubic Feet	July 1, 2021 City Distribution Cost Per 100 Cubic Feet
Uniform	$ 2.81	$ 2.93	$ 3.05	$ 3.18	$ 3.31

Recycled – "Normal" recycled water rates remain in effect in all stages of conservation.

Meter Service Charges: Per Meter, Per Month

Meter Size[1]	**Effective August 1, 2017**	**Effective July 1, 2018**	**Effective July 1, 2019**	**Effective July 1, 2020**	**Effective July 1, 2021**
Meter Service Charges:					
5/8 Inch - D	$18.28	$19.43	$20.57	$21.71	$22.85
3/4 inch - D	$21.05	$24.37	$25.90	$27.42	$30.46
1 inch w/ fire	$18.28	$19.43	$20.57	$21.71	$22.85
1 inch - D	$36.53	$38.82	$41.10	$43.38	$45.66
1 ½ inch D	$66.95	$71.13	$75.32	$79.50	$83.68
1 ½ inch T	$79.12	$84.06	$89.01	$93.95	$98.89
2 inch – D	$103.45	$109.92	$118.38	$122.85	$129.31
2 inch - T	$121.70	$129.31	$138.91	$144.52	$152.12
3 inch - T	$270.74	$287.66	$304.58	$321.50	$338.42
4 inch - T	$462.36	$491.26	$520.16	$549.06	$577.95
6 inch - T	$979.44	$1,040.65	$1,101.87	$1,163.08	$1,224.29
8 inch - T	$1,709.44	$1,816.28	$1,923.12	$2,029.96	$2,136.79
10 inch -T	$2,561.08	$2,721.15	$2,861.22	$3,041.29	$3,201.35
Fire-Line Meter Service Charges:					
1 inch	$2.26	$2.40	$2.54	$2.68	$2.82
1 1/2 inch	$3.39	$3.60	$3.81	$4.02	$4.23
2 inch	$4.51	$4.79	$5.07	$5.35	$5.63
3 inch	$6.76	$7.18	$7.60	$8.02	$8.44
4 inch	$9.00	$9.57	$10.13	$10.69	$11.25
6 inch	$13.49	$14.34	$15.18	$16.02	$16.86
8 inch	$17.99	$19.11	$20.24	$21.36	$22.48
10 inch	$22.47	$23.87	$25.28	$26.68	$28.08

[1] Displacement Meters are indicated by "D" and Turbine Meters indicated by "T". All 1 inch with fire meters are Displacement

Private fire protection service charges are applicable to all water service furnished for privately owned fire protection systems.

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. The total quantity rate will be broken down into a Wholesale Water Cost, based on the rate charged by the Zone 7 Water Agency, and a City Distribution Cost based on the City's operations, maintenance and replacement costs.

b) Wholesale Water Cost – A combination of fixed charges and/or variable rates based on the City's purchased water costs from the Zone 7 Water Agency. All costs resulting from wholesale water purchases from Zone 7 will continue to be passed through to Livermore Municipal Water customers between January 2018 and January 2022. Livermore City Council resolves to pass-through without further Council action, any increase in Zone 7 Water Agency rates for the next five years by adjusting the Wholesale Water Cost upon notice to customers required by law.

c) City Distribution Cost – A quantity rate based on the City's operations, maintenance, and replacement costs. The City Distribution Costs will be adjusted by Council resolution and adjustments will take effect on July 1st of each year unless otherwise specified.

d) Meter Service Charge – The service or demand charge is a base rate per month representing the fixed costs of providing water service and is charged in addition to the quantity rate.

e) 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 "Normal Supply – Voluntary Conservation" water rates are implemented.

Section 4. This resolution is effective August 1, 2017.

BE IT FURTHER RESOLVED by the City Council of the City of Livermore resolves that commencing August 1, 2017, July 1, 2018, July 1, 2019, July 1, 2020, and July 1, 2021, the Water Rates and Meter Service Charges be amended as described.

On motion of Council Member Carling, seconded by Council Member Woerner, the foregoing resolution was passed and adopted on June 26, 2017, by the following vote:

AYES: Council Members Carling, Coomber, Woerner, Vice Mayor Spedowfski
NOES: None
ABSENT: Mayor Marchand
ABSTAIN: None

ATTEST:

Susan Neer
City Clerk

Date: June 27, 2017

APPROVED AS TO FORM:

Jason Alcala
City Attorney

Appendix C: Adoption Resolution

IN THE CITY COUNCIL OF THE CITY OF LIVERMORE, CALIFORNIA

A RESOLUTION APPROVING THE 2020 WATER SHORTAGE CONTINGENCY PLAN FOR THE LIVERMORE MUNICIPAL WATER SYSTEM

Water Code Section 10632 requires that every urban water supplier prepare, update, and adopt a Water Shortage Contingency Plan (WSCP) as part of its Urban Water Management Plan (UWMP). The WSCP is a document that provides a water supplier with an action plan for a drought or catastrophic water supply shortage.

A draft 2020 WSCP for the Livermore Municipal Water System has been prepared to meet all the requirements of the Urban Water Management Act (Act) and has been made available to the public for review and comment prior to today as required by the Act. Following the requirements of the Act, a public hearing concerning the 2020 WSCP was noticed for today, has been held, and public comments about it have been taken.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Livermore, that

1. That the 2020 Water Shortage Contingency Plan has been approved and adopted and is attached as Exhibit A and is incorporated by this reference.
2. Authorizes transmittal to the California Department of Water Resources.
3. Authorizes the City Manager to take appropriate and necessary actions to carry out the purpose and intent of this Resolution and to incorporate any necessary amendments as stipulated by the State Department of Water Resources.

On motion of Council Member Bonanno, seconded by Council Member Kiick, the foregoing resolution was passed and adopted on June 14, 2021, by the following vote:

AYES:	Council Members Bonanno, Carling, Kiick, Vice Mayor Munro, and Mayor Woerner
NOES:	None
ABSENT:	None
ABSTAIN:	None

ATTEST:

DocuSigned by:
Marie Weber
80379482GBC44BB...

Marie Weber
City Clerk

APPROVED AS TO FORM:

Tara Mazzanti
Assistant City Attorney

Date: June 14, 2021

Exhibit A – 2020 Water Shortage Contingency Plan