City of VALLEJO California

2015

Urban Water Management Plan

Prepared by: RMC water and environment

November 2016
Revised August 2018

City of Vallejo
2015 Urban Water Management Plan

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Table of Contents

List of Tables

List of Figures

Appendices

List of Abbreviations

AB	Assembly Bill
ABAG	Association of Bay Area Governments
AF	Acre-foot or Acre-Feet
AFY	Acre-foot per Year
AWWA	American Water Works Association
BMP	Best Management Practice
BO	Biological Opinion
Caltrans	California Department of Transportation
CCF	100 cubic feet of water
CDPH	California Department of Public Health Services
CII	Commercial, Industrial and Institutional
CIMIS	California Irrigation Management Information System
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DMMs	Demand Management Measures
DOF	Department of Finance
DWR	Department of Water Resources
ERP	Emergency Response Plan
ETo	Evapotranspiration
FY	Fiscal Year
GPCD	Gallons Per Capita Per Day
gpm	Gallons Per Minute
HET	High Efficiency Toilet
HEU	High Efficiency Urinal
HOA	Home Owners Association
IRWMP	Integrated Regional Water Management Plan
MG	million gallons
MGD	million gallons per day
MOU	Memorandum of Understanding
MPN	Most Probably Number
NBA	North Bay Aqueduct
NMFS	National Marine Fisheries Service
NOD	North of Delta
PDA	Priority Development Area
PG&E	Pacific Gas & Electric
SB	Senate Bill
SBX7-7	Water Conservation Bill of 2009
SCWA	Solano County Water Agency
SID	Solano Irrigation District
SWP	State Water Project
SWRCB	State Water Resources Control Board

Abbreviations (cont'd)

TDS	Total Dissolved Solids
TOC	Total Organic Carbon
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
VA	Vulnerability Assessment
VSFCD	Vallejo Sanitation and Flood Control District
WSCP	Water Shortage Contingency Plan
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Section 1 Introduction and Overview

The City of Vallejo (City) has prepared this Urban Water Management Plan (UWMP) following California state requirements, as defined in the California Water Code (CWC). This chapter discusses the requirement for and purpose of an UWMP, and provides a summary of this plan.

1.1. Urban Water Management Planning and the California Water Code

1.1.1. Urban Water Management Planning Act

The Urban Water Management Planning Act (Act) was created by Assembly Bill (AB) 797 which was signed into law by Governor Deukmejian on September 21, 1983. The Act requires that urban water suppliers (i.e., municipal water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) annually) prepare and adopt Urban Water Management Plans (UWMPs) containing certain specified elements.

The Act was subsequently amended by AB 2661, which was signed into law by Governor Deukmejian on July 18, 1990. AB 2661 deleted the January 1, 1991 termination date specified in AB 797. AB 2661 also expanded the elements which are to be addressed in Urban Water Management Plans.

The Act was also amended by AB 1869, which was signed by Governor Wilson on October 13, 1991. AB 1869 requires that urban water suppliers update (not just review) Urban Water Management Plans every five years to include projections of both potable and recycled water use, identify current reclamation practices, address additional alternative conservation measures, and describe findings, actions, and planning related to a number of water conservation and reclamation measures.

The Act was further amended by AB 11X signed by Governor Wilson on October 13, 1991. AB 11X requires that urban water suppliers prepare an Urban Water Shortage Contingency Plan as an amendment to its Urban Water Management Plan. Water Shortage Contingency Plans (WSCPs) must be updated every five years and specify proposed measures for response to short- and long-term water shortages.

1.1.2. Water Conservation Bill of 2009

On November 10, 2009, the state legislature passed the Water Conservation Bill of 2009 (also referred to as Senate Bill (SB) X7-7) as a water conservation component to the Sacramento-San Joaquin River Delta (Delta) legislative package. The bill seeks a 20 percent statewide reduction in urban per capita water use in California by December 31, 2020. SB X7-7 requires that each retail agency preparing a 2010 UWMP to calculate baseline water use as well as an interim (for 2015) and final (for 2020) water use reduction target. The methodologies used to calculate both the baseline per capita water use and targets were outlined in the Draft and Final UWMP guidelines published by the California Department of Water Resource (DWR) in December 2010 and March 2011, respectively. Updates to those methodologies were released with the guidelines for the 2015 UWMPs.

1.2. UWMP Organization

This UWMP was prepared based upon the recommended organization presented in DWR's *2015 UWMP Guidebook for Urban Water Suppliers* (UWMP Guidebook). Chapter titles are included below and a DWR checklist, including the location of all required components of the UWMP, is included in Appendix A.

Section 1 Introduction and Overview
Section 2 Plan Preparation
Section 3 System Description
Section 4 System Water Use
Section 5 SB X7-7 Baselines and Targets
Section 6 System Supplies
Section 7 Water Supply Reliability Assessment
Section 8 Water Shortage Contingency Plan
Section 9 Demand Management Measures
Section 10 Plan Adoption, Submittal and Implementation
Section 11 References

1.3. UWMP Summary

The City provides water delivery to over 3,000 services, therefore requiring the preparation and adoption of an UWMP in compliance with the Act, as amended by ABs 2661, 1869 and 11X, and SB X7-7 of 2009.

Vallejo, located at the southern end of Solano County, uses surface water as its sole supply source to provide service to the City of Vallejo and surrounding unincorporated areas. The City consistently meets all drinking water standards, despite some water quality concerns during storm events. As such, constraints due to water source quality is considered to be unlikely. Due to a conservative total water supply volume, the City expects to have sufficient water supplies to meet projected future demands through 2040, during normal, single-dry and multiple-dry water year conditions. Using the California Department of Water Resources (DWR) population tool and SB X7-7 verification tables, the City's baseline per capita water use was determined to be 156 gallons per capita per day (gpcd) with a 2015 target of 140 gpcd and a 2020 target of 124 gpcd (a 20% reduction from the baseline). Thanks in part to the aggressive conservation programs employed by the City in light of the statewide drought, the City's 2015 per capita water use was calculated as 114 gpcd, well below its 2015 and 2020 targets.

Looking ahead to the City's development and water needs, the City's current plan positions it well to meet any future demands regardless of water year type. California Department of Finance (DOF) shows that the 2015 population was 116,764; future projections estimate a population slightly above 130,000 in 2040. The most recent Reclaimed Water Study (2014) evaluated the potential of utilizing recycled water coordination to further supplement and enhance the City's water supply sources. The study determined that recycled water is not currently a cost-effective solution, but may become more feasible if increased water demand due to development were to occur. Potential future development projects that are considered in this plan include two Priority Development Areas (PDAs) as well as Solano 360, which together consists of approximately 375 acres of development within the City's

service area. However, even with this growth, total demands are actually expected to decrease over the planning period of this UWMP with the implementation of water codes, conservation programs, and higher water and sewer rates. The recent drought and state-mandated restrictions have demonstrated the effectiveness of the City's water conservation and efficiency measures. Additionally, this plan includes a Water Shortage Contingency Plan prepared by the City (Chapter 8) which lays the foundation for the City's response to reductions in water availability, as well as the City's demand management measures (Chapter 9), which are in place regardless of water year type and supply availability.

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Section 2 Plan Preparation

This chapter provides information on the City's process for developing the 2015 UWMP, including efforts in coordination and outreach with other agencies in the region.

2.1. Basis for Preparing a Plan

The City acts as an urban, retail public water provider with over 3,000 connections (Table 2-1), requiring the preparation of an UWMP. This plan was prepared in compliance with the requirements of California Water Code, Division 6, Part 2.6.

Table 2-1: Public Water System (DWR Table 2-1)

Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (MG)
CA4810007	City of Vallejo	36,664	3,925
CA4810021	City of Vallejo – Lakes System	848	78
	TOTAL	37,512	4,003

Table 2-1 Notes:

1. *4,003 MG of water supplied 2015 is a sum of drinking water provided to Single Family, Multi-Family, Commercial, Agricultural irrigation, and Other (Fire hydrant/services). It does not include potable or raw sales/transfers/exchanges to other agencies or water losses that are including in Table 4-1.*

2.2. Planning and Compliance Reporting

The City of Vallejo's primary sources of water are the Solano Project (Lake Berryessa), State Water Project (SWP)/Vallejo Permit Water (California Bay Delta), and Lakes Frey and Madigan. The City also receives a small amount of water from the City of Fairfield to augment service to the Lakes System. The City is a wholesale water provider to the cities of American Canyon and Benicia, as well as Travis Air Force Base. The City prepared this UWMP individually (Table 2-2), but has notified and included stakeholders as discussed in the next section.

Table 2-2: Plan Identification (DWR Table 2-2)

X	Individual UWMP
	Regional UWMP

Information prepared for and presented in this UWMP is reported based on a calendar year and water volumes are presented in Millions of Gallons (MG), as summarized in Table 2-3.

Table 2-3: Agency Identification (DWR Table 2-3)

Name of Agency	City of Vallejo
	Agency is a wholesaler
X	Agency is a retailer
Fiscal or Calendar Year	
X	UWMP Tables are in Calendar Years
	UWMP Tables are in Fiscal Years
Units of Measure	
	Acre Feet (AF)
X	Million Gallons (MG)
	Hundred Cubic Feet (CCF)

2.3. Coordination and Outreach

The City of Vallejo participates in regional-wide planning efforts through the Solano County Water Agency (SCWA), is an active member of the California water community, and continually coordinates with neighboring communities and water agencies regarding water-planning activities. SCWA members include the Cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville and Vallejo; the Solano Irrigation and Maine Prairie Water Districts; and Reclamation District 208. Additionally, the City coordinates with Travis Air Force Base, Vallejo Sanitation and Flood Control District, and the City of American Canyon.

The City coordinated the preparation of this urban water management plan with other appropriate agencies in the area, including the SCWA, Vallejo Sanitation and Flood Control District (VSFCD), the Cities of Benicia, American Canyon and Fairfield. In June 2016, the City sent out letters to its regional stakeholders to inform them of the UWMP preparation and to welcome comments or questions they might have. The City notified both of its wholesale suppliers, Solano County Water Agency and the State Water Resources Control Board (Table 2-4), that this UWMP was being prepared. Additionally, the City encouraged public participation in the development of the 2015 UWMP and provided opportunities for public review and comment. Additional information regarding outreach and public participation is included in Section 10.

Table 2-4: Water Supplier Information Exchange (DWR Table 2-4)

The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
Solano County Water Agency
State Water Resources Control Board

Section 3 System Description

The City of Vallejo provides water services to two, geographically distinct areas: the City of Vallejo jurisdictional limits and adjacent unincorporated areas (termed "Vallejo proper") and an area in the unincorporated western part of Solano County and southern Napa County, known as "Vallejo Lakes". This chapter describes each portion of the City's water system, including water supply source and infrastructure.

3.1. Service Area Physical Description

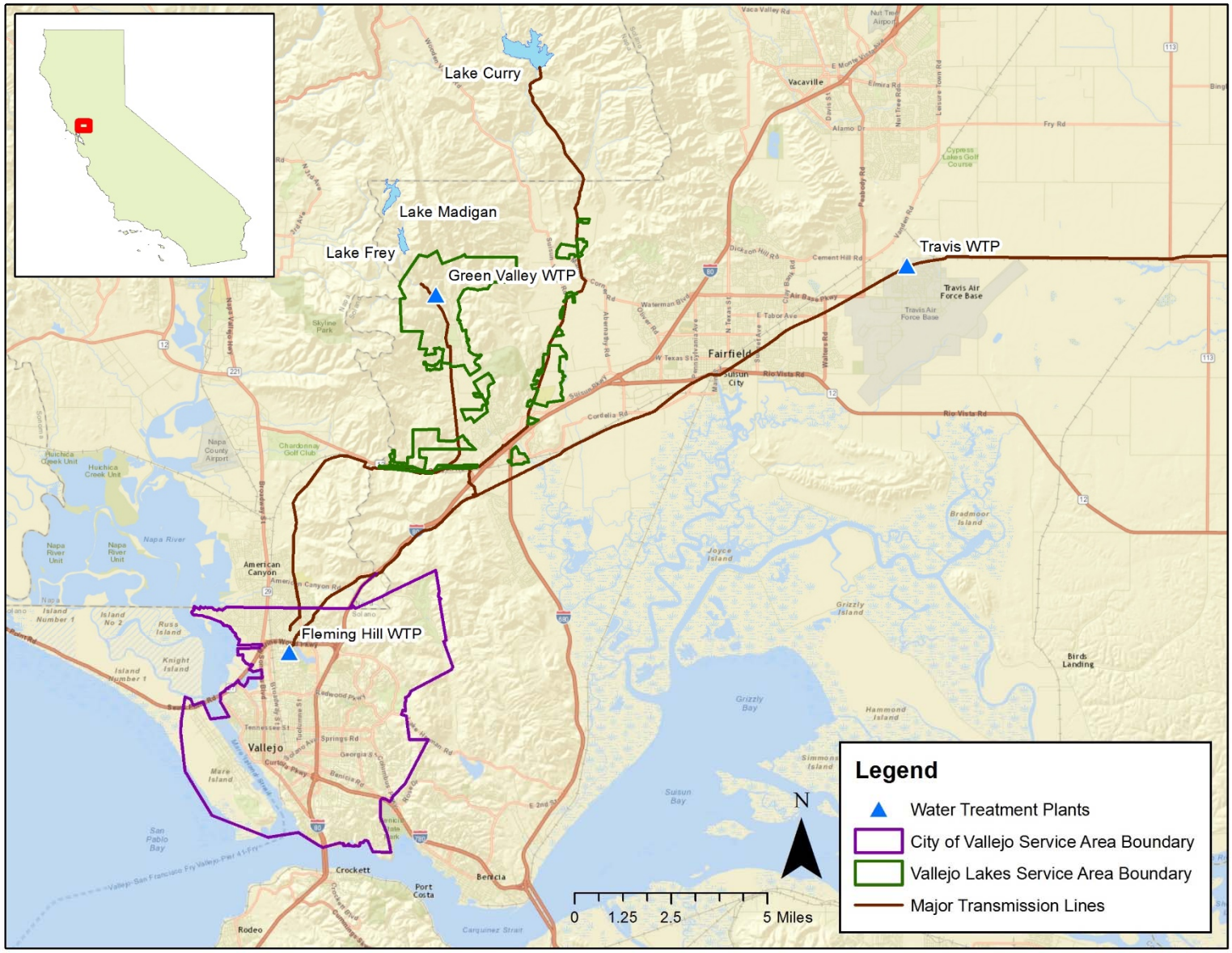
The City of Vallejo is located approximately 30 miles northeast of San Francisco at the southern end of Solano County. The City's water service area is shown in Figure 3-1 and, as previously described, encompasses the city limits, unincorporated "Vallejo proper" (i.e., the neighborhoods of Home Acres, Sandy Beach, and Starr Subdivision), as well as the Vallejo Lakes area (the area in the adjacent unincorporated western part of Solano County and southern Napa County). The service area is approximately 31 square miles of land area and includes predominantly residential and commercial users. Elevations in the existing service area range from approximately 0 feet above mean sea level to approximately 630 feet above mean sea level.

The water system is owned and operated by the City and governed by a 7-member City Council. The water system is operated and maintained by the Water Division of the Public Works Department. City management staff for the water system consists of a City Manager, Public Works Director, Assistant Public Works Director – Water, and Assistant Public Works Director – Maintenance.

The Vallejo Water system consists of two water treatment plants (WTPs): Fleming Hill WTP and Green Valley WTP. The Fleming Hill WTP is a conventional 42 million gallons per day (mgd) treatment plant with pre-ozonation that treats water supplied from Lake Berryessa (Solano Project) and from the Sacramento River Delta as delivered through the North Bay Aqueduct (NBA). Treated water from this plant is delivered to city customers. The Green Valley WTP was completed in 1998 and is a conventional 1.0 mgd plant that treats water from Lake Berryessa and Lakes Frey and Madigan. Treated water from this plant is delivered to Vallejo Lakes customers. Although not part of the City's water service area, by agreement, the City also operates the Travis WTP on behalf of the Travis Air Force Base. The Travis WTP is a conventional 7.5 mgd plant with pre-ozonation.

The City water distribution system contains multiple pressure zones. Principal water mains in the distribution system range in size from 14 to 24 inches in diameter. Most of the distribution grid piping in the older sections of the City range in size from 4 to 8 inches in diameter, while the newer areas are served by pipes 8 to12 inches in diameter.

Figure 3-1: City of Vallejo Water Service Areas



3.2. Climate

The City's climate is typical of other areas in the northern part of the San Francisco Bay area. The climate is characterized by summers that are dry and warm, and winters that are relatively mild, with the majority of rainfall occurring during this season. Regional averages of the rate of evapotranspiration of common turf grass (ETo), rainfall, and temperature are summarized in Table 3-1.

The average annual rainfall and annual ETo for the region are approximately 13 and 45 inches per year, respectively. ETo is a measurement of water evaporation combined with plant transpiration and is expressed in the form of a rate, typically inches per time period. In other words, ETo is the amount of water needed for common turf to grow in a specific region.

The average annual ETo for the region is approximately 32 inches more than the average annual precipitation. Because of this difference, and because 90 percent of the annual precipitation occurs between the months of November and April, growing turf in this region requires a significant amount of irrigation during the dry season.

Table 3-1: Climate Characteristics for the City of Vallejo

Month	Average ETo[1], (in)	Average Rainfall[2], (in)	Average Air Temp[1] (°F)
January	1.41	1.87	45.9
February	1.9	2.91	50.1
March	3.05	1.99	52.97
April	4.48	1.18	55.48
May	5.62	0.65	58.03
June	6.04	0.05	62.77
July	6.18	0.00	63.93
August	5.51	0.01	63.57
September	4.54	0.07	63.32
October	3.19	0.40	59.17
November	1.75	1.60	51.05
December	1.17	2.51	46.83
Annual	**44.84**	**13.23**	**56.09**

Table 3-1 Notes:

1. *Data was obtained from California Irrigation Management Information System (CIMIS), Station 109, Carneros, which was the closest station to Vallejo, located north of San Pablo Bay. Values reflect monthly averages from 1/2010 – 12/2015.*
2. *Data was obtained from NOAA's Global Historical Climatology Network, Station 49219, VALLEJO CA US. Values reflect monthly averages from 1/2000 – 12/2015 (n=7 to n=9 for each month within the date range).*

3.2.1. Climate Change

Sea Level Rise and Flooding

The City of Vallejo is bordered on the west by the Napa River and San Pablo Bay, and on the south by the Carquinez Straits. The City of Vallejo and surrounding areas have been threatened by floods in the past, such as overflows from the Napa River and insufficient flood control from the Lake Chabot Dam. Improvements were made to the Lake Chabot Dam in the early 1980s following a harmful 100

year flood event and the City is currently protected from Napa River flooding by Highway 37. The adjoining wetlands, known as White Slough, also provide flood protection for the City. These flood control facilities may be at risk from climate change effects such as sea level rise and increased storm severity.

Although aging levees are a concern in many parts of the Delta system, the City of Vallejo is not directly protected by levees. A levee failure could affect the portion of the City's water supply that comes through the North Bay Aqueduct and some farmland surrounding Vallejo, but would not likely affect the City itself.

The nearest NOAA tidal gage is located 24 miles from the center of the City in Alameda, CA. This gage shows that the "100-year" flood height is 3.1 feet above the mean high tide line, with the highest observed flood from 1976 to 2015 reaching 3.05 feet above the mean high tide line in 1983 (Climate Central, 2016). This gage shows a gradual increase in the mean high tide line over the past few decades, with an average increase of 0.72 mm per year (NOAA, 2016). The National Research Council and Climate Central predict a local sea level rise of 2.9 feet by 2100 from a 1992 baseline. This translates to a "34 percent multi-year risk of at least one flood exceeding 3 feet from 2016 to 2030, a 93 percent risk from 2016 to midcentury, and a 100 percent risk by 2100" (Climate Central, 2016). Under high-end projections, these risks of a 3 foot flood all increase and the likelihood of at least one flood exceeding 6 feet is 100 percent. Within the City of Vallejo, 690 acres of land, 1,854 people, and $300 million in property are currently below 3 feet above mean high tide, and thus are potentially at risk of flooding if sea level rises as expected. If floods reached 6 feet above mean high tide, 5,431 people and $672 million are at risk.

Ecosystem and Habitat Vulnerability

The region around the City, particularly the area north of Mare Island, contains aquatic habitats vulnerable to erosion and sedimentation. Erosion is expected to increase under climate change conditions and sedimentation is expected to shift, so habitats that are already sensitive to these issues may be additionally impacted by climate change. Additionally, the coastal areas surrounding the City may be impacted by the increased risk of storm surges due to seal level rise, making the already fragile coastal ecosystems more vulnerable.

The Delta is an ecologically sensitive estuarine habitat that is likely to be significantly impacted by climate change. The Delta relies on freshwater flows from the Sacramento and San Joaquin Rivers, which are likely to be impacted by the decrease in snowpack and shifts in snowmelt patterns. The Delta has been identified by the Endangered Species Coalitions *Top 10 Habitats Vulnerable to Climate Change*, which points out that 12 of the original 29 indigenous Delta fish are either extinct or endangered (ESA, 2011). Specifically, salmon populations make their migration run through the Delta. Salmon require specific water temperatures and salinity levels to survive, so they are likely to be impacted by changes in the seasonal shifts and overall decrease of cold freshwater in the Delta. The Delta is also used for recreational, economic, and municipal purposes, so balancing these needs with ecological needs may continue to become more challenging as the changing climate creates shifts in freshwater flow patterns.

There are many State and Federally Endangered and Threatened plant and animal species in Solano County, including Suisun Thistle, Soft Bird's beak, Contra Costa Goldfields, Colusa Grass, San Joaquin Valley Orcutt Grass, Solano Grass, Swainson's Hawk, California Black Rail, California Clapper Rail, California Tiger Salamander, California Red-legged Frog, Giant Garter Snake, Slat Marsh Harvest

Mouse, Conservancy Fairy Shrimp, Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, Delta Green Ground Beetle, Valley Elderberry Longhorn Beetle, Callippe Silverspot Butterfly, Green Sturgeon, Chinook Salmon, Steelhead, and Delta Smelt. The climate change impacts most likely to affect these species are sea level rise, increased air and water temperature, increased carbon dioxide concentrations, and changes in precipitation patterns. The *Solano Habitat Conservation Plan* provides more details about these endangered species and how they are likely to be affected by climate change (SCWA, 2012).

One of the sources of the City's water supply, the Solano Project, is subject to quantified environmental flow requirements; water is released from Lake Berryessa to Putah Creek to maintain proper water quality and quantity for Chinook salmon and steelhead trout populations. Although these requirements have gone unmet in the past, they may be difficult to maintain under climate change conditions.

Hydropower

The City receives its power from Pacific Gas and Electric (PG&E), which utilizes hydropower as an energy source. However, there are no hydropower facilities within the City's region and no hydropower facilities are planned for the future, so the City will likely not be significantly impacted by climate change impacts to hydropower production.

3.3. Service Area Population

The City of Vallejo service area can be broken into three distinct population areas, each of which will be discussed below:

- City of Vallejo
- Unincorporated Vallejo proper
- Vallejo Lakes region

From 2000 to 2010, the City of Vallejo's population dropped from 116,760 to 115,942, according to the 2010 Census. California Department of Finance (DOF) data shows that the 2015 population subsequently rose to 116,764. Future projections of City population were obtained from the Association of Bay Area Governments (ABAG) 2013 projections by city. Population projections in 5-year increments for the City of Vallejo are shown in Table 3-2.

The unincorporated Vallejo proper area includes the neighborhoods of Home Acres, Sandy Beach, and Starr Subdivision. To estimate the area's 2015 population, the area's 913 single-family residential connections were multiplied by 2.78 persons per household (as provided by 2015 DOF data for unincorporated Solano County) which comes to 2,535 people. For future projections, the growth rate was assumed to be the same as the City of Vallejo's population growth rate as determined in ABAG projections. Population projections for the unincorporated Vallejo proper area in 5-year increments are shown in Table 3-2.

In the Vallejo Lakes service area, most customer accounts are single-family residential customers, with a small number of multi-family residential connections. For 2015, the number of 774 single-family residential connections was multiplied by 2.78 persons per household (as provided by 2015 DOF data for unincorporated Solano County) to estimate that portion of the area's population. The 11 multifamily connections were multiplied by an assumed 5 persons per connection. When summed together, the total estimated 2015 population for the Lakes region is 2,298. For future projections, population in the Lakes region was assumed to increase at the rate of one new single-family service connection per year, using the same 2.78 persons per household based on 2015 DOF data for

unincorporated Solano County. Population projections for the Vallejo Lakes region in 5-year increments are shown in Table 3-2.

Table 3-2: Population – Current and Projected by Region

Population Served	2015	2020	2025	2030	2035	2040
City of Vallejo	116,764	121,032	124,222	126,190	128,617	131,790
Unincorporated Vallejo	2,590	2,685	2,755	2,799	2,853	2,923
Vallejo Lakes	2,298	2,312	2,326	2,340	2,354	2,367

A summary of the entire service area population is shown in Table 3-3.

Table 3-3: Population – Current and Projected (DWR Table 3-1)

Population Served	2015	2020	2025	2030	2035	2040
	121,652	126,029	129,304	131,328	133,824	137,081

Potential future development projects in the City's service area are identified below.

- Priority Development Areas (PDA) are places identified by Bay Area communities are areas for investment, new homes, and job growth. 2 PDAs exist within the City of Vallejo:
    - The Vallejo Downtown and Waterfront PDA is a 149 acre area located in the City's old downtown area and along the City's waterfront. The PDA consists of residential and commercial development in the downtown and waterfront areas. This PDA is included in the 2013 ABAG projections.
    - The Sonoma Boulevard PDA is a mixed-use 75 acre corridor along Sonoma Blvd stretching from approximately Redwood Street down to Curtola Parkway. This PDA was submitted to ABAG in 2015 and so it is not currently included in the 2013 ABAG population projections.
- Solano 360. This potential project consists of approximately 150 acres of (conceptualized) entertainment and mixed-use commercial development compatible with the adjacent Six Flags Discovery Kingdom. The land is owned by Solano County, and is currently used for the Solano County Fairgrounds. More information regarding this proposed development can be found in the "*Solano 360 Specific Plan"* prepared by Solano County. A variety of private and public funding sources will be necessary to support the future project. With the abolishment of redevelopment agencies, the funding of this project has been impacted. Average water demand for the Plan Area is estimated at 97.7 million gallons per year and up to 50 housing units are conditionally permitted (SWA Architects, 2013). The *Solano 360 Specific Plan* was updated in 2013, but not likely included in the 2013 ABAG population estimates due to timing constraints of data availability.

- Mare Island. Implementation of the *Mare Island Specific Plan* involves the redevelopment of the historic shipyard as a multi-use community with a balance of industrial, office, commercial, residential, educational, recreation, cultural, and open space uses, meeting the needs of future generations. Mare Island is located on the western edge of the City of Vallejo in southwestern Solano County. This future development project consists of approximately 1,448 acres of Reuse Areas. The City's General Plan identifies the following Policy Action (NBE-2.4A) with respect to Mare Island redevelopment: "Continue to use the *Mare Island Specific Plan* to guide development and conservation on Mare Island and support activities that contribute to the economic and social well-being of the community." The *Mare Island Specific Plan* was originally adopted in 1999, but has since undergone several revisions, most recently in August 2013. ABAG population estimates likely consider some redevelopment of Mare Island, but the extent and timing of such activities continue to evolve.

It is anticipated that there may be other developments approved between now and 2040 which have not yet been submitted for consideration. For these undefined developments, the UWMP assumes development consistent with the currently adopted General Plan. For the City's General Plan and current Housing Element, see: *http://www.ci.vallejo.ca.us*. Note that the City is currently in the process of updating its General Plan. Since the General Plan update has not yet been finalized, any changes in population projections (or assumptions relating to those projects) in the draft plan would not have been included in the ABAG population values that were used to project future water demands for this UWMP.

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Section 4 System Water Use

This chapter describes the City of Vallejo's current water use and projected water use through the year 2040.

4.1. Water Uses by Sector

Vallejo's water use is limited to treated surface water from Solano Project (Lake Berryessa), State Water Project (SWP)/Vallejo Permit Water (California Bay Delta), and Lakes Frey and Madigan. The City's water demand has historically been primarily attributed to residential use, with roughly 62 percent of all water produced serving residential demands. In 2015, 49 percent of water produced serviced single family residences and 13 percent served multi-family homes. Commercial demands (which includes institutional and industrial demands) is the next largest water user, at 17 percent in 2015. Remaining 2015 water use included irrigation demand (9 percent of water produced), other demands, such as public facilities, fire hydrants, etc. (3 percent) and water loss (9 percent).

Although water usage has decreased since 2012 due to the drought, the general split of City-wide water usage remained roughly the same in 2015 as it has been the previous decade. This can be attributed to even growth across land use types in the City, with no large commercial or industrial development that might significantly shift overall water usage. A summary of 2015 water demands in million gallons (MG) per year can be found in Table 4-1.

Table 4-1: 2015 Demands for Potable and Raw Water (DWR Table 4-1)

Use Type	2015 Actual		
	Additional Description (as needed)	Level of Treatment When Delivered	Volume (MG)
Single-Family[1]		Drinking Water	2,166
Multi-Family[1]		Drinking Water	574
Commercial[1,2]		Drinking Water	727
Irrigation[1]		Drinking Water	410
Other[1]	Fire hydrant/services	Drinking Water	126
Sales/Transfers/Exchanges to other agencies[3]	City of American Canyon treated deliveries	Drinking Water	33
Sales/Transfers/Exchanges to other agencies[3]	Raw water deliveries to American Canyon, Benicia, and Travis Air Force Base	Raw Water	850
Losses		Drinking Water	963
TOTAL			5,849

Table 4-1 Notes:

1. *Values based on study conducted by M. Cubed (2016). Projected water use by use type in each 5-year increment may not add up to listed sum due to rounding.*
2. *Institutional and industrial demands are included in commercial demand.*
3. Values based on City of American Canyon 2015 UWMP, City of Benicia 2015 UWMP, and prediction from Travis Air Force Base 2005 Water Supply Master Plan of 2.9 mgd average with 15% contingency. Includes both raw and treated water demands.

As discussed in Section 3.3, population growth is estimated to remain low, at around 1 percent, resulting in a slow increase in residential units. Additional growth in the City is expected to be proportional to the population projections, meaning that the future water use breakdown by sector will remain roughly proportional. Demand projections were calculated using population projections, forecasts of the number of metered connections, historical water use, and anticipated changes in water use practices. Though there will be some future growth, the implementation of water codes, conservation programs, and higher water and sewer rates (the effects of which have all been incorporated into the projections) will limit the increase in total City-wide demand, with total demands actually expected to decrease over the planning period of this UWMP. A technical memorandum describing the methodology used to calculate the demand projections is available in Appendix B. Table 4-2 summarizes the projected water demands in the City. Since there is no recycled water use within the City's service area, City's total water demands are equal to the potable and raw water demands, as summarized in Table 4-3.

Table 4-2: Project Demands for Potable and Raw Water (DWR Table 4-2)

Use Type	Additional Description *(as needed)*	Projected Water Use (MG)				
		2020	2025	2030	2035	2040
Single-Family[1]		2,591	2,515	2,428	2,365	2,281
Multi-Family[1]		610	602	593	590	590
Commercial[1,2]		835	806	770	738	707
Agricultural irrigation[1]		584	571	547	518	485
Other[1]	Fire hydrant/services	123	126	128	130	134
Sales/Transfers/Exchanges to other agencies[3]	(includes raw and treated)	2,599	2,783	2,783	2,783	2,783
Losses[1]		950	711	496	483	466
TOTAL (MG)		8,291	8,114	7,746	7,608	7,447

Table 4-2 Notes:

1. *Values based on study conducted by M. Cubed (2016). Projected water use by use type in each 5-year increment may not add up to listed sum due to rounding.*
2. *Institutional and industrial demands are included in Commercial demand.*
3. *Values based on City of American Canyon 2015 UWMP, City of Benicia 2015 UWMP, and prediction from Travis Air Force Base 2005 Water Supply Master Plan of 2.9 mgd average with 15% contingency. Includes both raw and treated water demands.*

Table 4-3: Total Water Demands (DWR Table 4-3)

	2015	2020	2025	2030	2035	2040
Potable and Raw Water *From Tables 4-1 and 4-2*	5,849	8,291	8,114	7,746	7,608	7,447
Recycled Water Demand *From Table 6-4*	0	0	0	0	0	0
TOTAL WATER DEMAND (MG)	5,849	8,291	8,114	7,746	7,608	7,447

4.2. Distribution System Water Losses

City water losses fall into two categories: distribution system losses (real losses) and apparent water losses. Using the American Water Works Association (AWWA) Water Audit software, the City's 2015 total water loss was calculated to be approximately 963 MG (Table 4-4). This calculation is based on a preliminary version of the City's 2015 Water Loss Audit which will not be finalized until it has been validated through DWR's Water Loss Technical Assistance Program in 2016-2017. This water loss is equivalent to a 22 percent loss rate when compared to water supplied and is consistent with the loss rate observed over the previous few years and in line with the City's water loss goal. Results of the Water Audit are available in Appendix C.

Table 4-4: AWWA Water Loss Audit (DWR Table 4-4)

Reporting Period Start Date	Volume of Water Loss[1]
January 2015	963 MG

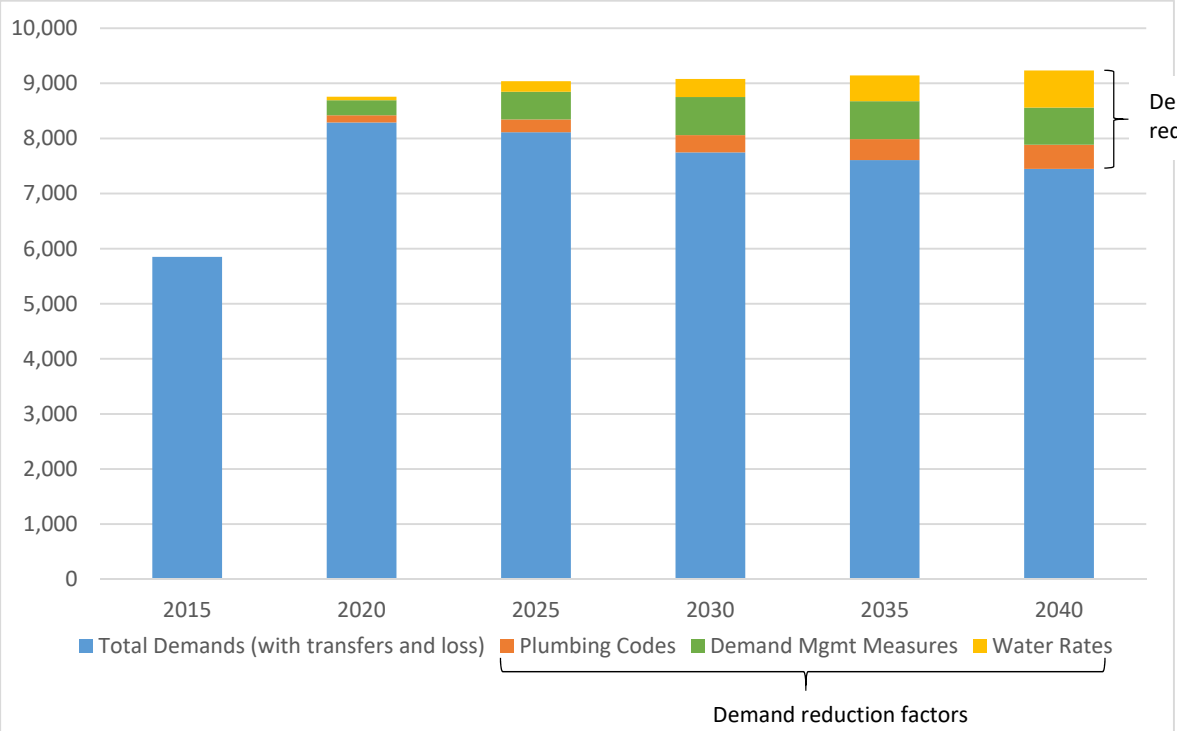
Notes:

1. *Based on the AWWA Water Audit and methods presented in Appendix L of the DWR Guidebook.*

4.3. Estimating Future Water Savings

In order to meet water use targets and continue striving for more efficient water use, the City anticipates an increase in water savings due to enforcement of new plumbing codes, conservation programs, water loss management and potentially increased water/sewer rates. The water demand projections presented in Table 4-2 (calculated by M.Cubed and included in Appendix B) accounted for these water savings measures (Table 4-5). Plumbing codes, water and sewer rate increases, and demand management measures are projected to reduce demands by roughly 26 percent by 2040 as shown in Figure 4-1.

Figure 4-1: Current and Projected Water Use



In January 2016, City Ordinance No. 1718 N.C. (2d) was enacted to ensure compliance with Section 2 of Article X of the California Constitution which specifies that the right to use water is limited to the amount reasonably required for the beneficial use. This ordinance promotes the planning, design and implementation of water efficient landscaping as both standalone projects and components of larger developments. This ordinance also establishes a maximum applied water allowance to help ensure efficient and effective water use. This ordinance will help reduce water usage City-wide as new development takes place. In addition to the ordinance, Chapter 11 of the City's Municipal Code contains prohibitions on the waste of water (11.54). City Ordinance No. 1718 N.C. (2d) and the referenced section of the City's Municipal Code are included in Appendix D.

While not in the City plumbing code, there are anticipated water savings from increases in the efficiency of toilets, urinals, showerheads, clothes washers, and dishwashers. New homes and businesses will install more efficient plumbing fixtures and water-using appliances than is currently reflected in the existing stock upon which baseline average water use is based. Additionally, existing homes will eventually replace their current fixtures and appliances as they wear out or as part of remodeling or resale (per state law) with more efficient fixtures and appliances. Over time, this will result in a predictable decline in indoor water use per dwelling unit or service meter. These water savings were calculated using the Alliance for Water Efficiency's Water Conservation Tool[1] and were included in the demand projections presented in Table 4-2. This tool is in wide use in California and throughout North America, and is specifically designed to estimate water savings associated with plumbing codes, appliance standards, and utility-based conservation programs.[2] The tool follows similar methodology to that presented in Appendix K of DWR's UWMP Guidebook, *Estimating Future*

[1] http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx
[2] Currently, approximately 400 utilities throughout North America are using the Alliance for Water Efficiency's Water Conservation Tool for conservation program planning.

Water Savings from Adopted Codes, Standards, Ordinances, or Transportation and Land Use Plans (2015).

Other water savings can be attributed to increases in water and sewer rates. The City's water rates employ a combination of fixed service and volumetric charges. Users are encouraged to limit water usage to reduce the volumetric portion of their water bills. The City is likely to continue employing this rate structure in the future which will continue to encourage customers to reduce water demands.

4.4. Water Use for Lower Income Households

CWC Section 10631.1(a) requires suppliers to estimate projected water use for single-family and multi-family residential housing needed for lower income households, as identified in the Housing Element of the General Plan for the service area of the supplier. According to the City's current Housing Element Update 2015-2023 (Lisa Wise Consulting, Inc., 2015), an estimated 41 percent of households in the City are lower-income, as defined as having income below 80 percent of the area's median household income.

Further, per the Housing Element, the City's Regional Housing Need Allocation for 2014 through 2022 for lower income housing is 461 units. The Regional Housing Need Allocation does not break down the housing need by housing type (single-family versus multi-family). Therefore, the projected water demand for lower income housing was conservatively estimated based on the average 2015 water demands for single-family residential customers. At 0.066 MG per household[3] and 17,055 lower-income household units[4], the projected water demand for lower income housing units is roughly 1,130.3 MG in 2020.[5] This estimate is considered to be conservative because multi-family residential housing uses less water on a per-dwelling unit than single-family housing. As shown in Table 4-5, this demand is incorporated in overall demand projections in this UWMP by assuming lower income housing grows proportionally to City population growth.

Table 4-5: Inclusion in Water Use Projections (DWR Table 4-5)

Are Future Water Savings Included in Projections?	Yes
Location in UWMP	Section 4.3
Are Lower Income Residential Demands Included in Projections?	Yes

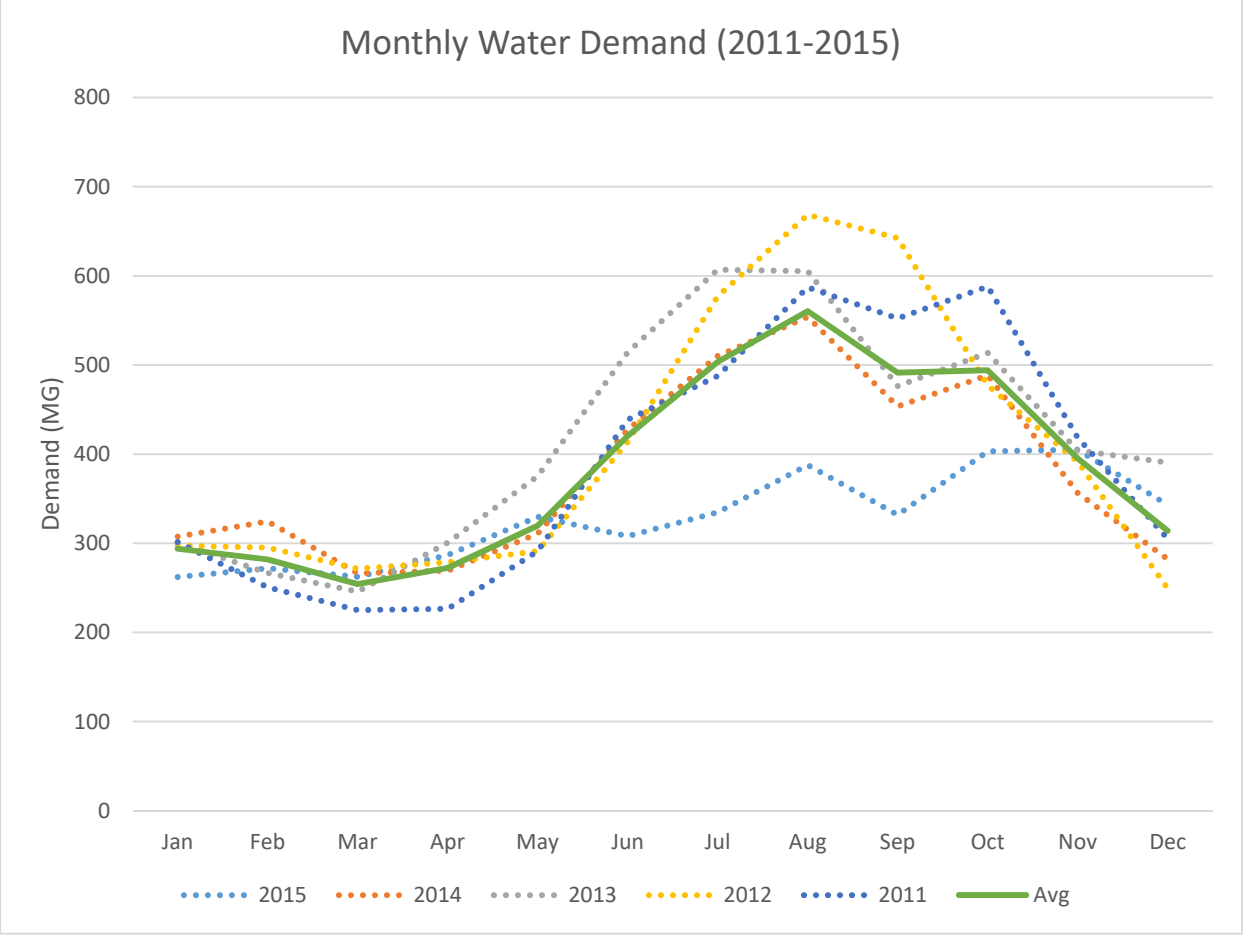
[3] Based on 32,682 single-family households with a demand of 2,166 MG in 2015.
[4] 16,594 existing low-income households plus 461 future households.
[5]While the current Housing Element does not include projections for low income housing through 2040, an estimate of growth in this sector can be estimated based on the projected growth of the general population. Assuming a 1 percent annual increase in the population of lower income residents (and a related change in lower income housing units), the projected water demand for lower income housing units is estimated to be 1,379 MG in 2040.

4.5. Climate Change

Climate change is expected to increase temperatures and increase the frequency and severity of droughts in California. This, in turn, will increase demand for outdoor irrigation, as hotter and drier conditions lead to an increase in plant evapotranspiration and fewer opportunities for natural irrigation through precipitation. Figure 4-2: shows that The City's water demand approximately doubles in summer months, indicating that demand increases with seasonal uses like outdoor irrigation. Climate change is likely to exacerbate this difference and increase summer irrigation demands even further.

The recent drought has shown that the City's curtailment measures are effective. The City and its customers worked to reduce water use in response to state-wide cutbacks, and were able to reduce summertime water use by nearly one third of the average water demand in 2015. Figure 4-2: illustrates the magnitude of this decrease in use. As droughts become more frequent, it may be challenging to further decrease already-hardened demands.

Figure 4-2: Monthly Water Demand for Vallejo (2011-2015)



Section 5 SB X7-7 Baselines and Targets

This section describes the City's urban water system demands. It presents the calculations for the City's baseline (base daily per capita) water use and interim and final water use targets, including a detailed description of how the baseline and targets were calculated. The calculations follow the guidance provided in DWR's publication *Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use* (2016a). Background information and the approach used to develop baselines and targets are also included.

5.1. Updating Calculations from 2010 UWMP

In 2010, urban water suppliers were required under SBx7-7 (the Water Conservation Bill of 2009) to develop a baseline daily per capita water use, a per capita water use target for 2020, and an interim water use target for 2015 in their UWMPs. In its 2010 Draft UWMP, the City used a baseline period from 1999 to 2008 to calculate a baseline water use of 156 GPCD. The City's 2020 water use target was 125 and its 2015 interim water use target was 141 GPCD. Since the 2010 U.S. Census data was not available when the City drafted its 2010 UWMP, it must recalculate its SBX7-7 water use baselines and targets for this Plan using 2010 Census data. The *2015 UWMP Guidelines* also state that an agency may use a different baseline period in its 2015 UWMP than its 2010 UWMP (2016b).

5.2. Baseline Periods

The purpose of developing a base daily per capita water use is to have a baseline from which to derive the water use target for 2020 and the interim target for 2015. The baseline is developed for each water supplier based on a 10-year average beginning no earlier than 1994 and ending no later than 2010. If in 2008 more than 10 percent of an urban water supplier's deliveries were from recycled water, a 15-year average may be used. The City does not have recycled water so the 15-year average does not apply.

Average water use over a 5-year baseline period beginning no earlier than 2003 and ending no later than 2010 is also calculated to confirm whether the proposed 2020 per capita water use target meets the legislation's minimum water use reduction requirement of at least 5 percent. In other words, if the calculated 2020 water use reduction target does not represent at least a 5 percent reduction from the 5-year baseline period, the urban water supplier must lower the proposed 2020 target to meet the 5 percent minimum reduction requirement.

The City's baseline is calculated using a 10-year average because its recycled water supply was less than 10 percent of the total water supply (in fact, it was zero). The City has selected its baseline over the 10-year period to be 1997 to 2006 and its 5-year period (used to calculate compliance with the 5 percent minimum reduction requirement) to be 2003 to 2007. This information is summarized in Table 5-1.

Table 5-1: Baseline Period Ranges (SBX7-7 Table 1)

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	6,721	Million Gallons
	2008 total volume of delivered recycled water	-	Million Gallons
	2008 recycled water as a percent of total deliveries	0.00%	Percent
	Number of years in baseline period[1, 2]	10	Years
	Year beginning baseline period range	1997	
	Year ending baseline period range[3]	2006	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range[4]	2007	

Notes:

1. *If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.*
2. *The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.*
3. *The ending year must be between December 31, 2004 and December 31, 2010.*
4. *The ending year must be between December 31, 2007 and December 31, 2010.*

5.3. Service Area Population

The City delivers water primarily to urban customers. Its current water customers included in the baseline population are residential and commercial users within the city limits, in pocket areas that are not in the city limits but within "unincorporated Vallejo proper" (such as Homeacres and Starr Subdivision); and in the Vallejo Lakes service area (Green Valley located in northern Solano County and the Gordon Valley located in southern Napa County). The City is a wholesale supplier to Travis Air Force Base, the City of American Canyon, and the City of Benicia. The wholesale supply customers are not included in the City's baseline population.

Since more than 95% of the area served by the City substantially overlaps with the Census-designated City of Vallejo, Department of Finance (DOF) population estimates were used for the City of Vallejo service area for the baseline period and for 2015. The relatively small population served in the Vallejo Lakes and unincorporated service areas was calculated using a combination of DOF population growth rates and population density data with City connection data. These small areas outside of the City of Vallejo account for approximately 4% of the City's customers.

The population served by the City and its gross water use for its baseline period and 2015 is summarized in Table 5-2.

5.4. Gross Water Use

"Gross Water Use" is defined in the CWC 10608.12 as the total volume of water entering the distribution system of an urban retail water supplier, excluding recycled water, water placed into long term storage, water conveyed to another urban water supplier, and water delivered for agricultural use. Table 5-2 shows the total gross water produced from 1997 through 2007 at Vallejo's water treatment plants which then is delivered to customers. Gross water use also includes raw

water customers, which constitute approximately 3 percent of total water use and take delivery of their water upstream of the Fleming Hill WTP.

Water produced from the Fleming Hill WTP is delivered to all in-city water customers, unincorporated Vallejo proper and City of American Canyon treated water sales. Total gross water use shown in Table 5-2 does not include water treated at the Fleming Hill WTP that is wholesaled to American Canyon. Water produced from the Green Valley WTP is delivered to the Lakes water customers. Starting in 2014, Lakes water customers also receive potable water purchased from the City of Fairfield.

The City does not produce any recycled water, place water into long term storage, or deliver water for agricultural use, so these potential water uses were not incorporated into the gross water use analysis.

Table 5-2: Gallons per Capita Per Day (GPCD) (SBX7-7 Table 5)

10 to 15 Year Baseline GPCD				
10 to 15 Year Baseline GPCD		10 to 15 Year Baseline GPCD	10 to 15 Year Baseline GPCD	10 to 15 Year Baseline GPCD
Year 1	1997	116,741	6,892	162
Year 2	1998	117,346	6,459	151
Year 3	1999	119,269	6,975	160
Year 4	2000	121,510	7,122	161
Year 5	2001	122,756	6,755	151
Year 6	2002	123,561	7,013	155
Year 7	2003	123,804	6,996	155
Year 8	2004	123,991	6,836	151
Year 9	2005	122,875	7,042	157
Year 10	2006	122,195	6,809	153
10-15 Year Average Baseline GPCD				**156**
5 Year Baseline GPCD				
Baseline Year *Fm SB X7-7 Table 3*		**Service Area Population** *Fm SB X7-7 Table 3*	**Gross Water Use** *Fm SB X7-7 Table 4*	**Daily Per Capita Water Use**
Year 1	2003	123,804	6,996	155
Year 2	2004	123,991	6,836	151
Year 3	2005	122,875	7,042	157
Year 4	2006	122,195	6,809	153
Year 5	2007	122,237	6,882	154
5 Year Average Baseline GPCD				**154**
2015 Compliance Year GPCD				
2015		121,652	5,067	**114**

Notes:

1. *The City's population was calculated through adding the Unincorporated and Lakes area populations determined through U.S. Census and DOF data to the City's population determined through DOF data. The City's gross water use includes water treated at the Fleming Hill and Green Valley water treatment plants, raw water served directly to customers, and potable water wheeled by the City of Fairfield to the Lakes area. It does not include treated water wholesaled to American Canyon.*

5.5. Baseline and Target Daily Per Capita Water Use

The base daily per capita use is the water supplier's average gross daily per capita use in gallons ("baseline"). The baseline includes all water entering the delivery system, including water losses.

Table 5-3 illustrates the City's 10-year baseline and is calculated at 156 gallons per capita per day (gpcd). The baseline was developed using the total service area population shown in Table 2.2 and is the average per capita usage over the 10-year period selected.

Each urban water supplier must also calculate a 5-year baseline for a period between 2003 and 2010 and adopt a target that results in at least a 5 percent reduction from that 5-year baseline. As illustrated below in Table 5-3, the City's 5-year base daily per capita water use is 154 GPCD.

As previously stated, SBx7-7 requires that the City's 2020 target must be at least 95 percent of the 5-year baseline of 154 GPCD, or 147 GPCD. Thus, the City's 2020 per capita water use target cannot exceed 146 GPCD.

SBx7-7 established requirements to reduce the statewide urban per capita water use by 20 percent by the year 2020. Each individual urban water supplier must develop a water use target for the year 2020 as well as an interim water use target for the year 2015. The interim water use target set for 2015 is numerically halfway between the baseline and the 2020 target. Depending on an agency's baseline, the resulting targets may result in something more or less than 20 percent reduction compared to current use. In accordance with Water Code Section 10608.4(k)(2), agencies not in compliance with the 2020 target by December 31, 2020 will not be eligible for state water grants or loans.

There are four methods that an urban water supplier may use to develop its 2015 and 2020 water use targets. Three methods were provided in SBx7-7 and the fourth was subsequently established by DWR. The four methods are generally described below. A more complete description can be found in DWR's *2015 UWMP Guidebook* (2016b).

- Method 1: 80 percent of 10-year baseline GPCD;
- Method 2: Performance standards based on actual water use data for indoor residential water use, landscaped area, and commercial, industrial and institutional (CII) water use;
- Method 3: 95 percent of the San Francisco Bay Hydrologic Regional Target from the 20 x 2020 Water Conservation Plan; and
- Method 4: Water Use Targets based on residential performance standards and specific savings goals for Cll and Landscape use and for water losses.

Methods 1and 3 were applied in this analysis. Methods 2 and 4 require data specificity that is not currently available to the City, such as parcel-specific landscaped area for all property (Method 2). Method 4 requires the development of a 10-year average of the GPCD of Cll use. The City's Cll sector water billing data is not reliable for the first two years of its selected 10-year range. Therefore, Method 4 was not used by the City to calculate water use targets.

Urban Water Use Target Method 1 Evaluation: 80 Percent of Base Daily per Capita Water Use

The City's baseline water use, as illustrated in Table 5-3is 156 GPCD, calculated over the period from 1997 through 2006.

- Based on a 20 percent reduction of the base daily per capita water use of 156 GPCD, the 2020 target is 124 GPCD; and

- Based on the midpoint between the base daily per capita water use of 156 GPCD and the 2020 target of 124 GPCD, the 2015 interim target is 140 GPCD.

Urban Water Use Target Method 3 Evaluation: 95 Percent of the Hydrologic Region Target

Method 3 allows the water supplier to select 95 percent of the hydrologic region's 2020 target as its target. The applicable hydrologic region for the City is Region 2 - San Francisco Bay, with a regional target of 131 GPCD.

- Based on 95 percent of the hydrologic region's target of 131 GPCD for the San Francisco Bay Region, the 2020 target is 124 GPCD; and
- Based on the midpoint between the baseline water use of 156 GPCD and the 2020 target of 124 GPCD, the 2015 interim target is 140 GPCD.

Method 1 was chosen by the City as the final methodology; thus, the City's 2020 target is 124 GPCD and its 2015 interim target is 140 GPCD. Because the 2020 target calculated under Method 1 is below 95% of the 5-year baseline (154 GPCD), the final selected target does not need to be adjusted.

Table 5-3 summarizes the City's 2015 and 2020 water use targets.

Table 5-3: Baselines and Targets Summary (DWR Table 5-1)

Baseline Period	Start Year	End Year	Average Baseline GPCD	2015 Interim Target	Confirmed 2020 Target
10-15 year	*1997*	*2006*	*156*	*140*	*124*
5 Year	*2003*	*2007*	*154*		

5.6. 2015 Compliance Daily Per Capita Water Use (GPCD)

The City's 2015 actual per capita water use was 114 GPCD. Thus, it is in compliance with the 2015 interim target of 140 GPCD. Although 2015 use may be artificially low due to state-mandated restrictions caused by the recent severe drought, the City is on track to meet its 2020 target. The City demonstrates compliance with its 2015 GPCD goal in Table 5-4. The City plans to continue to make improvements to its system as feasible, implement DMMs as described in Section 9, and encourage water use efficiency throughout its service area in an attempt to further reduce urban per capita water use.

Table 5-4: 2015 Compliance (DWR Table 5-2)

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments to 2015 GPCD *From Methodology 8*					2015 GPCD	Did Supplier Achieve Targeted Reduction for 2015?
		Extraordinary Events	Economic Adjustment	Weather Normalization	TOTAL Adjustments	Adjusted 2015 GPCD		
114	140				0	114	114	Yes

Section 6 System Supplies

The City of Vallejo uses surface water as its sole supply source; no groundwater sources are used. Recycled water is limited to water treatment plant process backwash, sludge handling decant, and filtrate water, which is returned to a reclaim basin and subsequently introduced back into the headworks of the plant. The City obtains surface water from five water rights from four different sources. Surface water is conveyed to three treatment plants in order to serve customers in two different counties (Solano and Napa) and to an active military base (Travis Air Force Base). The four sources of surface water are:

- State Water Project (SWP)/ Vallejo Permit Water (California (Sacramento) Bay Delta);
- Solano Project Water (Lake Berryessa);
- Lakes Frey and Madigan; and
- Lake Curry (not currently accessible for water system supply.

6.1. Purchased or Imported Water

A summary of 2015 purchased/imported water supplies can be found below in Table 6-1, with a description of each source following in the sections below.

Table 6-1: 2015 Purchased/Imported Water Supplies

Water Supply Source	Volume (MG)	
	2015 Supply	Total Annual Right or Safe Yield
State Water Project	2,092	1,825
Vallejo Permit Water	1,261	7,429
Solano Water Project	2,667	4,757
Total	6,020	14,011

6.1.1 State Water Project

State Water Project (SWP) water is diverted from the Sacramento-San Joaquin Delta at the Barker Slough Pumping Plant and conveyed through the North Bay Aqueduct (NBA) system approximately 21 miles to the California Department of Water Resources (DWR)-operated Cordelia Forebay. A portion of SWP water is diverted to supply Travis Air Force Base before reaching the Cordelia Forebay. From the Cordelia Forebay, the water is pumped via the City's Cordelia and Jameson pumping stations and the City's two transmission pipelines to the Fleming Hill Water Treatment Plant (WTP). Solano County Water Agency (SCWA) is the managing wholesaler for Solano County agencies for purchase of SWP water.

Table A Allotment

The SCWA executed a *Water Supply Contract* with DWR for SWP water on November 12, 2003. SCWA subcontracts to member units throughout Solano County, including the City. The SWP contract between the State and SCWA can be found at the following website link: http://www.water.ca.gov/swpao/docs/wsc/SCWA_C_C.pdf

The City executed a *Water Contract for Water Supply from North Bay Aqueduct* with SCWA. In the agreement, the City is allocated annual allotments of SWP water, commonly referred to as "Table A allotment". The City's Table A allotment was accelerated in 2009 to its ultimate amount of 1,825 million gallons per year (MG/yr) starting in 2010. The City's current water contract with SCWA runs through 2035 with provisions for extensions. All member units to the SWP contract share in the same curtailment percentage as declared by the State of California for any given water year. The annual right may be exceeded in a given year due to available carryover from previous years.

Dry-Year Water Bank

SCWA, along with a consortium of State water contractors, entered into an agreement with DWR, entitled *2009 Drought Water Bank Agreement*, which is for emergency water potentially available when there is a curtailment of SWP water and if rice farmers in the Sacramento Valley are willing to make their SWP water supply available to urban users of SWP water. This supply (commonly referred to as "dry-year water bank") is neither guaranteed nor reliable. This potential dry-year supply does not reduce available SWP Table A allotments.

Turn-Back Water Pool Program

DWR has a program for interested SWP contractors called the Turn-back Water Pool Program. A SWP contractor may choose to sell Table A water it will not use or purchase turn-back pool water that is available through the program. For purposes of this UWMP, water from this pool program is not included in the reliability assessment or the various water supply tables because this program operates on an as-available basis. The amount of pool water that would be available to the City is not a significant amount.

6.1.2 Vallejo Permit Water

Vallejo holds an Appropriative Water Rights License (No. 997848) with the State Water Resources Control Board (SWRCB), issued August 1966, pre-dating the construction of the SWP. This water supply is commonly referred to by the City as "Permit Water." Permit Water is pumped from Barker Slough and delivered through the NBA and is separate from the City's SWP Table A allotment. SCWA is the managing wholesaler for purchase of Permit Water. The license allows for a maximum diversion of 31.52 cfs or about 7,429 MG/yr. Conveyance of Vallejo Permit Water through the NBA is limited by this contract to a maximum of 5,633 MG/yr. Since the limitation is not based on a physical capacity constraint of the NBA, an additional 1,790 MG could be available upon execution of an amendment to the existing agreement between DWR and SCWA.

6.1.3 Solano Project Water

The Solano Project is a federal water project operated by the U.S. Bureau of Reclamation (Bureau) that stores water in Lake Berryessa for various agencies and users in the area, including the City of Vallejo. Solano Project water is delivered from Lake Berryessa via the Putah South Canal to the Bureau's Terminal Reservoir in Cordelia. Approximately 95 percent of the Solano Project water is pumped via the City's Cordelia pumping station, primarily to the Fleming Hill WTP. Approximately 5 percent of the Solano Project water is conveyed via Solano Irrigation District's distribution facilities to the Green Valley WTP. Approximately 98 MG/yr is delivered to the Travis WTP via the Beck Avenue Pump Station.

The City has a water entitlement of 4,757 MG/yr of Solano Project water. SCWA is the managing wholesaler for Solano County agencies for purchase of Solano Project water.

6.2. Groundwater

The City does not have any groundwater supply sources (as shown in Table 6-2). At this time, the City has no intention to seek or investigate groundwater supply.

Table 6-2: Groundwater Volume Pumped (DWR Table 6-1)

☑	Supplier does not pump groundwater. The supplier will not complete the table below.					
Groundwater Type	Location or Basin Name	2011	2012	2013	2014	2015
TOTAL		0	0	0	0	0

6.3. Surface Water

Local Vallejo Lakes surface water sources are stored in Lakes Frey, Madigan, and Curry. Currently, Lake Curry is used for voluntary instream flow purposes only; water from Lakes Frey and Madigan are supply sources for the Lakes customers (see Figure 3-1).

Lakes Frey and Madigan are located in northern Solano County. The City owns both lakes and the surrounding land. Water flows from Lake Madigan into Lake Frey, then flows into the Diversion Dam, and then continues to flow via a City gravity pipe system to the Green Valley WTP, located at the end of Green Valley Road.

Safe yield calculations by Raymond Vail and Associates in 1989 show that the safe yield of Lake Madigan and Frey is 196 MG/yr, as determined using a worst case historical two year 1976 drought scenario. The City has chosen to reduce this amount by one third to 130 MG/yr due to the lack of alternative water sources for the Lakes system.

Lake Curry is the largest lake in the Vallejo Lakes System and is located in southern Napa County. It was used as a water supply for the City as well as customers in the Lakes area until the early 1990s, but closure of the Gordon WTP at Lake Curry meant that water could no longer be pumped and treated from the lake. The City owns the lake and surrounding land. Lake Curry has a storage capacity of 3,487 MG, and according to a 1989 study by Raymond Vail and Associates, the lake has a safe yield of 1,222 MG/yr. However, Lake Curry is not currently being used or planned to be used in the near future as a drinking water source, although lake water is being used for voluntary in-stream flow into Suisun Creek.

6.4. Stormwater

The City of Vallejo does not collect stormwater for beneficial reuse. Vallejo Sanitation & Flood Control District (VSFCD) is responsible for managing stormwater runoff within the City.

6.5. Wastewater and Recycled Water

Except for a small amount of recycled water used at the VSFCD wastewater treatment plant for native plant propagation, and the City's own on-site recycling of water treatment backwash and sludge handling decant and filtrate water back to the plant headworks at Fleming Hill and Green Valley WTPs, the City does not currently have recycled water available in its service area. This section

describes the wastewater characteristics, flows, and treatment facilities that are in close proximity to the City's water service area.

6.5.1. Recycled Water Coordination

In order to further supplement and enhance the City's water supply sources, the City has had discussions about recycled water treatment, distribution, and consumption with the Vallejo Flood Control and Sanitation District (VSFCD) which is the agency that takes the lead on wastewater, stormwater, and recycled water planning in the City of Vallejo. The City supports the development of recycled water and will actively work with VSFCD and other stakeholder agencies to pursue recycled water projects and related funding. The City continues to support and contribute data to periodic reclaimed water studies that VSFCD has conducted. The most recent Reclaimed Water Study (2014) is discussed further in Section 6.5.4.

6.5.2. Wastewater Collection, Treatment, and Disposal

VSFCD provides all wastewater collection, treatment, and disposal services, and recycled water production and reuse within its wastewater service area, which includes the City of Vallejo and the unincorporated area in the greater Vallejo area.

The wastewater system consists of collection pipes that deliver wastewater to the Vallejo Wastewater Treatment Plant (WWTP). The WWTP, located at 450 Ryder Street in Vallejo, treats an average flow of 11.44 million gallons per day (mgd). The Vallejo WWTP has a dry weather capacity of 15.5 mgd and a wet weather capacity of 60 mgd. VSFCD's current dry weather flow is 9 mgd and has been decreasing due to low flow fixtures and a reduction of inflow and infiltration into the collection system. Treatment consists of conventional secondary treatment with trickling filters, short-term aeration, chlorination, and dechlorination before treated effluent is discharged to the Carquinez Strait.

In 2015, VSFCD collected, treated, and discharged 3,198 MG of wastewater. The collection system is described in Table 6-3. Treatment and discharge information is summarized in Table 6-4.

Table 6-3: Wastewater Collected Within Service Area in 2015 (DWR Table 6-2)

Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
Vallejo Sanitation & Flood Control District (VFCSD)	Metered	3,198 MG	Vallejo Sanitation & Flood Control District (VFCSD)	Vallejo Wastewater Treatment Plant	Yes	Yes
Total Wastewater Collected from Service Area in 2015:		3,198 MG				

Table 6-4: Wastewater Treatment and Discharge Within Service Area in 2015 (DWR Table 6-3)

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level[1]	2015 volumes (MG)			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
Vallejo Wastewater Treatment Plant	EFF-001 and EFF-002	EFF-001: Carquinez Strait EFF-002: Mare Island Strait		Bay or estuary outfall	No	Secondary, Disinfected - 23[1]	3,198	3,198	0	0
						Total	3,198	3,198	0	0

Table 6-4 Notes:

1. *Vallejo WWTP effluent geometric mean enterococcus density analyzed in each calendar month may not exceed 35 MPN/100mL, which is slightly different than DWR's secondary disinfected treatment categories of 2.2 and 23 MPN/100mL.*

6.5.3. Recycled Water System

The City of Vallejo does not currently use recycled water. A study describing potential recycled water demands and treatment/distribution options is described in the next section.

6.5.4. Recycled Water Beneficial Uses

VSFCD commissioned a report entitled *Reclaimed Water Study*, (RMC, May 2014). The study showed that there is a potential annual recycled water demand of approximately 502 MG in the Sanitation District's service area (City of Vallejo and unincorporated Vallejo – does not include the Lakes region). The recycled water demand is primarily for irrigation demands from golf courses, parks, schools and other large landscape irrigation customers within the city limits. The report recommended a centralized treatment option which would include construction of a tertiary treatment facility at the existing WWTP with distribution pipelines radiating out from the central treatment plant. The centralized treatment option was found to be more cost-effective than a considered decentralized treatment option. The recommended alternative was implementation of a recycled water program for 93.5 MG/yr of demands identified on Mare Island, including the 18-hole Mare Island Golf Course, the City Park, and planned mixed-use residential and commercial development with open space elements. The unit cost of implementation for serving these demands was found to be comparable to potable water rates.

Recycled water delivery would require adding tertiary treatment processes to its secondary WWTP as well as construction of recycled water distribution pipelines from the tertiary WWTP. The lack of a tertiary WWTP and "backbone" infrastructure system for recycled water causes a significant financial limitation to the use of recycled water in the City's service area. As stated in the 2014 *Reclaimed Water Study*, a recycled water program could only likely occur when one of the following conditions occur:

- Implementation of more stringent wastewater discharge requirements;
- Increased water demand due to development;
- Increased vulnerability of the water supply due to drought;
- Substantial grant funding to lower the cost of recycled water development; or
- Public opinion to implement recycled water as an environmental enhancement.

For this reason, Table 6-5 does not identify potential future uses because recycled water use is not feasible nor cost-effective in the foreseeable future.

Table 6-5: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (DWR Table 6-4)

☑	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Beneficial Use Type	**General Description of 2015 Uses**	**Level of Treatment**	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**
Agricultural irrigation								
Landscape irrigation (excludes golf courses)								
Golf course irrigation								
Commercial use								
Industrial use								
Geothermal and other energy production								
Seawater intrusion barrier								
Recreational impoundment								
Wetlands or wildlife habitat								
Groundwater recharge [Indirect Potable Reuse (IPR)]								
Surface water augmentation (IPR)								
Direct potable reuse								
Other								
		Total:	0	0	0	0	0	0

The City of Vallejo did not complete its 2010 UWMP, but the draft 2010 UWMP assumed no projected recycled water use, as shown in Table 6-6, which also shows that there was no actual recycled water use in 2015.

Table 6-6: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual (DWR Table 6-5)

☑	Recycled water was not used in 2010 nor projected for use in 2015. The supplier will not complete the table below.

Use Type	2010 Projection for 2015	2015 Actual Use
Agricultural irrigation		
Landscape irrigation (excludes golf courses)		
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		
Groundwater recharge (IPR)		
Surface water augmentation (IPR)		
Direct potable reuse		
Other		
Total	0	0

6.5.5. Actions to Encourage and Optimize Future Recycled Water Use

Currently, the City does not have established ordinances and policies requiring the installation of purple pipe for new development. In addition, the City does not require the installation of separate irrigation meters for all non-residential landscapes which would facilitate identifying potential recycled water uses. While these types of policies could facilitate the installation of recycled water infrastructure and incremental conversion to recycled water, treatment upgrades at the WWTP would be required for recycled water production. Table 6-7 shows potential methods to expand future recycled water use in Vallejo in the future.

Table 6-7: Methods to Expand Future Recycled Water Use (DWR Table 6-6)

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use
Recycled Water Ordinance	Prohibit the use of potable water when recycled water is available.	Unknown	Unknown
Recycled Water Ordinance	Continue cooperation with VSFCD to facilitate future recycled water and grey water use in the City's wastewater service area and in the City's water service area.	2015 and ongoing	Unknown
Pursue funding for recycled water projects	Pursue funding for recycled water projects in coordination with VSFCD and stakeholder agencies	2017 and ongoing	Unknown
Provide ongoing technical assistance to users	Provide ongoing technical assistance to users.	Unknown	Unknown
Be proactive in public education.	Be proactive in public education, including providing information about greywater use on the City's website.	2017 and ongoing	N/A
		Total	0

6.6. Desalinated Water Opportunities

SCWA's Integrated Regional Water Management Plan (IRWM) identifies desalinating Carquinez Strait water as an available long-term action to develop a new permanent water supply for Solano County. Potential desalination plant locations include offshore in the Cities of Benicia and Vallejo. Currently, there are no planned desalination projects in Solano County. Such projects could be pursued by SCWA if grant funding becomes available or other actions are taken to improve the economics of such projects. However, feasibility studies would be needed to evaluate its cost-effectiveness relative to other sources and to identify potential permitting restrictions.

Desalination facilities are costly to construct and operate relative to the City's current supply sources. According to DWR's *California Water Plan Update 2013*, recent estimates for proposed large-scale seawater desalination plants in California range from about $4,900 to $9,200 per MG, a large component of which is energy which can fluctuate greatly in cost. While cost estimates can vary wildly based on site-specific characteristics and other assumptions used, desalinated water usually costs more than other water supplies. There are also significant environmental and permitting issues associated with disposal of brine from the desalination treatment process. Alternatives would need to be investigated for discharging brine into the Bay that would not have adverse environmental effects.

The City's water supply needs can be met without the development of a local desalination supply. Desalination could conceivably be considered as a potential, future, local emergency supply source; however, the development of such a supply would be a long-term project requiring study and evaluation to determine its feasibility and cost effectiveness.

6.7. Exchanges or Transfers

The City has existing water transfer agreements with the Cities of American Canyon and Benicia and water exchange agreements with the City of Fairfield and Solano Irrigation District (SID).

6.7.1. American Canyon Water Agreement

The Cities of Vallejo and American Canyon entered into an agreement to provide for the sale of water from the City of Vallejo to the City of American Canyon. This includes three subsets of water: (1) treated water, (2) raw Permit Water, and (3) emergency water, each of which will be discussed below.

Treated Water Supply to City of American Canyon

The Vallejo Water Agreement provided for American Canyon's purchase of 205 MG/yr of treated Vallejo water supply in 1996. Under the terms of the agreement, American Canyon also has or had an option to purchase treated water supply during 5-year increments of time from 2001 through 2021. If the option for any of the years is not exercised by the dates established in the agreement, the option expires for that block of water supply.

The proposed purchase options that have or would be taken are based on American Canyon's 2015 UWMP. The year of the options to purchase blocks of treated water and the volumes are summarized below:

Table 6-8: American Canyon Treated Water Purchase Blocks

Option Year	Volume (MG/yr)	Result
1996	205	Purchased (original agreement)
2001	236	Not purchased (option 1)
2006	236	Purchased (option 2)
2011	236	Purchased (option 3)
2016	184	Purchased (option 5)
2021	184	Pending option 5, final
Total	1,045	Ultimate total, excluding option 1

Permit Water Supply to City of American Canyon

The City sells Permit Water to the City of American Canyon. On June 4, 1998, the American Canyon Water Agreement was amended (Addendum 2) to provide for a 3-party agreement for the "wheeling" of 163 MG/yr of Permit Water to the City of Calistoga (Calistoga). For Calistoga to receive the 163 MG/yr water supply, the City of American Canyon permanently transferred 163 MG/yr of American Canyon's SWP Table A allotment to Calistoga, and in turn, the City provided 163 MG/yr of Permit Water to American Canyon.

Emergency Water for City of American Canyon

The Vallejo Water Agreement was amended (Addendum 1) on July 18, 1996 to provide for American Canyon's purchase of up to 163 MG/yr (untreated water) for *emergency* purposes. Under the addendum, an emergency is defined as a condition whereby American Canyon's SWP allotment is reduced due to environmental or other constraints. When American Canyon's Table A allotment is not curtailed, emergency water is not available for purchase. In the reliability assessment presented later in Section 7, Vallejo emergency water is not included as a sale to American Canyon. The environmental constraints cited by the State are: i) restrictions on the SWP pumping required by the biological opinions issued by the U.S. Fish and Wildlife Service (June 2009) and National Marine

Fisheries Service (December 2008), and ii) climate change, which is altering the hydrologic conditions in the State.

6.7.2. City of Benicia Water Agreement

Under Amendment No. 2 to the 1962 Vallejo/Benicia Water Agreement, dated April 28, 1989, Vallejo is to deliver 358 MG of raw water per year to the City of Benicia. A service charge applies for usage exceeding 50 days per year. The agreement expires in February 2025, but is assumed in this UWMP to be extended for purposes of this report. However, terms of any agreement extension would need to be negotiated by both parties at a future time.

6.7.3. City of Fairfield

An agreement, dated March 20, 1992, provides for temporary potable water service between the City of Fairfield and the City of Vallejo. This agreement provides for Fairfield to serve potable water to Vallejo's Lake System. Vallejo provides the raw water supply and pays for the cost of service (lease payment and user charge). Demand is not to exceed 365 MG in 12 months. This agreement is now expired.

A subsequent agreement, dated May 4, 1993, with the City of Fairfield provides for mutual water exchange or sale between Fairfield and Vallejo. In the agreement, Vallejo will provide surplus Permit Water to Fairfield at either an exchange rate of 2:1 for Solano Project water or at a price of $50 per acre-feet (initially). In exchange, Fairfield will serve potable water into the Vallejo Lakes system and provide raw water that will be added to Vallejo's Solano Project allotment. Vallejo will be charged for water service at Fairfield's in-city general service rate.

Amendment No. 1 to the agreement, dated August 4, 1993, provides for two water connections ("interties") that were added through which Fairfield can serve potable water into the Vallejo Lakes system. Vallejo pays Fairfield a user charge if the connections are activated.

As a result of a California Department of Transportation (Caltrans) project on State Route 80 in the vicinity of Green Valley Road overpass that impacted a water distribution line exclusively feeding a subset of Vallejo Lakes customers known as the Old Cordelia subarea, the City of Vallejo is unable to directly deliver potable water to this portion of its service area. Rather than replace the impacted line, the City chose to enter into a water service agreement with the City of Fairfield to wheel (deliver) water to this portion of their system in lieu of the City's direct delivery. The agreement, dated June 3, 2014, provided for the wheeling (movement) of Fairfield potable water to the City of Vallejo's distribution system through an existing intertie between the two systems for delivery to the impacted portion of the Vallejo Lakes system. This potable water service utilizes an existing 4-inch City of Fairfield-owned intertie and provides for a maximum of 21,000 gallons per hour (350 gallons per minute [gpm] rate for one hour). This agreement does not affect existing water entitlements for either city nor does it have an expiration date; the agreement is specifically for the delivery of potable water to the Old Cordelia subarea.

6.7.4. Solano Irrigation District

The City has a service exchange agreement with Solano Irrigation District. Under this arrangement, the City provides raw water to Tolenas area within Fairfield, in SID's service area, and in exchange, SID delivers an equal amount of raw water to the City's Green Valley WTP. Consequently, the City supplies Tolenas' water demand from the City's Permit Water and/or SWP water supplies (through the NBA system) and in exchange, SID augments the City's supplies with Solano Project water. The demands of both areas are typically not equal and SID usually owes the City a balance of Solano Project water at the end of each year.

6.8. Future Water Projects

At present, the City has no planned future water supply projects to meet total projected water demands or to provide additional reliability to its water supply sources.

Table 6-9: Expected Future Water Supply Projects or Programs (DWR Table 6-7)

☑	No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.
☐	**Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.**
☐	**Provide page location of narrative in the UWMP.**

Name of Future Projects or Programs	Joint Project with other agencies?		Description (if needed)	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency
	Y/N	If Yes, Agency Name				

6.9. Summary of Existing and Planned Sources of Water

Table 6-10 provides a summary of all existing water supplies in 2015, while Table 6-11 provides projections of future supply through 2040.

Table 6-10: Water Supplies – 2015 Actual (DWR Table 6-8)

Water Supply	Additional Detail on Water Supply	2015 Volumes (MG)		
		Actual Volume	Water Quality	Total Right or Safe Yield
Purchased or Imported Water	State Water Project[1]	2,092	Raw Water	1,825
Purchased or Imported Water	Permit Water	1,261	Raw Water	7,429
Purchased or Imported Water	Solano Water Project	2,667	Raw Water	4,757
Surface water	Lakes Frey and Madigan	30	Raw Water	130
Exchanges	Solano Irrigation District	85	Raw Water	0
	Total	6,135		14,142

Table 6-10 Notes:

1. *2015 State Water Project deliveries were higher than the City's total water right because of carryover from previous years.*

Table 6-11: Water Supplies – Projected (DWR Table 6-9)

Water Supply	Additional Detail on Water Supply	Projected Water Supply (MG)									
		2020		2025		2030		2035		2040	
		Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield	Reasonably Available Volume	Total Right or Safe Yield
Purchased or Imported Water	State Water Project[1]	1,466	1,825	1,466	1,825	1,466	1,825	1,466	1,825	1,466	1,825
Purchased or Imported Water	Permit Water[2]	5,633	5,633	5,633	5,633	5,633	5,633	5,633	5,633	5,633	5,633
Purchased or Imported Water	Solano Project[3]	4,723	4,757	4,723	4,757	4,723	4,757	4,723	4,757	4,723	4,757
Surface water	Lakes Frey and Madigan[4]	130	130	130	130	130	130	130	130	130	130
Total		11,952	12,346	11,952	12,346	11,952	12,346	11,952	12,346	11,952	12,346

Table 6-11 Notes:

1. *SWP Reasonably Available Volume assumes 73% allocation based on normal year conditions (based on SCWA analysis), plus a 10% North of Delta Allocation. Total Right of 1,825 MG (5,600 AF) is not expected to be met except in very wet years.*
2. *Permit Water based on appropriative water rights license of 7,429 MG/yr (22,800 AFY), but reduced to 5,633 MG/yr (17,287 AFY) due to lack of agreement for full conveyance.*
3. *Reasonably available volume assumes 99% allocation based on normal water year conditions, based on SCWA analysis.*
4. *Based on City water rights.*

6.10. Climate Change Impacts to Supply

Water Supply

Precipitation patterns are expected to shift and snowpack is expected to decline in California due to climate change. This may threaten water supply that comes from snowmelt, such as the water supplied to the City through the State Water Project (SWP). Although the City is not located in a watershed that will be directly impacted by a decrease in snowmelt, the City's supplies may be impacted by this decrease via watersheds that contribute to the SWP, such as mountainous watersheds in the northern Sierra Nevada and southern Cascades.

Additionally, the City receives its SWP water through the Delta, an area that is already ecologically sensitive. Since the Delta is a climate sensitive water body, it will likely be impacted by climate change and this will result in strains on environmental and municipal demands. For more information on the impacts of climate change on the Delta, see *Section 3.2.1 Climate Change* of this UMWP.

Water supplies in some regions in California may be threatened by invasive species, such as the Quagga Mussel. Invasive species are expected to become more prevalent under climate change conditions, which may further threaten water supply. Invasive species in Solano County include Yellow Star Thistle, New Zealand Mud Snails, Medusa-head, Pepperweed, Bullfrogs, Russian Thistle, and Cocklebur. Water facilities and conveyance structures are being monitored for invasive species, but have not yet been detected.

Water Quality

The NBA watershed has had a history of water quality issues. In the mid-1990s, the water quality in the NBA was considered "perhaps the most vulnerable in the State Water Project" (DWR, 1998). While steps have been taken to improve water quality, the City still observes water quality shifts from the NBA during rain events that impact its treatment plant operation. As rain events are likely to become more severe under climate change conditions, more erosion may occur in the watershed. This would increase turbidity in the water and further impact the City's treatment infrastructure after a severe storm event.

Section 7 Water Supply Reliability Assessment

This section compares the water demand information developed in Section 4 and the water supply information developed in Section 6 to provide an estimate of water supply reliability. Comparisons are provided using DWR's required range of hydrologic conditions, including the Normal, Single Dry Year, and Multiple Dry Year scenarios.

7.1. Constraints on Water Sources

The City has five water rights to four sources of water supply: surface water supplies from the State Water Project (SWP), Permit Water, Solano Project Water, and surface water supplies stored in Lakes Frey and Madigan. While the City also has a right to water stored in Lake Curry, there is currently no conveyance infrastructure to make use of the supply beyond in-stream flows for Suisun Creek. As illustrated in Table 6-11, the City's supply projections indicate that its 2040 water supply portfolio will be composed of the following water supply sources under normal year conditions:

- 54 percent Permit Water;
- 33 percent Solano Project water;
- 10 percent State Water Project; and
- 1 percent Lakes Frey and Madigan surface water.

Water from Lakes Frey and Madigan are available sources of supply for the Lakes service area. Although this supply source is small in comparison to the other available sources, it is an important, independent source of supply from both a reliability and operational standpoint. Table 7-1 summarizes the various factors that may affect the City's supplies. This table does not include the City's emergency water supplies as those supplies are mainly used for operational flexibility and during catastrophic emergencies.

Table 7-1: Factors Affecting Reliability of Supply

Water Supply Source	State Water Project (SWP)	Permit Water	Solano Project Water	Lakes Frey and Madigan Surface Water
Specific Sources Name (if any)	Bay-Delta surface water via Barker Slough	Bay-Delta surface water via Barker Slough	Lake Berryessa	Lakes Frey and Madigan
Limitation Quantification (Year 2040)	1,825 MG/yr (Table A allotment + NOD Settlement)	7,429 MG/yr	4,757 MG/yr	130 MG/yr
Legal	Agreement expires 2038; will need to extend	Appropriative rights under License 997848; no expiration date	Water delivery contract through SCWA for water from USBR federal project; No expiration date	Pre-1914 Appropriative rights
Environmental	Biological Opinions from USFWS[1] and NMFS[1] issued in 2008 and 2009 affect water exports from the Delta through the SWP	Same as SWP	None	None
Water Quality	Barker Slough water quality issues mainly pertaining to TOC, turbidity and taste and odor affect the cost of treatment at City and Travis WTPs	Same as SWP	None	None
Climatic	Vulnerable to climatic conditions as this directly affects the SWP system and hence, deliveries from the SWP	Appropriative rights make this supply more reliable than SWP, but was curtailed for 1st time in 2014 and 2015 due to severe drought	Vulnerable to climatic conditions as this source is surface water from runoff; however, not as vulnerable as Bay-Delta source	Vulnerable to climatic conditions as this source is surface water from runoff; however, not as vulnerable as Bay-Delta source
Additional Information	As SWP water is curtailed, dry-year water bank water may become available. Can acquire additional amount beyond entitlement from carryover water, when available	1,790 MG/yr of total entitlement is unavailable until such time agreement to allow Vallejo's full conveyance through the NBA is secured	Can bank unused entitlement for future years subject to conditions	Water from Lakes Frey and Madigan available to Lakes System only

Table 7-1 Notes

1. U.S. Fish and Wildlife Service (USFWS); National Marine Fisheries Service (NMFS)

7.1.1. Legal & Environmental Constraints

State Water Project Supply Reliability

The DWR *2015 SWP Delivery Reliability Report* is based on a model of what SWP deliveries could be, reported as a percentage of SWP full allocations. The analysis is based on several environmental factors including Biological Opinions (BOs) by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS). The BO by USFWS was issued in December 2008 and the BO by NMFS was issued in June 2009. The BOs affects SWP pumping operations and SWP exports from the Delta. The *Delivery Reliability Report* concludes that projected long-term average delivery amounts of Table A allotments have decreased from previous estimates.

As a result of a North of Delta (NOD) Settlement (December 31, 2013), DWR issues a separate SWP annual allocation for Solano County Water Agency (SCWA), Napa County Flood Control and Water Conservation District, City of Yuba City, and County of Butte. The NOD allocation amounts to an additional increment of annual allocation above the current SWP allocation and is being used as a way to not penalize North Bay Aqueduct (NBA) users due to conveyance restrictions that are exclusive to the South of Delta pumping plants. A copy of the Summary of the *2015 SWP Delivery Reliability Report* is included in Appendix E.

Permit Water Supply Reliability

Permit Water, although conveyed via the NBA system, is not the same as SWP water. Permit Water is an appropriative water right that Vallejo has under a license with the SWRCB. Although Permit Water is similarly subjected to Delta smelt-related pumping restrictions, it has not been subject to the same curtailment as SWP water supplies. Historically, the City has not experienced a curtailment of its Permit Water allocation, even under severe drought conditions, until recently when Permit Water was curtailed from June 2014 to November 2014 and again May 2015 to November 2015.

Solano Project Water Supply Reliability

The reliability of the Solano Project water supply is based on the SCWA *Water Supply Reliability Technical Memorandum* prepared by Kennedy/Jenks Consultants in April 2016. In general, this source is reliable, but can experience significant drawdown during long periods of drought since the local watershed will not produce as much runoff. In this case, member agencies have an agreement to reduce allocations at defined reservoir elevation thresholds and instead keep water in the reservoir as carryover for the future.

Lakes Frey and Madigan and Lake Curry Water Supply Reliability

Water stored in Lakes Frey and Madigan is used to serve the City's Lakes customers. Historically, it has not been curtailed and for this reason, during normal water years, a supply reliability of 100 percent is assumed. However, for single and multiple-dry years, the supply reliability has been assumed to be similar to that of Lake Berryessa (Solano Project water).

A reliability analysis was not conducted for the Lake Curry since, currently and into the near future, this water source is being used only for voluntary instream flows to Suisun Creek. When, in the future, the City constructs a conveyance system to access this supply, water from Lake Curry can be made available as an additional supply for City's customers. For this UWMP, however, it is assumed that this supply source will not available in the planning horizon.

7.1.2. Water Quality Constraints

A major source of the City's water supply is the SWP and Permit Water from the Barker Slough watershed. This watershed is located in the larger Sacramento River watershed, and drains an area approximately 14.5 square miles in Solano County. The source water is conveyed via the NBA system to the Cordelia Forebay, from which it is pumped and transmitted to the City's water treatment plant

by a separate pipeline. Surface water source problems pertaining to the NBA water from the Sacramento Delta are due, in part, to the location of the intake in Barker Slough. Water quality problems include excessive turbidity, color, taste and odor, and total organic carbon (TOC) concentrations of the NBA water, mostly occurring during storm events.

In addition to the Barker Slough watershed, the City receives water from the Solano Project, which is water stored in Lake Berryessa. This water supply source generally has very good water quality except after significant storms, when the turbidity in the source water can be challenging to treat. Turbidity is introduced at Putah Creek and Putah South Canal, downstream of Lake Berryessa.

The City consistently meets all drinking water standards, though the source water occasionally poses treatment challenges during storm events when elevated levels of turbidity and TOC occur. Local runoff and low pumping rates at Barker Slough during the winter result in an extended period of increased turbidity and TOC concentrations into the NBA. Taste and odor are also occasional problems. In order to reduce the significance of potential contamination sources, the cities and districts receiving NBA water have been working with the SCWA to evaluate watershed management practices that could improve water quality. The SCWA and its retailers are investigating an alternate NBA intake to mitigate against water quality and environmental concerns with the existing NBA intake.

All California Department of Public Health Services (CDPH) standards are consistently met in the potable water supplies delivered. For this reason, curtailment of the use of the City's water supplies due to water quality issues is considered to be unlikely. However, the cost of treatment is an ongoing concern, and the SCWA member agencies continuously collaborate to work towards the implementation of watershed best management practices (BMPs) within areas that drain into Barker Slough.

7.2. Reliability by Water Year Type

The City's water supply sources primarily consist of Bay-Delta surface water (for SWP and Permit Water), water from Lake Berryessa (Solano Project Water), and surface water from Lakes Frey and Madigan (used to serve the Lakes area). The basis for each water year type for each supply source is summarized in Table 7-2 through Table 7-5. The data used to determine the supply available for each water year type for the SWP and Solano Project water are from the SCWA *Water Supply Reliability Technical Memorandum*, prepared for SCWA by Kennedy/Jenks Consultants in April 2016. SCWA is the managing supplier of these sources of water for the City. Data used to determine supply availability for Permit Water was from historical supply records. A combination of historical supply records and values from SCWA's Lake Berryessa analysis were used to determine supply availability for Lake Frey and Madigan water supplies.

SCWA and the City are continuing discussions with other Bay-Delta water users regarding "area of origin" and priority water rights for Bay-Delta water. The results this discussion may affect the reliability of this source in the future.

Although the source for Permit Water is the same as for the SWP (Bay-Delta) supply, Permit Water is a much more robust supply for the City. While Permit Water is similarly subject to Delta smelt-related pumping restrictions, it is not typically subject to the same curtailments as SWP water, and therefore, the City's license for receiving this water is more reliable. However, Permit Water was curtailed for the first time in 2014 and 2015 due to the current severe drought (although full allocations were delivered in 2012 and 2013, the first 2 years of the current drought). Since Permit Water was not curtailed in 2012 or 2013 (years one and two of the current drought) but was curtailed in 2014 (year three), the City is assuming that, in the future, Permit Water will be curtailed in year 3 of a multiple-dry year scenario. The Permit Water curtailments in 2014 and 2015 averaged 54% of the calendar

year delivery, so the City is assuming 46% supply availability during the third year of multiple-dry water years.

The basis for the City's supply from water stored in Lakes Frey and Madigan is the same percent allocation for the various hydrologic water years as the Solano Project water source, Lake Berryessa. This assumption is based on the fact that the three lakes are located in the same hydrologic area. Safe yield calculations by Raymond Vail and Associates in 1989 show that the safe yield of Lake Madigan and Frey is 196 MG/yr, as determined using a worst-case historical two-year (1976-77) drought scenario. The City has chosen to reduce this amount by one third to 130 MG/yr due to the lack of alternative water sources for the Lakes system. In addition, as the scenario envisioned only a two-year drought event, the City has chosen to reduce the 130 MG/normal water year value by 20% in a single dry year (reduced to 104 MG/yr) and by 25% in multiple dry years (reduced to 98 MG/yr) to assure extension of water delivery.

Water stored in Lake Curry is not included since this water source is currently being used for voluntary instream flow to Suisun Creek and the City does not have a way to convey the water to the City's water treatment plant at this time.

Table 7-2: Basis of Water Year Data – State Water Project (DWR Table 7-1)

Year Type	Base Year	Volume Available	% of Average Supply
Average Year	Average 1922-2004	1,466	100%
Single-Dry Year	1977	396	27%
Multiple-Dry Years 1st Year	1990	454	31%
Multiple-Dry Years 2nd Year	1991	454	31%
Multiple-Dry Years 3rd Year	1992	454	31%

Table 7-2 Notes:

1. *Multiple versions of DWR Table 7-1 are being used herein; this table summarizes the City's State Water Project water source. The values above include a North of Delta Allocation estimated by SCWA based on actual amounts received since the implementation of the North of Delta Settlement in 2014.*

Table 7-3: Basis of Water Year Data – Permit Water (DWR Table 7-1)

Year Type	Base Year	Volume Available	% of Average Supply
Average Year	1966 (license)[1]	5,633	100%
Single-Dry Year	-	5,633	100%
Multiple-Dry Years 1st Year	2012	5,633	100%
Multiple-Dry Years 2nd Year	2013	5,633	100%
Multiple-Dry Years 3rd Year	2014	2,582	46%

Table 7-3 Notes:

1. *Multiple versions of DWR Table 7-1 are being used herein; this table summarizes the City's Permit Water source. Available Permit Water entitlement is 5,633 MG/yr (17,287 AFY). Due to the first historical curtailments of about 54% in 2014 and 2015 due to the current severe drought, the City is assuming 46% supply reliability in year 3 of a multiple-dry year scenario.*

Table 7-4: Basis of Water Year Data – Solano Project (Lake Berryessa) (DWR Table 7-1)

Year Type	Base Year	Volume Available	% of Average Supply
Average Year	Average of 1906-2007	4,723	100%
Single-Dry Year	1934	4,682	99%
Multiple-Dry Years 1st Year	1990	4,242	90%
Multiple-Dry Years 2nd Year	1991	4,242	90%
Multiple-Dry Years 3rd Year	1992	4,242	90%

Table 7-4 Notes:

1. *Multiple versions of DWR Table 7-1 are being used herein; this table summarizes the City's water source from Lake Berryessa (Solano Project water).*

Table 7-5: Basis of Water Year Data – Lakes Frey & Madigan (DWR Table 7-1)

Year Type	Base Year	Volume Available	% of Average Supply
Average Year	-	130	100%
Single-Dry Year	-	129	99%
Multiple-Dry Years 1st Year	-	117	90%
Multiple-Dry Years 2nd Year	-	117	90%
Multiple-Dry Years 3rd Year	-	117	90%

Table 7-5 Notes:

1. *Multiple versions of Table 7-1 are being used herein; this table summarizes the City's water source from Lakes Frey and Madigan. The basis for the City's supply from Lakes Frey and Madigan is assumed to be the same percent allocation for the various hydrologic water years as the Solano Project water source from Lake Berryessa, which is geographically close (about 15 miles north). Base year is not reported since the reliability is based on the percentages from the Solano Project source.*

7.3. Supply and Demand Assessment

Table 7-6 compares the projected Normal Year (Reasonably Available Volume) water supply available to the City (including the Lakes service area) and projected customer demands from 2020 to 2040, in five-year increments. Comparisons of supply and demand under Single Dry and Multiple Dry Years are included in Table 7-7 and Table 7-8, respectively.

Table 7-6: Normal Year Supply and Demand Comparison (DWR Table 7-2)

	2020	2025	2030	2035	2040
Supply totals	11,952	11,952	11,952	11,952	11,952
Demand totals	8,291	8,114	7,746	7,608	7,447
Difference	3,661	3,838	4,206	4,344	4,504

Table 7-7: Single Dry Year Supply and Demand Comparison (DWR Table 7-3)

	2020	2025	2030	2035	2040
Supply totals	10,840	10,840	10,840	10,840	10,840
Demand totals	8,400	8,168	7,782	7,638	7,469
Difference	2,439	2,671	3,057	3,202	3,371

Table 7-8: Multiple Dry Years Supply and Demand Comparison (DWR Table 7-4)

		2020	2025	2030	2035	2040
First year	Supply totals	10,446	10,446	10,446	10,446	10,446
	Demand totals	8,280	8,056	7,678	7,536	7,371
	Difference	2,166	2,390	2,769	2,910	3,076
Second year	Supply totals	10,446	10,446	10,446	10,446	10,446
	Demand totals	8,117	7,903	7,536	7,398	7,237
	Difference	2,329	2,543	2,911	3,048	3,209
Third year	Supply totals	7,395	7,395	7,395	7,395	7,395
	Demand totals	8,173	7,955	7,584	7,445	7,283
	Difference	(778)	(560)	(189)	(50)	113

Table 7-7 and Table 7-8 show that, in most cases, the City has sufficient water supplies available to meet dry water year conditions. However, in the third year of a multiple-dry year scenario, the City expects a shortfall of between 50 and 778 MG between 2020 and 2035 due to expected curtailment of Permit Water. Under all other dry water year conditions, the City's projected water supply is approximately 10,000 MG/yr throughout the UWMP planning horizon. The City is fortunate to have a conservative total water supply volume such that City customers will have a reduced likelihood of being subject to severe rationing and mandatory water conservation due to water supply curtailments during the studied drought conditions.

In summary, the City's combined projected water supplies are anticipated to be sufficient to meet projected future demands during normal, single-dry and multiple-dry water year conditions.

7.4. Regional Supply Reliability

As part of its water management efforts, the City of Vallejo maintains a detailed Water Shortage Contingency Plan, as discussed later in Section 8, and is continually preparing to manage supplies and demands during droughts and water shortages to ensure a high quality, reliable water supply to its customers. The City also maintains a thorough conservation program as detailed in Section 9, and plans to continue to participate in regional water conservation measures, surveys, and rebate programs. Additionally, the City supports VSFCD which takes the lead on recycled water planning and associated studies.

The City works closely with and attends regular planning meetings with the other member agencies of the SCWA to coordinate optimized water supplies for all associated agencies.

Distribution system water losses will be analyzed annually using the AWWA Water Loss Audit for improved identification and tracking of loses. The City has purchased a new maintenance system which will improve water loss auditing processes by capturing a record of leaks, breaks, flushing, and firefighting events. Ongoing leak program activities include water meter calibrations, notifying customers when a leak appears to exist on the customer side of the meter, performing distribution system leak detection when warranted and cost-effective, and repairing leaks when found.

Section 8 Water Shortage Contingency Plan

This chapter describes the City's plans for water supply shortage or catastrophic supply interruptions in compliance with Water Code Section 10632(a). Prior to the preparation of this UWMP, the last version of the City's Water Shortage Contingency Plan (WSCP) had been prepared in 2005. This updated plan reflects changes in statewide and regional water shortage planning resulting from the recent ongoing drought. Although included as a section of the UWMP, the WSCP, upon its adoption by the City Council, can be separately cited as a stand-alone plan.

8.1. Stages of Action

The City of Vallejo employs a five stage water-shortage response plan (Table 8-1) which is triggered at prescribed levels. Water-shortage stages are monitored, reported and acted upon according to the plan set out in this WSCP for each water supply condition for each stage. Each stage consists of specific prohibitions, regulations, penalties, and/or rate structure to encourage the appropriate level of conservation. Though all five stages have both voluntary and mandatory components, none can be considered a rationing program because they do not strictly limit water use. However, Stages IV and V are most restrictive primarily due to the landscape irrigation component, which prohibits irrigation of any decorative landscaping. Under drought conditions, the City does not anticipate having to implement any conservation level above Stage III. Conservation Stages IV and V are prepared to meet emergency conditions brought about by catastrophic events.

Table 8-1: Stages of Water Shortage Contingency Plan (DWR Table 8-1)

Stage	Percent Supply Reduction	Water Supply Condition
Stage I – Normal Conditions	0% Normal Usage (Voluntary Conservation)	Full deliveries of water supply to all City customers and the ability to meet maximum day demand with largest unit out of service.
Stage II – Water Warning	Up to 10% reduction of normal usage	A cutback in supply of up to 10 percent of baseline supply and the inability to obtain additional water, or demand is greater than 90 percent of available supply.
Stage III – Water Shortage	Up to 20% reduction of normal usage	A cutback in supply of 20 percent and the inability to obtain additional water, or demand is greater than 105 percent of available supply.
Stage IV – Water Crisis	Up to 35% reduction of normal usage	A cutback in supply by 20-35 percent and the inability to obtain additional water, or demand is greater than 120 percent of available supply.
Stage V – Water Emergency	Up to and above 50% reduction of normal usage	A cutback in supply of up to or greater than 50 percent and the inability to obtain additional water, or demand is greater than 125 percent of available supply.

Table 8-1 Notes:

1. Stages II through V are mandatory compliance stages.

Given the potential requirement for various levels of demand reduction due to catastrophic events and drought scenarios, prioritization of use of available water resource must be considered. The principle of maximum beneficial usage must be implemented and plans created to efficiently produce such a result. Conservation measures utilized in each stage are based on the priorities set in the

California Water Code (CWC) Chapter 3 and through public input. A summary of those priorities is presented below.

Priority 1: Maintain essential public health and safety uses.

Uses include minimum drinking, sanitation, food preparation activities, and fire protection requirements. These uses are considered the core minimum water use of the community and are estimated at approximately 50 gallons per person per day.

Priority 2: Maintain the existing economic and job base of the community.

Acceptable uses would include water sufficient to allow restaurant operation, water necessary for existing industrial uses, and additional commercial uses which protect the employment base of the communities served. All these activities would be under condition of efficient water usage or penalty.

Priority 3: Continued discretionary uses for existing customers.

Existing customers make use of large quantities of non-essential water use through such activities as outdoor landscaping, swimming pools, and car washing. These activities would be heavily discouraged and would be expected to account for a large percentage of demand reductions. Provisions may be made to allow continued irrigation of heritage trees and plants which benefit the community.

Priority 4: New Service Connections

New connections would not be permitted during times of severe shortage. Only those approved connections permitted before supply reduction events occurred would be allowed to be connected to the system. Any additional service requests would be conditioned to fund demand reduction measures which produce verifiable savings greater than the proposed connection impacts.

8.2. Prohibitions on End Use

The specific water use reduction measures for the five stages are summarized in Table 8-2. The narrative description of the stages of action and restrictions and prohibitions on end use is provided in the following sections.

Stage I: Normal Supply

Stage I is to be in place at all times as it does not require any cutback in water usage. Instead, Stage 1 establishes recommendations for voluntary water conservation and water waste restrictions. All normal water efficiency programs are in place.

Stage II: Water Warning

In Stage II, all customers are required to reduce consumption by 10% for the duration of the water warning. Customers are also required or recommended to implement the following water shortage response measures:

- No hose washing of sidewalks, walkways, driveways, parking areas, patios, porches or verandas, except flammable or other similar dangerous substances may be washed from said areas by direct hose flushing for the benefit of public health and safety. This prohibition shall not apply where hosing of sidewalks or driveways is required by law.
- No water shall be used to clean, fill, operate, or maintain levels in decorative fountains unless such water is part of a recycling system.
- No customer shall permit water to leak from any facility on his/her premises. Such facilities shall include sprinklers and irrigation systems, faucets, toilets, water heaters, or any other fixture used in providing water service. Any leak shall be repaired in 72 hours.

- No customer shall sprinkle, water, or irrigate any shrubbery, trees, lawns, grass, ground cover, plants, vines, gardens, vegetables, flowers, or any other landscaped or vegetated area between the hours of 9:00 a.m. and 6:00 p.m. Such watering shall not be in excess of needs nor be of a manner that allows water to flow into streets. Watering by hand shall be allowed.
- Non-commercial washing of privately owned vehicles, trailers, buses, boats, and equipment, except from a bucket and except with a hose equipped with a shut-off nozzle may be used.
- Any use of water from a fire hydrant, except for fire protection purposes, is prohibited unless authorized by the City.
- Use of water for construction purposes, such as consolidation of backfill, unless no other source of water or method can be used, is prohibited.
- Water will be available only for beneficial uses; all unnecessary and wasteful uses of water are prohibited.
- Water efficient plumbing fixtures, water efficient appliances, and high efficiency irrigation techniques, such as drip irrigation, are encouraged.
- Mow less frequently allowing grass to grow longer, inducing hydration.
- Check the soil moisture in the root zone to determine when irrigation is required.
- Restaurants shall serve water only upon request.

Stage III: Water Shortage

Stage III is to be implemented when water demands need to be reduced by up to 20%. Customers will be notified that Stage III water conservation measures are in effect, and compliance with the following water shortage response measures will be required:

- All Stage I and II actions remain in force.
- Further reduction in landscape irrigation is required. Reduce watering time; tolerate some plant wilting.
- Landscape, pasture, common areas, and street median irrigation shall be limited to a maximum of three days per week, when necessary, based on the following schedule:
    - Customers with street addresses that end with an odd number may irrigate only on Tuesdays, Thursdays, and Saturdays.
    - Customers with street addresses that end with an even number may irrigate only on Monday, Wednesdays, and Fridays.
    - Common areas and street medians may irrigate only on Mondays, Wednesdays, and Fridays.

Stage IV: Water Crisis

Stage IV is to be implemented when water use reductions up to 35% are required. Customers will be notified of the water shortage response measures as listed below:

- All Stage I, II, and III actions remain in force.
- Landscape, pasture, common areas, and street median irrigation shall be limited to a maximum of two days per week based on the following odd-even schedule:

  - Customers with street addresses that end with odd numbers may irrigate only on Tuesdays and Saturdays.
  - Customers with street addresses that end with even number may irrigate only on Monday and Fridays.
  - Common areas and street medians may irrigate only on Mondays and Fridays.
- Water use for ornamental ponds and fountains is prohibited.
- Automobiles or equipment shall be washed only at commercial establishments that use recycled or reclaimed water.
- Water shall not be used for cooling mists.
- Flushing of sewers or fire hydrants is prohibited except in case of any emergency and for essential operations.

Stage V: Water Emergency

Customers will be required to comply with all of the following Stage V water shortage response measures when up to a 50% usage reduction is required. The water shortage response measures are listed below:

- All Stage I, II, III and IV actions remain in force.
- Landscape and pasture irrigation is prohibited.
- Activation of additional water service connections to the City will not be allowed.

Table 8-2: Restrictions and Prohibitions on End Use (DWR Table 8-2)

Stage	Restrictions and Prohibitions on End Users	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement[1]?
II	Other - Prohibit use of potable water for washing hard surfaces		Yes
II	Water Features - Restrict water use for decorative water features, such as fountains		Yes
II	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	Leaks shall be repaired within 72 hours.	Yes
II	Landscape - Limit landscape irrigation to specific times		Yes
II	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
II	Other	Any use of water from a fire hydrant, except for fire protection purposes, is prohibited, unless authorized by the City.	Yes
II	Other - Prohibit use of potable water for construction and dust control		Yes
II	CII - Restaurants may only serve water upon request		Yes
III	Landscape - Limit landscape irrigation to specific days	Landscape, pasture, common areas and street median irrigation shall be limited to a maximum of three days per week when necessary.	Yes
IV	Landscape - Limit landscape irrigation to specific days	Landscape, pasture, common areas and street median irrigation shall be limited to a maximum of two days per week when necessary.	Yes
IV	Other	Water shall not be used for cooling mists.	Yes
IV	Other	Flushing of sewers or fire hydrants is prohibited except in case of any emergency and for essential operations.	Yes
V	Landscape - Prohibit all landscape irrigation		Yes
V	Other	Activation of additional water service connections to the City will not be allowed.	Yes

Notes:

1. *Enforcement for Stages II through V is as follows: First offense results in a warning - delivered in person to the customer or left at the premises as a "door hanger." Second offense results in a fine of $200. Third offense results in a fine of $500.*

8.3. Penalties, Charges, Other Enforcement of Prohibitions

In order to discourage non-compliance with the mandatory water use restrictions in Stages II through V, the following enforcement practices and penalties will be implemented for violation of the stage-specific unauthorized water use:

- The first offense will result in a warning to the customer, which will be personally delivered or left at the premises as a "door hanger."
- The second offense shall result in a fine of $200.
- The third offense shall result in a fine of $500.

8.4. Consumption Reduction Methods

When the Water Shortage Contingency Plan is put into effect, the City will implement various consumption reduction methods depending on the stage of action. These consumption reduction methods are described below and summarized in Table 8-3.

Starting in Stage I, the City, in partnership with SCWA, will offer water surveys to customers to help them determine effect water conservation strategies. Additionally, the City will partner with SCWA, DWR and PG&E to offer rebates on high efficiency toilets and washing machines, smart irrigation controls and turf irrigation.[6] During Stage I, all normal water use efficiency programs will continue. During Stage II, the City will, notify local jurisdictions and customers that Stage II is being implemented, initiate a public information campaign explaining the water supply condition, maintain a water conservation hotline, provide free water conservation kits, and initiate "conservation monitor" duties to existing personnel to identify and document excessive water use. Additionally, the City will host conservation events and outreach in local schools.

If Stage III is implemented, the City will notify local jurisdictions and customers, continue those outreach strategies started in Stage II and tighten restrictions on water usage.

Should Stages IV or V be implemented, timely notice will be given to customers and local jurisdictions. Consumption reduction methods in Stages IV and V will build upon the actions of previous stages and include a moratorium on new water connections.

[6] http://www.cityofvallejo.net/cms/One.aspx?portalId=13506&pageId=23562

Table 8-3: Consumption Reduction Methods (DWR Table 8-3)

Stage	Consumption Reduction Methods	Additional Reduction or Reference
II	Expand Public Information Campaign	This will include distribution of literature, direct mailers, bill inserts, restaurants message tents, educational programs in schools and weekly water shortage status update and conservation messages printed in local newspapers. Additionally, a Water Conservation Hotline will be established with specially trained conservation representatives to answer customer questions about conservation and water use efficiency.
II	Other	Provide free water conservation kits at the Water Billing Office for customer pickup.
II	Increase Water Waste Patrols	Initiate "conservation monitor" duties to existing personnel to identify and document excessive water use and advise customers regarding the appropriate watering schedule.
II	Implement or Modify Drought Rate Structure or Surcharge	
III	Offer Water Use Surveys	In partnership with SCWA.
III	Other	Provide free water savings devices such as low-flow showerheads and aerators.
III	Provide Rebates on Plumbing Fixtures and Devices	In partnership with SCWA, offer rebates on high efficiency toilets ($100) and washers (up to $150) and irrigation controllers (up to $1,000).
III	Provide Rebates for Turf Replacement	In partnership with SCWA, offer rebates on turf replacement ($1/square-foot up to $2,000).
V	Moratorium or Net Zero Demand Increase on New Connections	

8.5. Determining Water Shortage Reductions

The success of the City's response to a water shortage depends on its ability to accurately monitor water usage, to determine if current stage mandatory water use reductions are being met, and project ongoing water supply adequacy. Billing data for the City of Vallejo lags approximately 1-2 months behind usage. Given the nature of standard rotating meter reading and the inability to hire and train meter reading personnel to increase the speed of data collection, the City will use water treatment plant production volume data to monitor water use reduction goals. Depending on the level of supply reduction and the corresponding requirement for demand reduction, water plant production will be monitored on a monthly, weekly, or daily schedule as described below to ensure that the necessary level of demand reduction is being achieved.

During Stage I periods, water production/consumption is reported by the Assistant Public Works Director – Water on a monthly basis to the Public Works Director to ensure adequate demand and supply balance is maintained.

During Stage II and III periods, water production/consumption is reported by the Assistant Public Works Director – Water on a weekly basis to the Public Works Director to ensure adequate demand and supply balance is maintained. If sufficient reductions are not being realized to ensure balance of supply and demand, recommendations will be presented to the City Manager for corrective actions to be taken.

During Stage IV and V periods, water production/consumption will be monitored on a daily basis with recommendations given daily if shortages are projected.

8.6. Revenue and Expenditure Impacts

As previously noted, the success of the City's response to a water shortage depends on its ability to accurately monitor water usage, to determine if current stage mandatory water use reductions are being met, and project ongoing water supply adequacy. It also depends on the City's careful review of revenue levels to ensure steps are taken, as needed, to maintain adequate water system funding during times of reduced water sales.

The City anticipates a reduction in revenue ranging from 9% in Stage II conditions to 35% in Stage V conditions due to reduced water sales. The reduction in revenue would be partially counteracted by a reduction in operations and maintenance expenses from the reduced deliveries. However, the reductions in expenses is not expected to entirely balance the City's reduced revenue, so the water fund will need to be monitored and a drought rate structure will likely need to be implemented. The plans for water fund monitoring and a drought rate structure are discussed below.

8.6.1. Water Fund Financial Monitoring

During Stage I periods, under normal conditions, water revenue figures are provided quarterly for review by department and division heads. The Assistant Public Works Director – Water will report monthly to the Public Works Director to ensure adequate revenue is being collected to meet existing and projected budgeted needs.

During Stage II and III periods, water revenue figures will be provided monthly for review by department and division heads. The Assistant Public Works Director – Water will report monthly to the Public Works Director to ensure adequate revenue is being collected to meet existing and projected budgeted needs. If revenues are projected to be inadequate, recommendations will be presented to the City Manager for corrective actions to be taken. Such actions may include increases or decreases in either or both the service charge and consumption charge, to ensure adequate funds are collected to maintain the financial stability of the water fund.

During Stage IV and V periods, water revenue figures will be provided weekly for review by department and division heads. The Assistant Public Works Director – Water will report monthly to the Public Works Director to ensure adequate revenue is being collected to meet existing and projected budgeted needs. If revenues are projected to be inadequate, recommendations will be presented to the City Manager for corrective actions to be taken. Such actions may include increases or decreases in either or both the service charge and consumption charge, to ensure adequate funds are collected to maintain the financial stability of the water fund.

8.6.2. Drought Rate Structure

Beyond Stage II, the City's existing rate structure is not likely to be adequate to meet expenses. The City recently conducted a rate study to determine future rates under both normal and drought conditions. The recent rate study recommends a volumetric increase in rates as conservation targets are increased to account for decreasing water usage. As proposed in the rate study, in the event of a

Stage III, IV or V Shortage Contingency event, City Council would enact the volumetric drought surcharge in parallel to the stage-appropriate water use reduction measures.

A new rate structure has not yet been adopted, but the City will pursue adoption of drought rates to allow the City to generate sufficient funds to operate, manage, and maintain its facilities and services in times of severe drought and water use reduction. The final rate structure may be imposed to adjust water volume rates by a specified percentage depending on the severity of the water shortage and the City's revenue needs. If a drought rate is implemented, customers who follow conservation recommendations provided by the City would experience minimal cost changes on their water bill while customers who do not conserve will experience higher bills. The 2016 rate study (NBS 2016) can be found on the City's website.[7]

8.7. Resolution or Ordinance

The City has prepared a draft water shortage contingency resolution which can be found in Appendix F. In the event of a water shortage emergency, the draft resolution will be brought before the City Council for adoption. The resolution includes a declaration of the water shortage and signals an official implementation of the prohibitions on end use and consumption reduction methods described in this WSCP.

8.8. Catastrophic Supply Interruption

Aside from drought-caused water shortages, the City is also vulnerable to other potential disaster situations that could result in a catastrophic interruption of water supplies including, but not limited to, regional power outages, landslides, earthquakes, and water contamination. Below is a brief summary of how catastrophic events, other than extreme drought, may affect the City's water supplies from the State Water Project (delivery of both State Water Project Table A and Vallejo Permit Water) and Solano Project facilities, as provided by SCWA, the City's wholesale supplier of water through these regional supply facilities.

North Bay Aqueduct Supply Interruption

The North Bay Aqueduct (NBA) supplies water to the City from the SWP, including conveyance of both Table A allotments and Vallejo Permit water entitlements. Potential catastrophic outages may occur from earthquakes that cause major damage to the NBA facilities, prolonged loss of PG&E power required for pumping water through the NBA, or contamination at the intake to the NBA. The NBA is an underground pipeline and not subject to landslide damage.

In the event of loss of NBA supply for any reason, the City would immediately switch to Solano Project water supplies while the emergency condition was being resolved and normal water supply restored. This high level of redundancy is possible due to the geographical separation of the two sources.

Solano Project Supply Interruption

The Solano Project supplies nearly half of all water to the City under normal conditions. In the event of an earthquake, the Solano Project Emergency Response Plan is invoked. The Plan, developed in coordination with the U.S. Bureau of Reclamation, provides a detailed response for various levels of seismic activities both at the Monticello Dam site and within a specified geographical area surrounding the Solano Project. No actions are necessary from the City of Vallejo, which will be notified at the time of the condition of the Solano Project and its ability to deliver. In the event of loss of Solano Project water, the City would attempt to shift to supplies delivered through the NBA including SWP water and Vallejo permit entitlements.

[7] http://www.cityofvallejo.net/common/pages/DisplayFile.aspx?itemId=2783255

The Putah South Canal is susceptible to a landslide which could either block or damage its ability to deliver Solano Project water. SCWA recently invested in a $3 million project to provide an underground pipeline bypass of an area that is most susceptible to a landslide. Any detection of contamination of Solano Project water may result in a shut-down of the Solano Project deliveries. The City of Vallejo receives its supply at the end of the delivery canal and, as such, is more exposed to potential supply interruptions due to canal impairment. Solano Project is a gravity system and is not dependent upon power to operate.

Vallejo Lakes Supply Interruption

Delivery of water from the Vallejo Lakes – Frey, Madigan, and Curry – is via gravity systems which are susceptible to earthquake damage. Each Lakes supply is inspected after earthquakes to assure public safety and determine the viability of the supply after an event. Damage may require changeover to the Solano Project through an exchange agreement with the Solano Irrigation District.

Emergency Response Plan

The City has completed a Water System Emergency Response Plan (ERP) in accordance with the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. The City's ERP identifies the City's standardized response and recovery protocols to prevent, minimize, and mitigate injury and damage resulting from emergencies or natural disasters as described previously in this section. The ERP has been exercised once previously when the State pumps delivering NBA water were down for more than 24 hours. A copy of the City's ERP is available at the Office of the Assistant Public Works Director – Water at the Fleming Hill WTP. A summary of ERP actions are illustrated in Table 8-4.

Table 8-4: Preparation Actions for Catastrophes

Decision Stage Process	Actions Taken	ERP Activation Level
Stage 1 – Possible Threat	• Evaluate available information • Determine if a threat is possible	• Implement precautionary response actions
Stage 2 – Credible Threat	• Determine that threat is credible by establishing corroborating information: o Highly credible source o Health Department/customer reports o Unusual monitoring results	• Activate portions of ERP • Initiate internal and external notifications • Issue public health advisory • Initiate water sampling and analysis • Consider partial or full activation of EOC
Stage 3 – Confirmed Major Event	• Confirm threat by verifying definitive evidence and information that establishes the major event • Perform water sampling and analysis	• Fully implement ERP • Immediately initiate appropriate action plan • Fully activate EOC

Notes:

1. These stages are not related to those defined for the Water Shortage Contingency Plan.

The City has engineered its critical pump stations and reservoirs to meet all California seismic safety standards for critical facilities. In addition, the City has, as required by law, completed and filed a Vulnerability Assessment (VA) addressing security of the City's distribution system facilities. Regional power outages are not expected to prevent the City from receiving adequate water supplies due to the multitude of facilities and the fact that due to the geographical separation of the facilities they are fed from different power grids. It is highly unlikely that all water supplies will be

simultaneously affected and prevent water delivery. The City should be able to function until regional power is available by relying on whatever raw water deliveries are available combined with available in-town treated water storage.

The City continues to work cooperatively with SCWA to investigate regional funding opportunities for measures to improve the reliability of key water supply facilities through participation in the Solano Water Agencies Committee. Through this committee, recommendations for water supply quality monitoring and modeling have been forwarded, and hydrologic studies have been undertaken to determine water quality and quantity parameters of the NBA facilities in Barker Slough. This type of modeling is necessary to determine the sources of water being pumped at the NBA intake during different times of the year and different hydrologic conditions. It will also show how NBA water quality will be affected by changes in the Delta, such as levee failures. Failures of the levees are predicted to drastically reduce the ability of the NBA pump station to provide water, and as with earthquake damage, will necessitate a changeover to Solano Project Water until mitigated.

8.8.1. Potential Emergency Preparedness Actions

In order to better prepare for potential catastrophic supply interruptions, the City has developed a list of potential projects and plans that could be implemented.

Increase existing water storage.

The City has over 87 MG of treated water storage currently available, with up to 59 MG of raw water available by gravity which may be treated during an emergency. This translates to greater than a 3 day supply at maximum day usage, or greater than 7 days with notification of water shortages. Opportunities for greater storage volume are being investigated.

Install backup power at the raw water pump station.

A backup diesel generator can be installed at the main pump station which supplies raw water to Vallejo to provide up to 50% of total water need in times of power outage.

Coordinate with other agencies for additional water supply funding sources.

The City, as noted above, participates in regional planning and grant applications with the Solano County Water Agency.

Put employees/contractors on-call.

Water maintenance and engineering currently have on-call and after hours contact lists available for use in emergencies.

Develop public communication methods/plans.

The City currently employs a Public Information Officer for timely distribution of City policies and announcements. In addition, Public Works Department staff are available to assist in public outreach, including use of social media.

Water Shortage Response Measures.

Because water supply is a sensitive and extremely valuable resource in California, all water utilities in the region practice water conservation programs. Beyond these normal practices, additional water shortage response measures are often needed when unforeseeable droughts and emergencies reduce water supplies. This WSCP includes proposed water shortage response measures which can be put into effect by the City Council.

8.9. Minimum Supply Next Three Years

Table 8-5 shows the minimum water supply available over the next three years: 2016, 2017, and 2018. This assumes that the hydrology will be the same as the hydrology during the multiple-dry year period reported in Section 7.

Table 8-5 – Minimum Supply Next Three Years (DWR Table 8-4)

	2016	2017	2018
Available Water Supply (MG)[1]	10,138	10,138	10,138

Notes:

1. *The minimum supply available in the next three years is based on the supply available in consecutive dry years.*

Section 9 Demand Management Measures

Demand management measures (DMMs) are water conservation measures based on the California Urban Water Conservation Council's (CUWCC) original Best Management Practices (BMPs) for water conservation. The purpose of this section is to provide a description of the City's currently implemented and planned water conservation programs. This section is also meant to correlate these programs to the "water use reduction plan" meant to achieve the 2015 and 2020 water use targets required by the Water Conservation Act of 2009 and described in Section 5 of this UWMP, and to document voluntary compliance with the CUWCC's Memorandum of Understanding (MOU).

The City of Vallejo is not a signatory to the voluntary CUWCC MOU but continues to complete annual reports. As a participating member of the Solano Project, the City is required by the U.S Bureau of Reclamation (Bureau) to utilize on-line BMP (or DMM) reporting and available water savings calculation tools on the CUWCC website. The City of Vallejo files and completes annual program updates for the Bureau by filling in information for urban BMPs on the CUWCC website, via the CUWCC's BMP Reporting Database, located on their web site at http://www.cuwcc.org/.

Water conservation, or demand management, is a management method available to reduce water use, thereby reducing water supply needs for the City. This section describes the conservation programs proposed for Fiscal Years 2015/2016 through 2019/2020, including methods to evaluate program effectiveness, estimate water savings, and the associated proposed budgets. The success of some of the conservation practices depends on cooperative work with other entities. To the maximum extent possible, the City designs programs in coordination with other agencies to leverage agency resources, reduce program costs, and improve cost-effectiveness. The City has participated in regional grants through the Solano County Water Agency – Urban Water Conservation Committee.

BMP reports for Fiscal Years 2008/2009 through 2013/2014 are available for viewing at the City Water Division office and online at www.cuwcc.org. The FY2014/2015 report has been submitted but has not yet been finalized.

9.1. Conservation Measure Organization

In 1991, the CUWCC adopted its *Memorandum of Understanding Regarding Urban Water Conservation in California*, outlining 14 BMPs to expedite implementation of reasonable water conservation measures in urban areas. Assembly Bill 1420 (AB1420) amended the Urban Water Management Planning Act to require, effective January 1, 2009, that urban water suppliers awarded grants or loans by the State be conditioned on the implementation of the 14 BMPs. In December 2008, the CUWCC MOU was amended such that the BMPs were restructured into new two general BMP categories: Programmatic and Foundational. Separately, the California Water Code (CWC) section describing the original 14 DMMs was modified in 2014 to describe six, more general DMM categories. This resulted in three different organizations of the DMMs/BMPs.

1. 14 BMPs described in the 1991 CUWCC MOU and AB1420.
2. Foundational and Programmatic BMPs described in the revised CUWCC's 2008 MOU.
3. Six DMMs described in the 2014 CWC amendment and DWR's 2015 UWMP Guidebook.

The City's Draft 2010 UWMP references the original 14 DMMs. This allowed for streamlined tracking of DMMs for the purposes of gaining funding eligibility through AB1420 and the associated completion of AB1420 self-certification tables. However, as of July 1, 2016, funding eligibility will be based on meeting the 2015 interim target, rather than through completion of the AB1420 self-certification tables. Therefore, to be consistent with the CWC and 2015 UWMP Guidebook, this

chapter uses the modified organization and describes the six DMMs as summarized in the 2015 Guidebook.

Table 9-1 summarizes how the original 14 DMMs fit into the six new DMM categories.

Table 9-1: 14 DMMs vs. 2015 Guidebook DMMs

New DMM	Original 14 DMMs
Water Waste Prevention Ordinance	DMM 13: Water Waste Prohibition
Metering	DMM 4: Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections
Conservation Pricing	DMM 11: Conservation Pricing
Public Education and Outreach	DMM 1: Residential Water Survey Program DMM 2: Residential Plumbing Retrofit Program DMM 5: Large Landscape Conservation Programs and Incentives DMM 6: High-Efficiency Clothes Washer Rebates DMM 7: Public Information Programs DMM 8: School Education Programs DMM 9: Conservation Programs for Commercial, Industrial, and Institutional Customers DMM 10: Wholesale Agency Programs DMM 14: Residential Ultra-Low-Flush Toilet Programs
Programs to Assess and Manage Distribution System Real Loss	DMM 3: System Water Audits, Leak Detection and Repair
Water Conservation Program Coordination and Staffing Report	DMM 12: Water Conservation Coordinator
Other DMMs	Turf Removal and Irrigation Controller Rebates

9.2. Demand Management Measures Not Implemented

Each water supplier, under the provisions of the UWMP Act, is required to implement only those measures that are found to be locally cost-effective. In a previous study (see Vallejo UWMP 2005), the City prepared cost-benefit calculations (i.e., benefit-to-cost ratios) for most of the DMMs. The results showed that the programs would cost more than the value of the City's avoided water procurement and operational costs associated with the water savings. From the agency perspective, many of the DMMs are not cost-effective. This is primarily due to the pricing structure of the City's relatively inexpensive water supplies. Those conditions have not significantly changed since that time. Nonetheless, all of the DMMs, whether locally cost-effective or not, are implemented by the City at least in part, either directly by the City or as a member of a regional water conservation program.

In 2012 and 2013, the City participated in a regional water conservation program funded by Proposition 84 through the Bay Area Integrated Regional Water Management program. This funding greatly increased the City's ability to participate in various water conservation programs, including high-efficiency clothes washer rebates, high-efficiency toilet rebates, and others.

The City is continuing to actively seek additional funding in the form of grants and cost-sharing with other agencies. The Vallejo Sanitation and Flood Control District has financially supported City's DMMs in the past and may be available to partner with the City on specific projects in the future.

9.3. Demand Management Measures

9.3.1. Water Waste Prevention Ordinances

Water Waste Prohibition

Description of Program

The City Council adopted a Wasteful Water Prohibition Ordinance on March 7, 2006 which was developed according to the guidelines of DMM #13. This ordinance was updated in 2010, and then again in March, 2015 when new drought restrictions, enforcement, and penalties were added. A copy of the ordinance is included in Appendix D. The ordinance provides for City staff to respond to complaints of water waste, or observed water waste. A phone hotline (707-648-4482) and an internet-based reporting program, "SeeClickFix", are available for the public for reporting water leaks and waste. In responding to observed water waste, City staff may visit or call customers to inform them of their wasteful activity and request that the activity be corrected. Follow-up visits are made to assess whether the water wasting activity has ceased. Notices are tracked for repeat "offenders." During times of water shortage, repeat water waste violators may be fined $200 for a second violation and $500 for a third violation. City staff maintains a log of advisories and actions taken. This ordinance is enforced at all times, with additional restrictions during water shortages.

Prohibitions at all times include:

- Gutter flooding
- Single-pass cooling systems for new connections
- Non-recirculating systems in all new conveyor car wash systems
- Use of hose for washing cars, boats, trailers and other vehicles without a nozzle
- Use of hose to wash sidewalks, walkways, driveways, parking lots, or other hard surfaced areas without a nozzle, unless the washing is required for health reasons
- Outdoor irrigation that causes runoff for more than 15 minutes
- Allowing potable water to escape from breaks within the customer's system for more than 36 hours after notification or discovery of the break
- Decorative water fountains without water recirculation
- Use of potable water for construction, compaction, dust control, street sweeping, or building wash down where nonpotable or recycled water is available
- Use of nonrecirculating systems in new conveyor car wash facilities

Additional prohibitions during water shortages include:

- Limits on outdoor irrigation with potable water during the day time hours and daily restrictions
- Outdoor irrigation that causes runoff
- Washing sidewalks and driveways with potable water
- Using potable water in a fountain or decorate water feature
- Outdoor irrigation within 48 hours of measurable rainfall

- Serving drinking water other than upon request in eating or drinking establishments
- Failing to provide the option to not have towels and linens laundered daily in hotels and motels
- Limits to outdoor irrigation daily schedules

In addition to the Wasteful Water Prohibition Ordinance, the City adopted an ordinance in March of 2010 incorporating the State Model Water Efficient Landscape Ordinance requirements for new development. The requirements are detailed in Chapter 16.71 of the City's municipal code. The ordinance was updated in February 2016, as required to maintain consistency with state regulations.

Implementation Over the Past Five Years

Table 9-2 shows how many accounts were contacted due to wasteful water use from 2011 through 2015.

Table 9-2: Water Waste Prohibition Activity 2011-2015

Planned	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
Waste Ordinance in effect?	yes	yes	yes	yes	yes
No. of contacts	8	8	4	15	226

Planned Implementation to Achieve Water Use Targets

The City will continue to enforce its Wasteful Water Prohibition Ordinance and update the Ordinance as needed.

9.3.2. Metering

Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections

Description of Program

This DMM is complete. There are no known unmetered accounts in the City's system. All accounts are billed by volume of use.

Implementation Over the Past Five Years

All of the City's existing accounts have been metered for the past five years and all new connections are metered.

Planned Implementation to Achieve Water Use Targets

The City will continue to meter all new connections.

The City will conduct a study to identify any barriers or disincentives to retrofitting mixed-use commercial industrial and institutional (CII) accounts with dedicated landscape meters and will assess the merits of a program to provide incentives to switch mixed use accounts to separate dedicated indoor and landscape meters.

The City will conduct a study to identify any barriers or disincentives to the installation of submeters in existing and future multi-family residential developments, and will assess the merits of a program to provide incentives to switch mixed use accounts to separate dedicated indoor and landscape meters, and to measure the water use of individual residential units.

9.3.3. Conservation Pricing

Conservation Pricing

Description of Program

This DMM is complete. The City undertook a rate study in 1999 which considered uniform, inclining block, and seasonal rates. The current rate structure has an inclining block rate structure for single-family residential water usage and a uniform water rate per hundred cubic foot for multi-family residential and non-residential usage. All customers pay a fixed fee service charge. Upon adoption of the rate structure in 1999, the fixed portion of bills dropped and variable water use charges were increased, providing more incentive to save water and money.

An inclining block rate structure is considered a water conserving rate structure by providing a negative pricing signal as each unit of water consumed beyond the first tier rate allotment carries an additional incremental cost. The City's volume charge is per one hundred cubic feet (ccf) and is applied to two rate blocks for single family customers in the Vallejo service area as follows:

i) 0-2,200 cubic feet, and

ii) Over 2,200 cubic feet

Implementation Over the Past Five Years

The City has maintained its inclining block rate structure since 1999.

Planned Implementation to Achieve Water Use Targets

The City will continue to use its current inclining block rate structure.

9.3.4. Public Education and Outreach

Residential Water Survey Program

Description of Program

Residential water use surveys in Vallejo are conducted for single family homes by a program jointly sponsored and administered by the Solano County Water Agency (SCWA) and the retail agencies' urban water conservation committee. The City of Vallejo began participating in the regional program in Fiscal Year 2008/2009. SCWA performs the majority of residential surveys during the warm weather months, and City staff performs the surveys as time permits during periods when the SCWA program is not available.

SCWA provides program oversight and tracks the number of surveys offered, as well as the number of surveys performed. The surveys include:

- An interview with the homeowner;
- Historical water use report;
- An irrigation system check for malfunctioning sprinkler heads or other system parts;
- A review of irrigation scheduling and recommendations;
- Leak checks;
- Providing homeowners with information about rebate programs offered including turf replacement, high-efficiency toilets, high efficiency clothes washers, and weather-based irrigation controllers; and
- Providing high-efficiency showerheads and low flow faucet aerators.

The program focuses on the highest residential water users by sending letters to the top 20 percent of water users each year. The surveys are also provided as a customer service to homeowners requesting a survey.

Implementation Over the Past Five Years

Table 9-3 shows how many surveys have been performed from 2011-2015.

Table 9-3: Residential Surveys Performed 2011-2015

2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
228	116	162	80	169

Planned Implementation to Achieve Water Use Targets

SCWA has conducted small scale reviews of water use at homes before and after receiving a water use survey, and extensive pilot studies are ongoing. The program appears to be effective at reducing water use in those homes receiving a water use survey and for this reason, the surveys are planned to continue.

The City will conduct a study to identify opportunities to expand the uses of water use surveys and plumbing retrofits upon resale or as part of a City rental inspection program.

Residential Plumbing Retrofit Program

Description of Program

As calculated in an earlier study conducted by the City (see Vallejo UWMP 2005), the benefit-cost ratio for this DMM is only 0.41 from the City's perspective. (That is, the City would save 0.41 dollars for every dollar spent on the program). Therefore, the City is exempt from full CUWCC BMP implementation, but offers the following listed measures to assist its residential water customers:

- Residents participating in the residential survey program receive high efficiency showerheads and aerators at the time of their surveys.
- The City provides high-efficiency showerheads and aerators to water customers upon request and at community events.

Implementation Over the Past Five Years

Table 9-4 below shows the number of high efficiency showerheads and aerators that have been distributed over the past five years.

Table 9-4: Plumbing Devices Distributed

Devices Installed or Distributed	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
Showerheads	198	231	410	399	285
Aerators	1,084	882	567	937	1,263

Planned Implementation to Achieve Water Use Targets

The City will continue to distribute high efficiency showerheads and aerators upon request, at community events, and when conducting residential surveys.

Large Landscape Conservation Programs and Incentives

Description of Program

Based on a cost-benefit analysis of this program, the City is exempt from full CUWCC BMP (DMM) implementation but offers the listed measures to assist its large landscape water customers. For example, landscape audits will be offered to a small percentage of dedicated irrigation accounts through the SCWA's regional landscape audit program. The audits consist of the following:

- Evaluation of the efficiency and distribution uniformity of the irrigation system;
- Evaluation of the condition of the system components: water pressure; broken, tilted or obstructed heads; over-spray;
- Development of a water budget based on square footage of various hydrozones and average ETo;
- Evaluate the irrigation scheduling and volume applied;
- Recommend improvements in irrigation practices; and
- A written report provided to the City as well as to the water customer.

Annual water budgets were also calculated for the city's largest outdoor areas owned by both public and private entities. Annually, the water use associated with these landscapes were monitored and evaluated against calculated water budget totals. In 2014, this monitoring effort was expanded and incorporated into a regional large landscape pilot program sponsored by SCWA with partial funding coming from the City of Vallejo. Under the program, the Vallejo Unified School District and Parks and Recreations Departments are routinely provided with water use performance reports that compare actual water consumption with calculated water budget totals.

Implementation Over the Past Five Years

Table 9-5: Number of Large Landscape Surveys and Water Budgets Performed

	2011 (10/11)	2012(11/12)	2013(12/13)	2014(13/14)	2015(14/15)
Surveys completed	1	2	2	1	1
Budgets Developed	97	124	123	123	64

Seven of the surveys performed through the City's CII water conservation program contained large landscapes owned by various Home Owners Associations (HOAs), schools, and golf courses, and hospitals. The following large landscapes were surveyed over the past five years:

- Blue Rock Golf Course – Sept 2010
- Hyde Park HOA – Dec 2011
- Kaiser Medical Center – March 2012
- Hogan Middle School – July 2012
- Mare Island Golf Course – May 2013
- Tiara Northgate HOA – January 2014
- Cerros HOA – Sept 2014

Planned Implementation to Achieve Water Use Targets

Over the next five years, the City will focus its efforts on conducting surveys at sites with the greatest potential for obtaining water savings. The City will also continue annual reviews of the water budgets developed for large outdoor areas.

High Efficiency Clothes Washer Rebates

Description of Program

The City participates in a clothes washer rebate program through its wholesaler, SCWA. The program currently provides between $50 and $150 rebates for clothes washers purchased within the service area receiving water supplied by SCWA. The new clothes washers must meet specified water efficiency standards to qualify, and the amount of the rebate paid depends on the water efficiency of the washer model purchased. The rebate amounts may vary from year to year and customers are encouraged to contact the local electrical utility for additional rebates.

Implementation Over the Past Five Years

Table 9-6 shows how many washer rebates of $50 to $150 have been paid over the past five years. The number of rebates increased in the years 2012 and 2013 due to the City's participation in the Integrated Regional Water Management Plan (IRWMP) water conservation program. This was a two-year program funded by a Proposition 84 grant.

Table 9-6: Rebates Paid

2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
114	185	339	207	133

Planned Implementation to Achieve Water Use Targets

The City will continue to provide rebates for high efficiency washers, likely at rates similar to those offered in 2014 and 2015.

Public Information Programs

Description of Program

The City has expanded its public information program since the 1980's. Current program elements include purchasing and providing educational materials, newspaper display ads and public information notices in Spring Home and Garden newspaper inserts, and TV-based water savings tips at Earth Day, during Water Awareness Month, office and library displays (adult and children's), and other events, such as Kaiser Hospital's Earth Day, Public Works' Week, and Fix-a-Leak Week. Financial support is provided annually for the Vallejo Downtown Earth Day event, the California Water Awareness Campaign and Loma Vista Farm.

Additional public outreach activities conducted in 2015 included:

- Distribution of multiple water savings-related articles including Sunset Magazine's "Water & Energy Savings in the West," "How to Water Your Garden," and "Water-Wise Gardening for California" through utility offices, at community events and upon request.
- Water staff (administrative, billing, meter, maintenance) answered customers' questions on leaks and reducing water use.
- Annual City-sponsored workshops in partnership with local businesses and cities, known as Water-Wise Gardening. Each year since 2006, a series of workshops provide hands-on

training at a garden site The workshops are taught by business professionals, educational consultants, and Master Gardeners. In 2014 and 2015, Bay-Friendly Landscaping and Gray Water workshops were also added. Workshop class attendance averages between 50 and 60 students.

- Water conservation web page link at: www.vallejowater.org .
- "Project Wet" teacher training workshops are offered once or twice a year and financial support is provided for teacher participation. These workshops have trained 78 teachers to incorporate interactive water education activities in the classroom.
- Partnerships with Loma Vista Farm, Vallejo Sanitation and Flood District, Valcore Recycling, East Bay Municipal Utility District, City of Benicia, Pacific Gas & Electric Company (PG&E), and Lowes and Home Depot Home Improvement Centers.
- Water Conservation presentations to HOAs, and various professional and civic groups are routinely performed throughout the year. The City gave Water Conservation presentations to the following groups:
    - Quite Harbor HOA - 2011
    - Touro University - 2011
    - Rose Society - 2014
    - Glen Cove Community Association - 2014
    - Vallejo Heights Homeowners - 2015

The City also participates in a regional public information program through the SCWA's urban water conservation committee. Regional information and outreach include:

- Climate-appropriate demonstration garden at Six Flags Discovery Kingdom Park in Vallejo.
- Public service radio announcements with drought messaging
- Water Conservation web page link at: www.solanosaveswater.org.
- Advertising published in local newspapers for Water-Wise gardening workshops.

Implementation Over the Past Five Years

Table 9-7 below summarizes the City's public outreach activities over the past five years. (Note that the SCWA's regional outreach efforts are summarized in the SCWA's Urban Water Management Plan.)

Table 9-7: Public Information Activities

Planned	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
Public Information Contacts	125,391	190,491	189,579	178,936	203,000
Public Information Outreach Events	7	9	9	10	9
Public Outreach Budget	$15,000	$16,000	$16,000	$16,000	$16,000

Planned Implementation to Achieve Water Use Targets

The City will continue its public outreach program and anticipates a similar budget and level of participation as the past five years. To expand the opportunity for enhanced outreach and education to water system customers and to facilitate feedback on conservation program design

and prioritization, the City will explore the feasibility of and support for creating a Citizen Advisory Committee.

School Education Programs

Description of Program

The City has its own school education and outreach program and participates in a regional program through the SCWA's regional school education and outreach program. The City's program consists of in-classroom presentations, field trips, sponsoring teacher training workshops (outlined in the public information section, above) and provision of educational materials. Feedback forms are distributed during teaching and outreach sessions. Returned surveys are reviewed and program changes are made to improve customer satisfaction.

The City also participates in the implementation and planning of the regional education program through the Solano County Urban Water Conservation Committee. The regional program consists of:

- In-classroom presentations;
- High school video contest;
- Bookmark art contest;
- School assembly programs by professional presenters;
- Providing educational materials to schools; and
- Attendance at regional and state-sponsored water education conferences

Beginning in 2012, the City partnered with the U. S. Bureau of Reclamation and School District officials and began sponsoring watershed field trips to Lake Berryessa and Loma Vista Farm. The City funds the bus travel and coordinates visits with local Park Rangers at the lake and with Loma Vista Farm program staff. Since 2012, a total of 30 field trips have been undertaken and paid for by the City and a total of 1,650 students have participated in the program.

The City also provides funding for the Watershed Explorers, a county-wide effort.

Implementation Over the Past Five Years

Table 9-8 quantifies the City's school education programs since 2011.

Table 9-8: School Materials and Programs Provided

	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
Classroom presentations	75	122	234	165	198
Students attendees	3,009	4,264	3,360	3,056	9,077
Assemblies	14	18	19	35	97
Assembly Student Attendee	2,630	4,536	5,076	4,614	19,052
Field trips	11	3	5	12	15
Attendees on field trips	1,549	150	274	623	834
School Education Budget	$16,500	$17,500	$26,449	$20,299	$28,200

Planned Implementation to Achieve Water Use Targets

The City will continue its school education programs at similar levels to the past five years.

Conservation Programs for Commercial, Industrial and Institutional (CII) Customers

Description of Program

The City has participated in regional CII programs through the Solano County Water Agency's Urban Water Conservation Committee. Since 2007, through SCWA's CII program, commercial water customers have been offered a free water survey to determine the efficiency of their existing facility. Typically, the surveys included irrigation system audits as well as audits of indoor water fixtures and appliances. More information about irrigation surveys performed for CII customers can be found in the *Large Landscape Conservation Programs and Incentives* section of this chapter of the UWMP.

During the surveys, surveyors installed faucet aerators and high efficiency showerheads, ensuring immediate water savings. Initially, pre-rinse spray valves were installed as well, however, because of the previous efforts by PG&E and other local programs, it was found that most restaurants had their pre-rinse spray valves retrofitted to efficiency models. After each survey was completed, a report was generated and provided to the customer, which included an inventory of water-using fixtures and appliances, recommendations for improving water efficiency at the site, and estimated water savings to be realized from implementing those recommendations. Those sites found to have pre-1992 toilets were also offered participation in a direct installation program of high-efficiency toilets (HET) and high-efficiency urinals (HEU).

In 2008, the CUWCC revised its BMP requirements. The CII BMP requirements shifted from an emphasis on conducting surveys to an emphasis on implementing water savings measures as appropriate for each agency. Surveys continue to be conducted as a customer service, as well as a required basis for participation in CII rebate programs. Surveys are offered to customers requesting a survey, customers requesting participation in HET and HEU installation, and those participating in rebate programs. SCWA has conducted random reviews of water use for CII customers before and after receiving a water use survey. The program appears to be effective at reducing water use, particularly for those sites where surveys act as incentives for rebates or direct installation of HETs and HEUs.

In response to changes in the BMPs, the Solano County Urban Water Conservation Committee developed a "Water Savings Incentive Program." This program has been designed to provide CII customers with assistance in upgrading fixtures, appliances, and irrigation systems for greater efficiency. The assistance comes in the form of rebates for equipment and control systems. This program is in addition to the HET, HEU, and weather-based irrigation controller rebate programs. The key element of the Water Savings Incentive Program is flexibility. Rather than being limited to the specific items typically rebated, such as toilets, urinals, or irrigation controllers, a water customer can make water efficiency repairs and/or upgrades to existing irrigation systems and apply for rebates for equipment based on specific-site conditions. Copies of the "Water Savings Incentive Program" terms and conditions are included in Appendix G.

At the outset of the program, the committee chose to focus its outreach efforts on schools, parks and other public properties, although commercial accounts could also participate. However, participation has been limited. The challenge facing program implementation is that the rebates apply to parts and equipment only, and not to labor. Although outreach to schools and other public facilities in the City's service area has been conducted, the requirement that the participating water customer provide or pay for the involved labor has been a limiting factor.

Implementation Over the Past Five Years

A summary of number of surveys and water savings devices installed is presented in Table 9-9.

Table 9-9: CII Surveys Completed

	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
No. of surveys completed	3	2	3	4	3
Aerators installed	22	22	0	0	224
Showerheads installed	37	37	0	0	112
HETs	192	192	248	296	224

Planned Implementation to Achieve Water Use Targets

The City will continue its conservation programs for CII customers at similar levels to the previous five years.

Wholesale Agency Programs

Description of Program

The City is a wholesale water supplier to the Cities of American Canyon and Benicia, but does not provide a wholesale agency assistance program since each of the cities has prepared an Urban Water Management Plan and is running its own water conservation program. In addition, the City operates the Travis Air Force Base Water Treatment Plant on behalf of the U.S. Air Force, but has no responsibility for the distribution system and no influence over end users on the base.

City staff also work with the SCWA, the regional wholesaler. The City contributes funds to SCWA, and reimburses some of the joint program expenditures on a proportional basis.

Implementation Over the Past Five Years

Not applicable.

Planned Implementation to Achieve Water Use Targets

Not applicable.

Residential Ultra-Low-Flush Toilet Programs

Description of Program

The City participated in a regional high-efficiency toilet retrofit program, which began in 2007 and ended in 2015, which was managed by the Solano County Water Agency. The rebate offered per toilet was up to $100. A similar program is now being offered by the state.

There is currently no ordinance requiring a toilet retrofit upon resale in the City of Vallejo.

Implementation Over the Past Five Years

The increase in the number of rebates in 2012 and 2013 was due to the City's participation in the IRWMP water conservation program. This was a two-year program funded by a Proposition 84 grant. State legislation regarding retrofit upon resale of single family homes has also driven the number of rebates higher. Table 9-10 below shows the number of rebates paid since 2011.

Table 9-10: Residential Toilet Program Summary 2011-2015

	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
Number of Rebates Paid	95	91	359	220	421

Planned Implementation to Achieve Water Use Targets

The City does not currently pay rebates for low flush toilets as SCWA has ended its regional program. Rebates will be paid if the regional program is resumed.

9.3.5. Programs to Assess and Manage Distribution System Real Loss

System Water Audits, Leak Detection and Repair

Description of Program

The City reviews its water system statistics and continues to make progress in collecting the data needed for a full system water audit using the American Water Works Association (AWWA) Water Loss Control Committee's water audit software. Leak detection equipment with "dataloggers" has been purchased and training offered to staff. Water main repairs are ongoing.

The City's program consists of the following actions:

- Ongoing water meter calibrations;
- Advising customers whenever it appears that leaks exist on the customer's side of the meter;
- Performing distribution system leak detection when warranted and cost-effective; and
- Repairing leaks when found.

Effectiveness is measured by monitoring the change in the percent of unaccounted water for the entire water system. Between the years 2005 and 2010, unaccounted water was reduced from 22 percent to 14 percent of gross water use. This is equivalent to a reduction of 732 MG per year. Water loss between 2010 and 2015 remained nearly constant, slightly increasing from 14 percent to 16 percent of total water use and remaining around 950 MG to 960 MG.

A formal Water Loss Committee chaired by Water Engineering with members from Distribution Maintenance, Water Billing, IT, Operations, and Water Administration, was formed in December 2015 to complete a comprehensive system-wide water loss analysis and make recommendations for reducing apparent water losses.

Implementation Over the Past Five Years

The City has performed calculated its water loss annually and formed the Water Loss Committee in 2015 to further efforts to analysis water loss across its entire distribution system.

Planned Implementation to Achieve Water Use Targets

The City will perform AWWA Water Loss Audits annually per DWR guidelines and the Water Loss Committee will recommend actions to reduce water loss.

9.3.6. Water Conservation Program Coordination and Staffing Support

Water Conservation Coordinator

Description of Program

The City has a Water Conservation Coordinator who spends an average of 30 - 40 percent time on water conservation. An analyst position, which provides staff support to the Water Conservation Coordinator in addition to other duties, was filled at the end of 2005 and continues to be filled full-time. A student intern is periodically assigned to the water conservation program to assist with various program duties. At times, the student intern position has been funded by the SCWA with respective costs reimbursed by the City.

The Water Conservation Coordinator, Pamela Sahin, can be reached at (707) 648-4479 (telephone), (707) 648-4060 (fax), or E-mail (Pam.Sahin@cityofvallejo.net) Program support, especially in the area of program measure implementation, is provided by Roger Judy, Administrative Analyst II/ Water Conservation Practitioner who can be reached at (707) 648-5299 (telephone) or E-mail (Roger.Judy@cityofvallejo.net)

The Water Conservation Coordinator develops and manages the conservation program and DMM implementation. The Coordinator is also responsible for preparing and submitting an annual implementation status report to the Bureau. Other duties of the Coordinator include: communication and promoting water conservation issues; coordinating City conservation programs with other City divisions; preparing annual and multi-year water conservation budgets; monitoring program impacts and recommending improvements. The Coordinator is responsible for training support staff and managing the efforts of consultants and contractors contracted to the City to implement conservation measures under the City's water conservation program. The position also coordinates preparation of the City's UWMP and the Water Management Plan updates for adoption by the City Council and submittal to the California Department of Water Resources and the Bureau, respectively. The above enumerated duties and responsibilities are performed either directly by the Water Conservation Coordinator or are delegated to support staff with oversight and direction provided, as needed.

Implementation Over the Past Five Years

The Water Conservation Coordinator position has functioned as described above for the past five years.

Planned Implementation to Achieve Water Use Targets

The City plans to maintain the current level of water conservation staffing through 2020. However, State legislative requirements under the Water Conservation Act of 2009 may impact future staffing requirements, depending on the level of effort needed to meet water demand reduction goals and the availability of SCWA-administered county-wide conservation programs.

9.3.7. Other Demand Management Measures

The City does not have any other demand management programs, but will continue to expand its programming and participate in new regional water conservation pilot program efforts that use and incorporate new Water Smart technologies. Additionally, the City provides turf removal rebates and irrigation controller rebates, through participation in county-wide programs. Although these do not fit within the original 14 DMM categories, these rebates contribute to residential irrigation water savings.

Implementation Over the Past Five Years

Table 9-11 below summarizes the number of turf removal and irrigation controller rebates paid by the City since 2011. Turf removal rebates increased in 2014 and 2015 due to the state-wide drought and an increase in public interest in decreasing residential irrigation use.

Table 9-11: Turf Removal and Irrigation Controller Rebates Paid

	2011 (10/11)	2012 (11/12)	2013 (12/13)	2014 (13/14)	2015 (14/15)
Turf Removal	4	8	6	50	51
Irrigation Controller	0	5	5	0	0

Planned Implementation to Achieve Water Use Targets

The City will continue to pay rebates for turf removal and irrigation controllers. Additionally, the City will continue to look into and participate, where appropriate, in other regional conservation programming.

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Section 10 Plan Adoption, Submittal and Implementation

This chapter summarizes the City of Vallejo's compliance with the State's notification, adoption and submittal procedure for UWMPs.

10.1. Inclusion of All 2015 Data

The City of Vallejo conducts its reporting for UWMP preparation on a calendar year basis. As such, this 2015 UWMP includes water use and planning data for the entire 2015 calendar year, with the exception of BMP reporting which is done on a fiscal year basis.

10.2. Notice of Public Hearing

The California Water Code Section 10621(b) stipulates that a water supplier must notify any city or county within which the supplier provides water that it is reviewing and considering changes to the UWMP. This notification must occur at least 60 days before the public hearing. The City of Vallejo sent these notification letters to the entities listed in Table 10-1 on June 28, 2016 along with notices of the public availability of the Draft UWMP and the public hearing on October 4, 2016; copies of these letters are included in Appendix H.

Table 10-1: Notice of Public Hearing to Cities and Counties (DWR Table 10-1)

City Name	60 Day Notice	Notice of Public Hearing
City of American Canyon	✓	✓
City of Benicia	✓	✓
City of Dixon	✓	✓
City of Fairfield	✓	✓
City of Rio Vista	✓	✓
City of Vacaville	✓	✓
Greater Vallejo Recreation District	✓	✓
Napa County	✓	✓
Solano County	✓	✓
Solano County Water Agency	✓	✓
Solano Irrigation District	✓	✓
Suisun City	✓	✓
Travis Air Force Base	✓	✓
Vallejo Sanitation and Flood Control District	✓	✓

10.3. Notice to the Public

The City of Vallejo held a public hearing on 10/25/2016 to receive comments on the draft UWMP and to adopt the plan. Government Code 6066 requires that the water supplier notify the public of the public hearing in a local newspaper once a week for two consecutive weeks. The notice must include the time and place of the hearing, as well as the location where the draft UWMP is available for public review. The City of Vallejo published these notifications for the public in the Vallejo Times Herald newspaper on 10/02/2016, 10/11/2016, 10/16/2016, and 10/18/2016 and the Fairfield Daily Republic newspaper on 10/02/2016, 10/12/2016, 10/16/2016, and 10/19/2016. Copies of these notices are provided in Appendix H.

10.4. Public Hearing and Adoption

California Water Code 10642 states that prior to adopting the 2015 UWMP, the water supplier must hold a public hearing. The purpose of the public hearing is to allow public input on the Plan, consider economic impacts of the UWMP, and adopt a method for determining the water supplier's water use target. The City of Vallejo held a public hearing on 10/25/2016. A copy of the hearing agenda is provided in Appendix H. The City also held a three week-long public comment period from 10/5/2016 to 10/25/2016. Comments on the draft UWMP were received from the public and a City Councilperson during the public hearing. This final UWMP has been modified to address those comments.

The City adopted its 2015 UWMP at the Vallejo City Council meeting on October 25, 2016. A copy of the adopting resolution is provided in Appendix I.

10.5. Plan Submittal

The City of Vallejo will submit the updated 2015 UWMP to DWR via the approved website. No later than 30 days after the Plan is adopted by the City of Vallejo's City Council, the City will submit a CD copy of the adopted 2015 UWMP to the California State Library and submit a copy to any city or county to whom the City provides water.

10.6. Public Availability

California Water Code 10645 requires that water suppliers, no later than 30 days after filing a copy with DWR, must make the approved Plan available for public review during normal business hours. The City of Vallejo will provide a copy of the approved 2015 UWMP to the John F. Kennedy Library and post the plan on the City's website.

10.7. Amending an Adopted UWMP

Should the City of Vallejo amend any portion of the approved 2015 UWMP, the City will follow each of the steps for notification, public hearing, adoption, and submittal that are required for an updated Plan. However, the 60 day notification to cities and counties to whom the City supplies water will not be sent again; the notification sent with the original plan addresses the requirement.

Section 11 References

City of American Canyon (2015). *2015 Urban Water Management Plan*. June 2016.

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Endangered Species Coalition (ESA) (2011). *It's Getting Hot Out There: Top 10 Places to Save for Endangered Species in a Warming World*. Jan, 2011.

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SWA Architects (2013). *Solano 360 Final Specific Plan*. Prepared for Solano County. February 2013.

Vallejo Sanitation and Flood Control District (VSFCD) (2014). *Reclaimed Water Study*. May 2014.

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RMC water and environment

Prepared by: RMC Water and Environment

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City of VALLEJO California

Appendices

2015

Urban Water Management Plan

Prepared by: RMC water and environment

November 2016

Appendix A. DWR UWMP Check List

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Checklist Arranged by Subject

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2.1	**Chap 10**
10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.5.2	**Page 2-1**
10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan.	Plan Preparation	Section 2.5.2	**Page 2-2, Page 10-1, Appendix H**
10631(a)	Describe the water supplier service area.	System Description	Section 3.1	**Page 3-1**
10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.3	**Page 3-3**
10631(a)	Provide population projections for 2020, 2025, 2030, and 2035.	System Description	Section 3.4	**Page 3-5**
10631(a)	Describe other demographic factors affecting the supplier's water management planning.	System Description	Section 3.4	**Page 3-5**
10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Sections 3.4 and 5.4	**Page 3-5**
10631(e)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2	**Page 4-1**
10631(e)(3)(A)	Report the distribution system water loss for the most recent 12-month period available.	System Water Use	Section 4.3	**Page 4-3**
10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.5	**Page 4-5**
10608.20(b)	Retail suppliers shall adopt a 2020 water use target using one of four methods.	Baselines and Targets	Section 5.7 and App E	**Page 5-5**

Appendix A **UWMP Checklist**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Chapter 5 and App E	**Page 5-2**
10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5 year baseline. This does not apply is the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.7.2	**Page 5-6**
10608.24(a)	Retail suppliers shall meet their interim target by December 31, 2015.	Baselines and Targets	Section 5.8 and App E	**Page 5-6**
1608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	Section 5.8.2	**Page 5-6**
10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	Section 5.1	**n/a**
10608.40	Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form.	Baselines and Targets	Section 5.8 and App E	**Page 5-6**
10631(b)	Identify and quantify the existing and planned sources of water available for 2015, 2020, 2025, 2030, and 2035.	System Supplies	Chapter 6	**Page 6-11**
10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.2	**Page 6-3**
10631(b)(1)	Indicate whether a groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.2.2	**n/a**
10631(b)(2)	Describe the groundwater basin.	System Supplies	Section 6.2.1	**n/a**
10631(b)(2)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	Section 6.2.2	**n/a**

Appendix A **UWMP Checklist**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10631(b)(2)	For unadjudicated basins, indicate whether or not the department has identified the basin as overdrafted, or projected to become overdrafted. Describe efforts by the supplier to eliminate the long-term overdraft condition.	System Supplies	Section 6.2.3	**n/a**
10631(b)(3)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.2.4	**n/a**
10631(b)(4)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	Sections 6.2 and 6.9	**n/a**
10631(d)	Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.	System Supplies	Section 6.7	**Page 6-9**
10631(g)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and multiple-dry years.	System Supplies	Section 6.8	**Page 6-10**
10631(i)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.6	**Page 6-8**
10631(j)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) – if any - with water use projections from that source.	System Supplies	Section 2.5.1	**Page 2-2**
10631(j)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	Section 2.5.1	**n/a**
10633	For wastewater and recycled water, coordinate with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.1	**Page 6-3**
10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area. Include quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.	System Supplies (Recycled Water)	Section 6.5.2	**Page 6-4**
10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.5.2.2	**Page 6-6**

Appendix A **UWMP Checklist**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.3 and 6.5.4	**Page 6-6**
10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.5.4	**Page 6-6**
10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Section 6.5.4	**Page 6-7**
10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.5.5	**Page 6-8**
10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.5.5	**Page 6-8**
10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 7.4	**Page 7-8**
10631(c)(1)	Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage.	Water Supply Reliability Assessment	Section 7.1	**Page 7-1**
10631(c)(1)	Provide data for an average water year, a single dry water year, and multiple dry water years	Water Supply Reliability Assessment	Section 7.2	**Page 7-4**
10631(c)(2)	For any water source that may not be available at a consistent level of use, describe plans to supplement or replace that source.	Water Supply Reliability Assessment	Section 7.1	**Page 7-1**
10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1	**Page 7-1**
10635(a)	Assess the water supply reliability during normal, dry, and multiple dry water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3	**Page 7-4**
10632(a) and 10632(a)(1)	Provide an urban water shortage contingency analysis that specifies stages of action and an outline of specific water supply conditions at each stage.	Water Shortage Contingency Planning	Section 8.1	**Page 8-1**

Appendix A **UWMP Checklist**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10632(a)(2)	Provide an estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency.	Water Shortage Contingency Planning	Section 8.9	**Page 8-11**
10632(a)(3)	Identify actions to be undertaken by the urban water supplier in case of a catastrophic interruption of water supplies.	Water Shortage Contingency Planning	Section 8.8	**Page 8-10**
10632(a)(4)	Identify mandatory prohibitions against specific water use practices during water shortages.	Water Shortage Contingency Planning	Section 8.2	**Page 8-2**
10632(a)(5)	Specify consumption reduction methods in the most restrictive stages.	Water Shortage Contingency Planning	Section 8.4	**Page 8-3**
10632(a)(6)	Indicated penalties or charges for excessive use, where applicable.	Water Shortage Contingency Planning	Section 8.3	**Page 8-6**
10632(a)(7)	Provide an analysis of the impacts of each of the actions and conditions in the water shortage contingency analysis on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts.	Water Shortage Contingency Planning	Section 8.6	**Page 8-8**
10632(a)(8)	Provide a draft water shortage contingency resolution or ordinance.	Water Shortage Contingency Planning	Section 8.7	**Page 8-9, Appendix F**
10632(a)(9)	Indicate a mechanism for determining actual reductions in water use pursuant to the water shortage contingency analysis.	Water Shortage Contingency Planning	Section 8.5	**Page 8-7**
10631(f)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Sections 9.2 and 9.3	**Page 9-3**
10631(f)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	Sections 9.1 and 9.3	**Page 9-12**
10631(j)	CUWCC members may submit their 2013-2014 CUWCC BMP annual reports in lieu of, or in addition to, describing the DMM implementation in their UWMPs. This option is only allowable if the supplier has been found to be in full compliance with the CUWCC MOU.	Demand Management Measures	Section 9.5	**Page 9-1**

Appendix A **UWMP Checklist**

CWC Section	UWMP Requirement	Subject	Guidebook Location	UWMP Location *(Optional Column for Agency Use)*
10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets.	Plan Adoption, Submittal, and Implementation	Section 10.3	**Page 10-2**
10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan.	Plan Adoption, Submittal, and Implementation	Section 10.2.1	**Page 10-1, Appendix H**
10621(d)	Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.	Plan Adoption, Submittal, and Implementation	Sections 10.3.1 and 10.4	**Page 10-2**
10635(b)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 60 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Page 10-2**
10642	Provide supporting documentation that the urban water supplier made the plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan.	Plan Adoption, Submittal, and Implementation	Sections 10.2.2, 10.3, and 10.5	**Page 10-2, Appendix H**
10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Sections 10.2.1	**Page 10-2, Appendix H**
10642	Provide supporting documentation that the plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3.1	**Page 10-2, Appendix I**
10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.4.3	**Page 10-2**
10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.4.4	**Page 10-2**
10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Sections 10.4.1 and 10.4.2	**n/a**
10645	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5	**Page 10-2**

Appendix B. Demand Forecast Memorandum

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POLICY ANALYSIS
FOR THE
PUBLIC AND PRIVATE
SECTORS
M.CUBED

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OAKLAND, CA 94618
PH: 510-547-4369
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MITCHELL@MCUBED-ECON.COM

DATE: July 28, 2015
TO: Leslie Dumas
FR: David Mitchell
RE: 2nd Draft City of Vallejo Retail Water Demand Forecast

This memorandum presents the draft City of Vallejo retail water demand forecast along with the data and methodology used to generate it. According to its 2010 UWMP, the City of Vallejo also sells water on a wholesale basis to the City of American Canyon, the City of Benicia, and the Travis Airforce Base. This memorandum only pertains to the City of Vallejo's retail water demands, including its Lakes System.

Retail Demand Forecast Summary

Table 1 provides a summary of the demand forecast. The forecast is for unrationed demand under normal weather conditions. The demand model's forecast for 2015 therefore exceeds 2015 actual demand which was significantly reduced in response to the State's Emergency Drought Regulation. As explained later in the memo, forecasts of population, housing units, and service meters tie back to ABAG's 2013 Projections for the City of Vallejo.

Demand forecasts were also prepared for a single dry year and multiple dry year scenarios. The forecasts were adjusted to account for the effects of weather on demand in dry years using the CUWCC's GPCD Weather Normalization Methodology (Western Policy Research, 2011). The driest year on record since 1920 was chosen as the reference year for the single dry year forecast. This year was 2013. The driest three consecutive years on record since 1920 were selected as the reference years for the multiple dry year forecast. These years were 1988-1990. The dry year demand forecasts are summarized in Table 2.

The retail demand forecast includes adjustments for future water savings from:

1. Plumbing codes and appliance standards
2. Conservation DMM implementation
3. Projected increases in water cost and household income
4. Water loss management

These adjustments offset increases in forecasted demand caused by population and housing growth, resulting in a total demand forecast that is declining over the forecast period. Table 3 shows the impact of each adjustment on the forecast of total and per capita demand. The first forecast in the Table 3 is the baseline forecast with no adjustments. The adjustments are then made sequentially to this baseline forecast. The last forecast in Table 3 includes all four adjustments and corresponds to the total demand forecast in Table 1.

Total production and per capita production forecasts, along with their historical values, are shown in Figures 1 through 2. The dashed lines in the figures are +/- 10 percent error bands on the forecasts.[1]

Figure 1. Actual and Projected City of Vallejo Retail Production

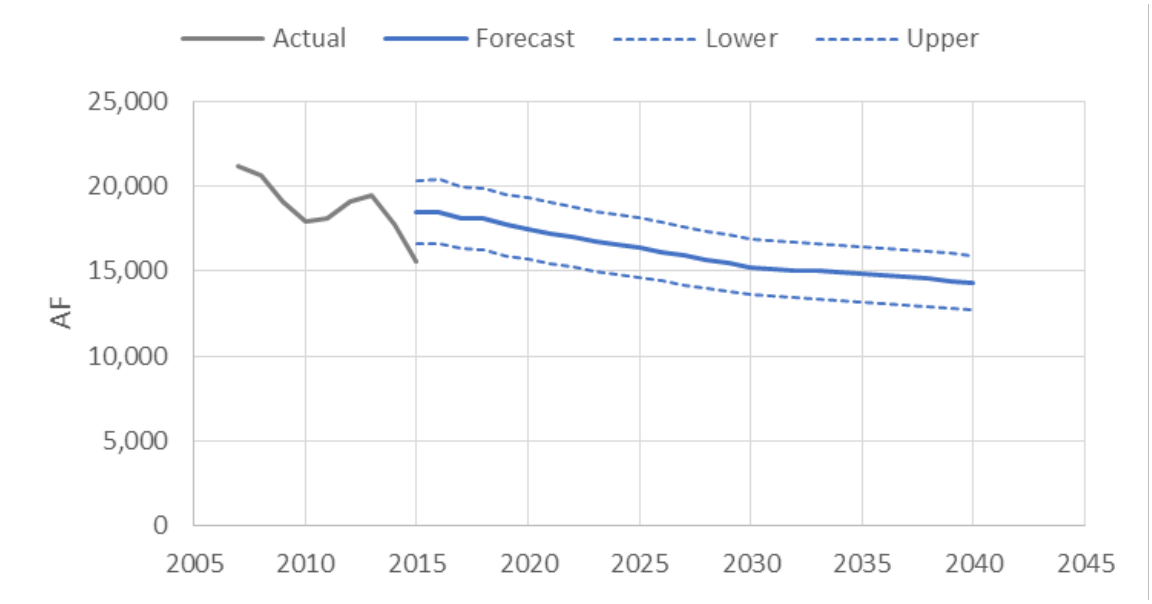
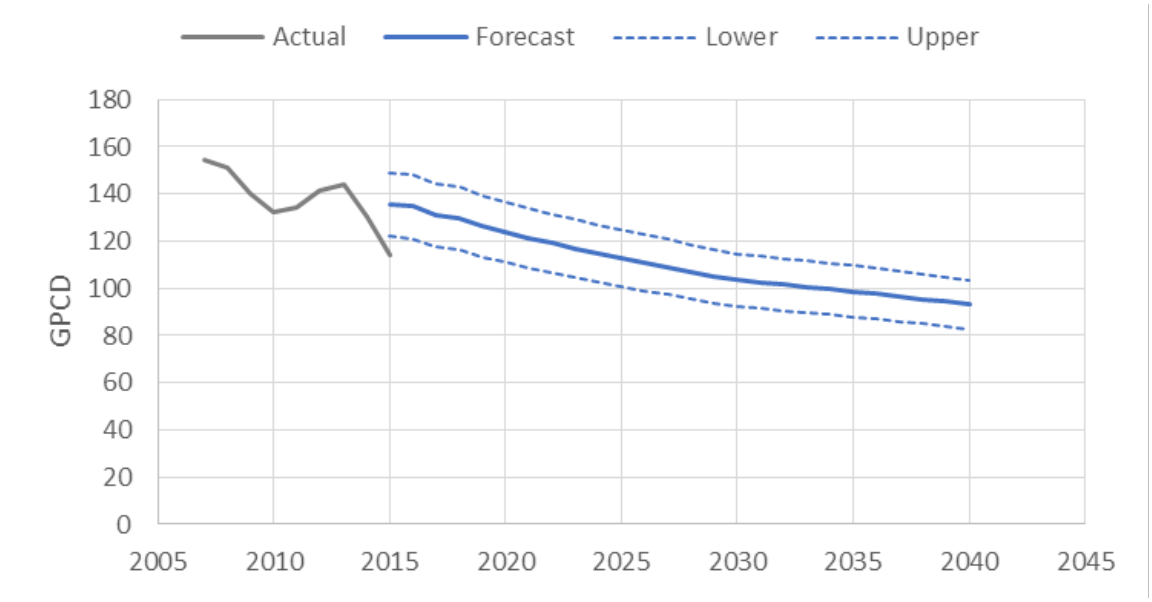


Figure 2. Actual and Projected City of Vallejo per Capita Water Production



[1] These are not statistical confidence intervals, which would show a significant widening the further the forecast moved into the future. The 10% error bands provide a rough indication of the typical degree of year-to-year variation in demand because of weather and economic shocks.

Table 1. Summary of City of Vallejo Water Demand Forecast

	2015 Actual	2015 Forecast 1/	2020	2025	2030	2035	2040
Population	121,652	121,652	126,029	129,304	131,328	133,824	137,081
Residential	119,701	119,701	124,238	127,443	129,383	131,738	134,875
Group Quarters 2/	1,951	1,951	1,791	1,861	1,945	2,086	2,206
Total Connections	37,682	37,682	38,641	39,630	40,241	40,978	41,954
Demand in AF							
Single Family	6,647	8,152	7,951	7,717	7,451	7,258	7,000
Multi Family	1,762	1,837	1,871	1,847	1,820	1,812	1,812
Commercial	2,231	2,633	2,563	2,472	2,364	2,264	2,171
Irrigation	1,258	1,796	1,791	1,752	1,679	1,591	1,489
Other	386	364	377	387	393	400	410
Total Demand	12,284	14,782	14,552	14,175	13,706	13,326	12,882
Losses	3,251	3,704	2,916	2,183	1,523	1,481	1,431
Total Production	15,535	**18,486**	**17,468**	**16,358**	**15,229**	**14,806**	**14,313**
Per Capital Demand (GPCD)							
Residential	63	75	71	67	64	61	58
Total Production	114	136	124	113	104	99	93

1. Forecast of demand without rationing. Actual demand in 2015 was reduced significantly by the State's Emergency Drought Regulation.
2. Institutionalized population residing in dormitories, jails, etc.

Table 2. Dry Year Demand Forecasts

Total Production	2015 1/	2020	2025	2030	2035	2040	Reference Year
			Demand in AF				
Normal Year	18,486	17,468	16,358	15,229	14,806	14,313	NA
Single Dry Year	19,401	18,332	17,167	15,982	15,539	15,021	2013
Multiple Dry Years							
Year 1	19,011	17,963	16,822	15,661	15,227	14,719	1988
Year 2	18,481	17,463	16,353	15,225	14,803	14,309	1989
Year 3	18,662	17,634	16,513	15,374	14,947	14,449	1990

1. Forecast of demand without rationing. Actual demand in 2015 was reduced significantly by the State's Emergency Drought Regulation.

Table 3. Demand Forecast Adjustments

	2015 Forecast 1/	2020	2025	2030	2035	2040
Baseline (AF)	**18,486**	**19,075**	**19,565**	**19,868**	**20,235**	**20,720**
GPCD	136	135	135	135	135	135
Adjustments to Baseline Forecast						
Plumbing Codes (AF)	**0**	**-394**	**-714**	**-962**	**-1,168**	**-1,346**
Adjusted Forecast						
Demand (AF)	**18,486**	**18,581**	**18,672**	**18,664**	**18,774**	**19,037**
GPCD	136	132	129	127	125	124
DMMs (AF)	**0**	**-107**	**-169**	**-217**	**-249**	**-274**
Adjusted Forecast						
Demand (AF)	**18,486**	**18,448**	**18,460**	**18,393**	**18,463**	**18,694**
GPCD	136	131	127	125	123	122
Water Cost/Income (AF)	**0**	**-199**	**-587**	**-1,002**	**-1,438**	**-2,066**
Adjusted Forecast						
Demand (AF)	**18,486**	**18,199**	**17,727**	**17,141**	**16,665**	**16,110**
GPCD	136	129	122	117	111	105
Loss Mgt (AF)	**0**	**-731**	**-1,369**	**-1,912**	**-1,859**	**-1,797**
Adjusted Forecast						
Demand (AF)	**18,486**	**17,468**	**16,358**	**15,229**	**14,806**	**14,313**
GPCD	136	124	113	104	99	93

1. Forecast of demand without rationing. Actual demand in 2015 was reduced significantly by the State's Emergency Drought Regulation.

Forecast Methodology

The demand forecast is constructed stepwise as follows:

1. For each residential service class, the forecast of dwelling units is multiplied by baseline average use per dwelling unit to get baseline future demand. For non-residential service classes, service meters, rather than dwelling units, are used. Baseline use per dwelling unit (or service meter) is set to 2013 weather-normalized average use. Forecasts of residential dwelling units and non-residential service meters are derived from ABAG's 2013 population and housing projections for City of Vallejo and allowances for the Lakes System and outside-city customers.

2. Baseline water use is adjusted for expected water savings from plumbing codes and appliance standards, which are predicted to increase the efficiency of toilets, urinals, showerheads, clothes washers, and dishwashers over time. Water savings are estimated with the Alliance for Water Efficiency's Water Conservation Tracking Tool.

3. A second adjustment to baseline water use is made to account for expected water savings from DMM implementation by the City of Vallejo. Water savings are estimated with the Alliance for Water Efficiency's Water Conservation Tracking Tool.

4. A third adjustment to baseline water use is made to account for customer response to increases in the real cost of water and household income over time. Estimates of price elasticity for each service class and income elasticity for the residential classes in combination with forecasts of the growth in the real cost of water and household income are used to make this adjustment.[2]

5. An estimate of system loss is added to the forecast of adjusted baseline water demand to get the forecast of system production.

The calculations are enacted in an Excel workbook[3] which holds the data and adjustment parameters. The forecast workbook can be used to audit the forecast data and calculations. It can also be used to generate alternative forecasts that rely on different data or adjustment assumptions.

Population, Dwelling Unit, and Service Meter Projections

Historical estimates of population and dwelling units are based on Department of Finance (DOF) E-5 and E-8 estimates for City of Vallejo plus allowances for outside-city and Lakes System customers prepared by RMC. Population and dwelling unit estimates were developed for the period 1996-2015. Tables 4, 5,

[2] Price elasticity measures the rate at which demand for a good changes in relation to changes in its price. Specifically, it measures the percentage change in demand given a percentage change in price. If, for example, price elasticity is estimated to be -0.2, this means that a 1% increase in price would be expected to result in a 0.2% decrease in demand. Price elasticities for municipal water demand are typically in the range of -0.1 to -0.5. Likewise, income elasticity measures the percentage change in the demand for a good given a one percent increase in income. Income elasticities for municipal water demand are typically in the range of 0.2 to 0.6 (Renzetti, 2002). Note that increases is price cause demand to go down while increases in income cause demand to go up. The two effects are partially offsetting.

[3] vallejo_water_demand_forecast_workbook_v2.xlsx.

and 6 show the total, group quarters, and residential population estimates for the last five years 2011-2015.

Table 4. City of Vallejo Population Estimates

Year	Total	Group Quarters	Residential
2011	115,682	1,878	113,804
2012	115,817	1,896	113,921
2013	115,681	1,944	113,737
2014	116,299	1,936	114,363
2015	116,764	1,951	114,813

Source: DOF E-5 Population Estimates.

Table 5. Lakes System and Unincorporated Area Population Estimates

Year	Total	Group Quarters	Residential
2011	4,812	0	4,812
2012	4,820	0	4,820
2013	4,811	0	4,811
2014	4,861	0	4,861
2015	4,888	0	4,888

Source: RMC.

Table 6. Retail Water System Population Estimates

Year	Total	Group Quarters	Residential
2011	120,494	1,878	118,616
2012	120,637	1,896	118,741
2013	120,492	1,944	118,548
2014	121,160	1,936	119,224
2015	121,652	1,951	119,701

Source: Sum of Tables 4 and 5.

Table 7 shows occupied housing unit and household density estimates for 2011-2015. The estimates for the City of Vallejo are taken from DOF E-5. The estimates for the Lakes System and outside-city customers are based on RMC's population estimates.

Table 7. Retail Water System Occupied Dwelling Units and Persons per Dwelling Unit

	Occupied Dwelling Units				Avg Persons Per Dwelling Unit			
Year	Vallejo DOF E-5 Estimates	Lakes RMC Estimates	Unincorp RMC Estimates	Total	Vallejo DOF E-5 Estimates	Lakes RMC Estimates	Unincorp RMC Estimates	Total
2011	40,592	825	917	42,334	2.80	2.76	2.76	2.80
2012	40,639	825	920	42,384	2.80	2.76	2.76	2.80
2013	40,639	820	924	42,383	2.80	2.76	2.76	2.80
2014	40,680	827	927	42,434	2.81	2.77	2.77	2.81
2015	40,674	826	931	42,431	2.82	2.78	2.78	2.82

Estimated single-family and multi-family occupied dwelling units are shown in Table 8. Single-family occupied dwelling units are set equal to the number of single-family services in each year.[4] Multi-family occupied dwelling units are set equal to the difference between total and single-family occupied dwelling units.

Table 8. Single- and Multi-Family Occupied Dwelling Unit Estimates

Year	Single-Family	Multi-Family	Total	% Single-Family
2011	32,093	10,241	42,334	76%
2012	32,267	10,117	42,384	76%
2013	32,390	9,993	42,383	76%
2014	32,544	9,890	42,434	77%
2015	32,682	9,749	42,431	77%

The number of services and average number of occupied dwelling units per service are shown in Table 9.

Table 9. Single- and Multi-Family Services

	Services			Avg. Occupied Dwelling Units per Service		
Year	Single-Family	Multi-Family	Total	Single-Family	Multi-Family	Total
2011	32,093	2,064	34,157	1.00	4.96	1.24
2012	32,267	2,073	34,340	1.00	4.88	1.23
2013	32,390	2,089	34,479	1.00	4.78	1.23
2014	32,544	2,089	34,633	1.00	4.73	1.23
2015	32,682	2,089	34,771	1.00	4.67	1.22

Projected population and dwelling units for 2020-2040 are based on ABAG's 2013 population and housing projections for the City of Vallejo and allowances for the Lakes System and outside-city

[4] Excluding Back Flow (BF) and Sewer Only (SO) services.

customers.[5] Tables 10, 11, and 12 show projected population and Table 13 shows projected occupied dwelling units. The ABAG dwelling unit projection is for total dwelling units. Occupied dwelling units are forecast by adjusting ABAG's total dwelling unit projection for expected vacancy. Projected vacancy rates range from 3 to 7 percent and are set to maintain the long-term historical average housing density of 2.84 persons per dwelling unit.[6]

Table 10. City of Vallejo Population Projections

Year	Total	Group Quarters	Residential
2015 (actual)	116,764	1,951	114,813
2020	121,032	1,791	119,242
2025	124,222	1,861	122,361
2030	126,190	1,945	124,244
2035	128,617	2,086	126,531
2040	131,790	2,206	129,584
Source: ABAG 2013 Projections.			

Table 11. Lakes System and Unincorporated Area Population Projections

Year	Total	Group Quarters	Residential
2015 (actual)	4,888	0	4,888
2020	4,997	0	4,997
2025	5,081	0	5,081
2030	5,139	0	5,139
2035	5,207	0	5,207
2040	5,291	0	5,291
Source: City of Vallejo 2010 UWMP.			

Table 12. Retail Water System Population Projections

Year	Total	Group Quarters	Residential
2015 (actual)	121,652	1,951	119,701
2020	126,029	1,791	124,238
2025	129,304	1,861	127,443
2030	131,328	1,945	129,383
2035	133,824	2,086	131,738
2040	137,081	2,206	134,875
Source: Sum of Tables 10 and 11.			

[5] Population within the unincorporated portion of Vallejo proper is assumed to increase at the same rate as the City of Vallejo. Connections (and associated population) within the Lakes System are assumed to increase at a rate of one connection per year. These are the same growth assumptions used in the 2010 UWMP.

[6] The average density for the period 2001-2015 was 2.84.

Table 13. Retail Water System Occupied Dwelling Unit Projection

Year	Vallejo ABAG 2013 1/	Lakes System 2010 UWMP	Unincorp 2010 UWMP	Total
2015 (actual)	40,674	826	931	42,431
2020	41,986	831	965	43,782
2025	43,074	836	990	44,901
2030	43,745	841	1,006	45,592
2035	44,553	846	1,026	46,425
2040	45,627	851	1,051	47,529

1. Occupied dwelling units = total dwelling units – vacant dwelling units

Table 14 gives projected single-family and multi-family occupied dwelling units. Single-family dwelling units are assumed to comprise 76 percent of the occupied housing stock, which corresponds to the average share of single-family dwelling units for the period 2001-2015.

Table 14. Single- and Multi-Family Occupied Dwelling Unit Projections

Year	Single-Family	Multi-Family	Total	% Single-Family
2015 (actual)	32,682	9,749	42,431	77%
2020	33,396	10,387	43,782	76%
2025	34,249	10,652	44,901	76%
2030	34,776	10,816	45,592	76%
2035	35,411	11,013	46,425	76%
2040	36,253	11,275	47,529	76%

Single-family and multi-family service projections are shown in Table 15. Single-family services are assumed to equal projected occupied single-family dwelling units. Multi-family services are projected by dividing projected multi-family occupied dwelling units by the 2015 ratio of occupied multi-family dwelling units to multi-family services. This ratio is 4.67.

Table 15. Single- and Multi-Family Service Projections

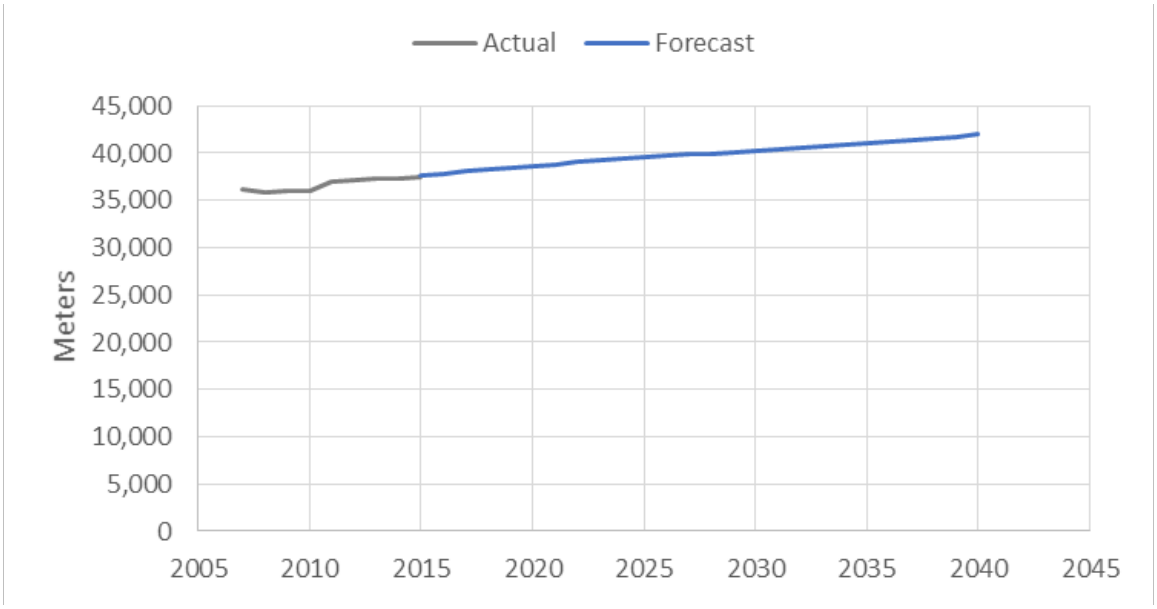
	Services			Avg. Occupied Dwelling Units per Service		
Year	Single-Family	Multi-Family	Total	Single-Family	Multi-Family	Total
2015 (actual)	32,682	2,089	34,771	1.00	4.67	1.22
2020	33,396	2,226	35,621	1.00	4.67	1.23
2025	34,249	2,282	36,531	1.00	4.67	1.23
2030	34,776	2,318	37,094	1.00	4.67	1.23
2035	35,411	2,360	37,771	1.00	4.67	1.23
2040	36,253	2,416	38,669	1.00	4.67	1.23

The projections of non-residential services are shown in Table 16. Non-residential services are projected to increase at the rate of service area population growth. Figure 3 shows actual and projected total retail water service connections.

Table 16. Non-Residential Service Projections

Year	Commercial	Irrigation	Other
2015 (actual)	1,869	468	404
2020	1,936	485	419
2025	1,987	497	429
2030	2,018	505	436
2035	2,056	515	444
2040	2,106	527	455

Figure 3. Actual and Projected Total Retail Water Service Connections



Baseline Average Use per Dwelling Unit and Non-Residential Service Meter

Baseline average use per dwelling unit and non-residential service meter is set to 2013 weather-normalized average annual use for each service class. Weather normalization follows the CUWCC GPCD Weather Normalization Methodology. This methodology adjusts demand in each month based on deviations from monthly average temperature and precipitation.[7] Demand is positively correlated with deviations in temperature and negatively correlated with deviations in precipitation. The amount of

[7] Monthly estimates of precipitation and average maximum daily air temperature for the period 1920-2015 for latitude 38.1144 longitude -122.2441 were downloaded from the PRISM Climate Group website (http://www.prism.oregonstate.edu/explorer/).

adjustment varies by season and by the amount of outdoor water use in the service area, as measured by the ratio of peak month to minimum month demand. The 2013 monthly adjustment factors are shown in Table 17. The last row of the table shows the annual adjustment factor, which is a production weighted-average of the monthly adjustment factors.

Table 17. 2013 Weather Normalization Factors

Month	Precip Factor	Temp Factor	Combined Factor
January	1.03	1.04	1.07
February	1.03	1.08	1.11
March	1.01	1.05	1.06
April	1.10	1.13	1.23
May	1.07	1.04	1.11
June	0.97	1.04	1.01
July	1.00	1.01	1.01
August	1.00	0.97	0.97
September	0.99	0.96	0.95
October	1.04	1.00	1.04
November	1.02	1.09	1.11
December	1.04	1.11	1.15
Weighted Annual	**1.02**	**1.03**	**1.05**

Weather-normalized baseline average demand is calculated by dividing 2013 average demand by the annual combined weather normalization factor. Actual and weather normalized baseline average demands by service class are shown in Table 18.

Table 18. Weather Normalized Baseline Average Annual Demand by Service Class

Service Class	Units	Actual 2013	Weather Normalized
Single Family	CCF/DU	114	109
Multi Family	CCF/DU	93	89
Commercial	CCF/Meter	644	614
Irrigation	CCF/Meter	1,754	1,672
Other	CCF/Meter	412	392

Unadjusted Baseline Demand Forecast

The unadjusted baseline demand forecast is calculated by multiplying the weather normalized baseline average demands in Table 18 by the forecast of dwelling units and service meters in Tables 15 and 16. The unadjusted baseline demand forecast is given in Table 19.[8] The forecast in Table 19 does not

[8] Volumes in Table 6 have been converted from CCF to AF.

include adjustments for expected water savings from plumbing codes and appliance standards, DMM implementation, or growth in the real cost of water and household income.

Table 19. Unadjusted Baseline Demand Forecast in AF 1/

	2015	2020	2025	2030	2035	2040
Single Family	8,152	8,330	8,543	8,674	8,833	9,043
Multi Family	1,837	1,957	2,007	2,038	2,076	2,125
Commercial	2,633	2,728	2,799	2,842	2,896	2,967
Irrigation	1,796	1,860	1,909	1,939	1,975	2,024
Other	364	377	387	393	400	410
Total Demand	14,782	15,252	15,644	15,887	16,180	16,568
Losses 2/	3,704	3,822	3,920	3,981	4,055	4,152
Total Production	**18,486**	**19,075**	**19,565**	**19,868**	**20,235**	**20,720**

1. Baseline forecast does not include adjustments for expected water savings from plumbing codes and appliance standards, DMM implementation, or growth in the real cost of water and household income.
2. Baseline system losses are estimated at 20% of total production, which is the average loss rate for the period 2011-2015.

Adjustments for Plumbing Codes and Appliance Standards

Over the next decades plumbing codes and appliance standards will work to increase the efficiency of toilets, urinals, showerheads, clothes washers, and dishwashers. For example, the standard for toilets recently changed from 1.6 to 1.28 gpf while the standard for urinals went from 1.0 to 0.25 gpf. Similarly, standards scheduled to take effect in 2016 and 2018 will ratchet down water used by showerheads, clothes washers, and dishwashers. This means new homes and businesses will install more efficient plumbing fixtures and water using appliances than is currently reflected in the existing stock upon which baseline average water use is based. It also means that existing homes will eventually replace their current fixtures and appliances as they wear out or as part of remodeling with more efficient fixtures and appliances. Overtime, this will result in a predictable decline in indoor water use per dwelling unit or service meter.

Expected water savings from plumbing fixture and appliance efficiency standards were estimated with the Alliance for Water Efficiency's (AWE) Water Conservation Tracking Tool.[9] This is a model in wide use in California and throughout North America specifically designed to estimate water savings associated with plumbing codes, appliance standards, and utility-based conservation programs.[10] The model uses the forecasts of population and dwelling units along with estimates of average persons per household and plumbing fixtures and appliances per household to estimate plumbing fixture and appliance water uses with and without the efficiency standards. The difference between the two forecasts provides the estimate of the expected water savings. These estimates are shown in Table 20.

[9] http://www.allianceforwaterefficiency.org/Tracking-Tool.aspx

[10] The Alliance for Water Efficiency estimates there are currently 400 utilities throughout North America using the model for conservation program planning.

Table 20. Demand Adjustments for Plumbing Fixture and Appliance Efficiency Standards in AF

	2015	2020	2025	2030	2035	2040
Single Family	0	-232	-428	-579	-702	-808
Multi Family	0	-89	-153	-204	-246	-283
Commercial	0	-73	-133	-179	-220	-255
Irrigation	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total Adjustment	0	-394	-714	-962	-1,168	-1,346

Adjustments for DMM Implementation

The City of Vallejo is a member of the CUWCC and implements the BMPs (which the UWMP Act refers to as DMMs). Not all DMMs have quantifiable water savings. For example, water savings estimates associated with public information and school education DMMs are generally unreliable. However, water savings associated with fixture replacement and customer survey/audit DMMs can be quantified using the AWE Water Conservation Tracking Tool.

The City of Vallejo expects to continue implementing fixture replacement and customer survey/audit DMMs at the rate they have been implemented historically. Recent DMM implementation is summarized in Table 21. The average implementation rate shown in the last column of Table 21 was used to estimate future water savings from DMM implementation. The resulting demand adjustments are shown in Table 22.

Table 21. City of Vallejo Implementation of Fixture Replacement and Customer Survey/Audit DMMs

	2014-15	2012-13	2011-12	2010-11	Avg
Devices Distributed					
SF Shower Heads	268	385	217	186	264
MF Shower Heads	17	25	14	12	17
CII Shower Heads	112	0	37	37	47
Rebates/Direct Install					
Residential HE Toilets	421	359	91	95	242
CII HE Toilets	224	248	192	192	214
Clothes Washers	133	339	185	114	193
Turf Replacement (Residential Sites)	51	6	8	0	16
Irr Controllers	0	5	5	0	3
Surveys					
Residential home surveys	169	154	109	228	165
Large Landscape Surveys	3	3	3	2	3

Source: City of Vallejo CUWCC BMP Reports. No report provided for FY 2013-14.

Table 22. Demand Adjustments for DMM Implementation in AF

	2015	2020	2025	2030	2035	2040
Single Family	0	-59	-88	-110	-121	-129
Multi Family	0	-1	-1	-1	-1	-1
Commercial	0	-39	-72	-98	-119	-136
Irrigation	0	-8	-8	-8	-8	-8
Other	0	0	0	0	0	0
Total Adjustment	0	-107	-169	-217	-249	-274

Adjustments for Growth in Real Cost of Water and Household Income

As the real cost of water increases, demand for water will be affected. Municipal water service is a normal economic good; as price goes up, less is demanded. This has been demonstrated conclusively through numerous empirical studies of municipal water use.[11] Similarly, as household incomes go up, more is demanded.

The degree of responsiveness to changes in the real cost of water is measured by price elasticity. Price elasticity estimates the percentage change in demand given a percentage change in the real (inflation-adjusted) price. Price elasticity has been estimated for numerous municipal water providers in California. Recent estimates include studies by M.Cubed (2013, 2015a, 2015b, 2015c), A&N Technical Services (2014), and Western Policy Research (2014). Jenkins et al. (2003) provide a summary of estimates from studies done in the 1980s and 1990s. The CUWCC's Conservation Rate Handbook also provides recommended price elasticities for residential water demand. Based on these and other studies, we have set the price elasticity parameters for each service class to the ranges shown in Table 23. We have used the mid-point estimate to calculate the price-induced demand adjustments in the forecast presented in this memorandum.

Table 23. Water Demand Price Elasticity Ranges

	Lower	Mid-Point	Upper
Single Family	-0.15	-0.20	-0.25
Multi Family	0.00	-0.05	-0.10
Commercial	-0.10	-0.15	-0.20
Irrigation	-0.20	-0.25	-0.30

There is significant uncertainty regarding the future growth in water rates over the forecast period. Over the past two decades, rates for municipal water service have been increasing faster than inflation in most of California and in much of the rest of the country. In the case of City of Vallejo, volumetric rates have increased at an annual rate of about 4.6% since 2005. City of Vallejo has indicated it is

[11] See Renzetti (2002) for a comprehensive review of the empirical evidence of municipal demand response to changes in price. Other reviews of the empirical evidence are provided by Dalhuisen et al. (2003) and Espey et al. (1997).

planning for a rate increase of about 9% in 2017 and another similar increase two years later in 2019. After 2019, the rate of potential increase is much less certain.

Water rates in California are expected to continue to rise faster than general inflation as water systems reinvest in aging infrastructure and develop new, more expensive sources of water supply. In economic studies done for the Bay Delta Conservation Plan, DWR assumed water rates in Southern California and the Bay Area would rise at an average annual rate of 5% over the next 50 years while it assumed inflation would average 2% over the same period (Sunding et al., 2013). This translates to a 3% average annual rate of growth in the real cost of water.

For this forecast, we have assumed that rates will increase by 9% in 2017 and 2019 and then at an average annual rate of 5% starting in 2020. Inflation is assumed to average 2% over the forecast period. This is in line with the assumptions used by DWR for the Bay Area overall, and is consistent with the historical rate of increase observed between 2005 and 2016.

The effect of higher water rates on residential water demand will be partially offset by projected increases in household income. The effect of changes in income on residential demand has also been studied empirically. Empirical estimates of income elasticity for municipal water service typically fall within the range of 0.2 to 0.6 for single-family households (Renzetti, 2002). Income elasticity for multi-family households is lower, because these household usually do not pay directly for water service and also have little direct influence over landscape area.[12] Based on a review of the literature, we have set the income elasticity parameters for the residential service classes to the ranges shown in Table 24.

Projected increases in real per capita income between 2015 and 2040 are taken from Caltrans's 2015 Solano County Economic Forecast (Caltrans, 2015).

Table 24. Water Demand Price Elasticity Ranges

	Lower	Mid-Point	Upper
Single Family	0.2	0.4	0.6
Multi Family	0.1	0.2	0.3

The resulting adjustments to demand given the projected real increases in water cost and income are summarized in Table 25. Note that these adjustment assume the City of Vallejo continues to recover approximately 40% of its sales revenues through service charges and 60% through volume charges.[13]

[12] Though they do have indirect influence through their collective choices in rental units and associated amenities.
[13] The demand adjustments in Table 25 are a function of the marginal cost of water paid by the consumer which in turn depends on the volumetric rate. It is possible for the marginal price to decrease even in years where overall rates increase if revenue recovery is shifted from the volume charge to the fixed charge. The demand forecast assumes the share of total sales revenue recovered through the volume charge does not change relative to its value today.

Table 25. Demand Adjustments for Growth in Real Cost of Water and Household Income in AF

	2015	2020	2025	2030	2035	2040
Single Family	0	-88	-309	-535	-752	-1,106
Multi Family	0	2	-7	-14	-16	-29
Commercial	0	-52	-122	-201	-293	-404
Irrigation	0	-61	-149	-252	-376	-527
Other	0	0	0	0	0	0
Total Adjustment	0	-199	-587	-1,002	-1,438	-2,066

Adjustments for Water Loss Management

System water losses over the last five years (2011-2015) have averaged 20%. The demand forecast assumes that renewal and replacement of distribution system infrastructure and active water loss management will reduce water losses to 10% by 2030. The assumed annual water loss percentages and adjustment to the demand forecast are shown in Table 26.[14]

Table 26. Demand Adjustments for Water Loss Management in AF

	2015	2020	2025	2030	2035	2040
Water Loss Percentage	20.0%	16.7%	13.3%	10.0%	10.0%	10.0%
Demand Adjustment	0	-731	-1,369	-1,912	-1,859	-1,797

Adjusted Baseline Demand Forecast

The adjusted baseline demand and system production forecast is summarized in Table 27. System production is the sum of adjusted baseline demand and system losses. Baseline system losses are based on the 2011-15 five-year average loss rate of 20%.

[14] Note that because water loss is being estimated as a percentage of total production, the magnitude of the demand adjustment is a function of the baseline demand and the magnitude of the other demand adjustments. Turning off one or more of the other adjustments in the forecast model will alter the magnitude of the water loss adjustment shown in Table 26.

Table 27. Adjusted Baseline Demand Forecast in AF

	2015	2020	2025	2030	2035	2040
Unadjusted Baseline Demand						
Single Family	8,152	8,330	8,543	8,674	8,833	9,043
Multi Family	1,837	1,957	2,007	2,038	2,076	2,125
Commercial	2,633	2,728	2,799	2,842	2,896	2,967
Irrigation	1,796	1,860	1,909	1,939	1,975	2,024
Other	364	377	387	393	400	410
Total Demand	14,782	15,252	15,644	15,887	16,180	16,568
System Losses	3,704	3,822	3,920	3,981	4,055	4,152
Total Production	**18,486**	**19,075**	**19,565**	**19,868**	**20,235**	**20,720**
Adjustments for Plumbing Code and Appliance Standards						
Single Family	0	-232	-428	-579	-702	-808
Multi Family	0	-89	-153	-204	-246	-283
Commercial	0	-73	-133	-179	-220	-255
Irrigation	0	0	0	0	0	0
Other	0	0	0	0	0	0
Total Adjustment	0	-394	-714	-962	-1,168	-1,346
Adjustments for DMM Implementation						
Single Family	0	-59	-88	-110	-121	-129
Multi Family	0	-1	-1	-1	-1	-1
Commercial	0	-39	-72	-98	-119	-136
Irrigation	0	-8	-8	-8	-8	-8
Other	0	0	0	0	0	0
Total Adjustment	0	-107	-169	-217	-249	-274
Adjustments for Growth in Real Cost of Water and Household Income						
Single Family	0	-88	-309	-535	-752	-1,106
Multi Family	0	2	-7	-14	-16	-29
Commercial	0	-52	-122	-201	-293	-404
Irrigation	0	-61	-149	-252	-376	-527
Other	0	0	0	0	0	0
Total Adjustment	0	-199	-587	-1,002	-1,438	-2,066
Adjustments for System Loss Management						
Total Adjustment	0	-731	-1,369	-1,912	-1,859	-1,797
Adjusted Baseline Demand						
Single Family	8,152	7,951	7,717	7,451	7,258	7,000
Multi Family	1,837	1,871	1,847	1,820	1,812	1,812
Commercial	2,633	2,563	2,472	2,364	2,264	2,171
Irrigation	1,796	1,791	1,752	1,679	1,591	1,489
Other	364	377	387	393	400	410
Total Adjusted Demand	14,782	14,552	14,175	13,706	13,326	12,882
System Losses	3,704	2,916	2,183	1,523	1,481	1,431
Total Production	**18,486**	**17,468**	**16,358**	**15,229**	**14,806**	**14,313**

Dry Year Demand Forecasts

The same methodology used to weather-normalize 2013 baseline average demand is used to calculate the weather adjustments for the dry-year demand forecasts. In this case, however, we multiply the forecast by the combined annual weather normalization factor rather than divide by it as we did to weather normalize 2013 demand.[15] In the case of the single dry year scenario, which is based on the 2013 weather year, the combined adjustment factor is the one given in Table 17. The adjustment factors for the multiple dry year forecasts are given in Table 28. The weather reference years for the multiple dry year forecasts are 1988-1990.

It is interesting to note that even though 1988-90 are the driest three consecutive years since 1920, the monthly pattern of rainfall and temperature in these years is not expected to have a significant impact on overall annual demand. Weather effects are significant in certain months, such as in April of 1989 and 1990, but in other months the weather effects are negligible, and in still other months they would be expected to cause demand to decrease. Importantly, the weather effects in the key outdoor water use months of May through September are small, which is why the overall annual effect is small. This is not unique to Vallejo. In general, the impact of a dry year on available water supply is what matters most. While drier and hotter than normal weather also causes a bump in demand, it is usually not more than a few percent across the entirety of a year.

Table 28. Combined Weather Adjustment Factors for 1988-90

Month	1988	1989	1990
January	1.00	1.06	1.02
February	1.16	1.00	0.99
March	1.11	0.92	1.02
April	1.07	1.17	1.21
May	0.98	1.05	0.79
June	0.96	0.96	1.00
July	1.02	1.00	1.00
August	1.01	1.00	0.99
September	1.02	0.89	1.00
October	1.05	0.90	1.06
November	0.98	1.09	1.06
December	1.06	1.09	0.99
Weighted Annual	1.03	1.00	1.01

The dry year demand forecasts are given in Table 29. This table is simply a reproduction of Table 2.

[15] This is because we are taking a forecast based on normal weather and adjusting it to reflect the actual weather for the reference year. In the case of the 2013 reference year, the drier and hotter weather is estimated to cause annual demand to increase by 5% from what we would expect if monthly weather had been normal. When we weather normalized 2013 demand, the opposite was the case. We started with demands that reflected the actual weather in 2013 and reduced them by 5% to reflect what demands would have been had monthly weather been normal.

Table 29. Dry Year Demand Forecasts

Total Production	2015	2020	2025	2030	2035	2040	Reference Weather Year
			Demand in AF				
Normal Year	18,486	17,468	16,358	15,229	14,806	14,313	NA
Single Dry Year	19,401	18,332	17,167	15,982	15,539	15,021	2013
Multiple Dry Years							
Year 1	19,011	17,963	16,822	15,661	15,227	14,719	1988
Year 2	18,481	17,463	16,353	15,225	14,803	14,309	1989
Year 3	18,662	17,634	16,513	15,374	14,947	14,449	1990

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Appendix C. AWWA Water Loss Audit

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AWWA Water Loss Worksheet - Vallejo System

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association

? Click to access definition

+ Click to add a comment

Water Audit Report for: City Of Vallejo

Reporting Year: 2015 (1/2015 - 12/2015)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

					Pcnt:	Value:	
Volume from own sources:	7	14,590.780	acre-ft/yr	5	-0.37%		acre-ft/yr
Water imported:	n/a		acre-ft/yr				acre-ft/yr
Water exported:	n/a		acre-ft/yr				acre-ft/yr
WATER SUPPLIED:		**14,644.966**	acre-ft/yr				

Enter negative % or value for under-registration

Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	5	11,622.000	acre-ft/yr			
Billed unmetered:	n/a		acre-ft/yr			
Unbilled metered:	n/a		acre-ft/yr			
Unbilled unmetered:		183.062	acre-ft/yr	1.25%		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

AUTHORIZED CONSUMPTION: **11,805.062** acre-ft/yr

Use buttons to select percentage of water supplied **OR** value

WATER LOSSES (Water Supplied - Authorized Consumption) **2,839.904** acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		36.612	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	2	359.443	acre-ft/yr	3.00%	acre-ft/yr
Systematic data handling errors:		29.055	acre-ft/yr	0.25%	acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: **425.111** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **2,414.794** acre-ft/yr

WATER LOSSES: **2,839.904** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: **3,022.966** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	483.0	miles
Number of active AND inactive service connections:	5	40,649	
Service connection density:		84	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 4 65.0 psi

COST DATA

Total annual cost of operating water system:	8	$27,431,572	$/Year	
Customer retail unit cost (applied to Apparent Losses):	8	$3.53	$/100 cubic feet (ccf)	
Variable production cost (applied to Real Losses):	7	$239.75	$/acre-ft	☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 62 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Billed metered

AWWA Water Loss Worksheet - Lakes System

AWWA Free Water Audit Software: Reporting Worksheet

WAS v5.0

American Water Works Association

? Click to access definition

+ Click to add a comment

Water Audit Report for: City Of Vallejo - Lakes System

Reporting Year: 2015 (1/2015 - 12/2015)

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input data by grading each component (n/a or 1-10) using the drop-down list to the left of the input cell. Hover the mouse over the cell to obtain a description of the grades

All volumes to be entered as: ACRE-FEET PER YEAR

To select the correct data grading for each input, determine the highest grade where the utility meets or exceeds all criteria for that grade and all grades below it.

<---------- Enter grading in column 'E' and 'J' ---------->

Master Meter and Supply Error Adjustments

WATER SUPPLIED

						Pcnt:	Value:	
Volume from own sources:	7	352.140	acre-ft/yr	5	-1.00%			acre-ft/yr
Water imported:	n/a		acre-ft/yr					acre-ft/yr
Water exported:	n/a		acre-ft/yr					acre-ft/yr

Enter negative % or value for under-registration

Enter positive % or value for over-registration

WATER SUPPLIED: 355.697 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

				Pcnt:	Value:	
Billed metered:	5	235.110	acre-ft/yr			
Billed unmetered:	n/a		acre-ft/yr			
Unbilled metered:	n/a		acre-ft/yr			
Unbilled unmetered:		4.446	acre-ft/yr	1.25%		acre-ft/yr

Default option selected for Unbilled unmetered - a grading of 5 is applied but not displayed

Use buttons to select percentage of water supplied OR value

AUTHORIZED CONSUMPTION: 239.556 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 116.141 acre-ft/yr

Apparent Losses

				Pcnt:	Value:	
Unauthorized consumption:		0.889	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for unauthorized consumption - a grading of 5 is applied but not displayed

Customer metering inaccuracies:	2	7.271	acre-ft/yr	3.00%		acre-ft/yr
Systematic data handling errors:		0.588	acre-ft/yr	0.25%		acre-ft/yr

Default option selected for Systematic data handling errors - a grading of 5 is applied but not displayed

Apparent Losses: 8.748 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 107.392 acre-ft/yr

WATER LOSSES: 116.141 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 120.587 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	7	46.3	miles
Number of active AND inactive service connections:	5	898	
Service connection density:		19	conn./mile main

Are customer meters typically located at the curbstop or property line? Yes

Average length of customer service line: (length of service line, beyond the property boundary, that is the responsibility of the utility)

Average length of customer service line has been set to zero and a data grading score of 10 has been applied

Average operating pressure: 4 65.0 psi

COST DATA

Total annual cost of operating water system:	8	$2,250,474	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$11.95	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	7	$328.59	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

*** YOUR SCORE IS: 62 out of 100 ***

A weighted scale for the components of consumption and water loss is included in the calculation of the Water Audit Data Validity Score

PRIORITY AREAS FOR ATTENTION:

Based on the information provided, audit accuracy can be improved by addressing the following components:

1: Volume from own sources

2: Customer metering inaccuracies

3: Billed metered

Appendix D. City Ordinance No, 1708 and Chapter 11.54 of the Municipal Code

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ORDINANCE NO. 1708 N.C. (2d)

AN ORDINANCE OF THE CITY OF VALLEJO AMENDING CHAPTER 11 OF THE VALLEJO MUNICIPAL CODE RELATED TO DROUGHT RESTRICTIONS AND PENALTIES

WHEREAS, On January 17, 2014, Governor Edmund G. Brown, Jr. issued Proclamation No. 1-17-2014 declaring a State of Emergency to exist in California due to severe drought conditions and calling on Californians to reduce their water usage by 20 percent; and

WHEREAS, On April 25, 2014, the Governor issued an Executive Order to strengthen the State's ability to manage water and directed the State Water Resources Control Board (SWRCB) to adopt emergency regulations as it deems necessary to address water shortage conditions; and

WHEREAS, On July 15, 2014, the SWRCB adopted 23 California Code of Regulations, Sections 863, 864, and 865, emergency regulations finding a drought emergency in California and imposing water conservation measures on individuals and water suppliers, which regulation became effective July 28, 2014, upon approval by the Office of Administrative Law and was scheduled to expire on April 25, 2015; and

WHEREAS, On March 17, 2015, the SWRCB re-adopted and expanded emergency regulations because of the continuing emergency drought conditions, and the need to act to extend the prohibitions before they expired; and

WHEREAS, Section 864 applies to all Californians and prohibits certain activities in promotion of water conservation, and Section 865 requires mandatory outdoor irrigation restrictions and reporting by water suppliers, including urban water suppliers like the City of Vallejo; and

WHEREAS, On March 27, 2015, the State Office of Administrative Law approved the SWRCB's proposed regulations and they became effective; and

WHEREAS, the City Council adopted Resolution No. 14-102 N.C. on August 26, 2014 to implement outdoor water use restrictions in compliance with the July 2014 State emergency drought regulation; and

WHEREAS, the City has promoted conservation and sought voluntary reductions in water use by its customers and City departments and has achieved a 10 percent reduction in 2014 over the same period in 2013; and

WHEREAS, the City's water supply has been limited for extended periods of time in 2014 and will be limited for an extended period of time in 2015 to 100 percent Solano Project (Lake Berryessa); and

WHEREAS, the City is party to the Solano Project Members' Agreement which requires curtailments in the amounts of water taken under the respective member's annual entitlements during certain drought conditions; and

WHEREAS, lake levels in Lake Berryessa have not triggered mandatory curtailments of Solano Project members' annual entitlements; and

WHEREAS, the City's Municipal Code, and Water Shortage Contingency Plan adopted by resolution of City Council in 2006 contain provisions to achieve responsible management of the City's water resources.

THE COUNCIL OF THE CITY OF VALLEJO DOES ORDAIN AS FOLLOWS:

SECTION 1. Chapter 11.54 of the Vallejo Municipal Code is amended to add the following:

11.54.050 – Drought Restrictions.

Until December 23, 2015, the 270-day period specified in State Water Resources Control Board ("Board") Resolution No. 2015-0013, or as extended by the Board:

a. No outdoor irrigation of ornamental landscapes or turf with potable water is permitted between the hours of 9:00 a.m. and 6:00 p.m., except for drip irrigation, soaker hoses and hand watering by container or hose equipped with a shut-off nozzle.

b. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, parking lots, or structures is prohibited.

c. The application of potable water to driveways and sidewalks is prohibited, except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency.

d. The use of potable water in a fountain or other decorative feature is prohibited.

e. The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited.

f. The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased, is prohibited.

g. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily, and the hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language.

h. Irrigation of landscape, pasture, and common areas shall be limited to a maximum of three days per week when necessary based on the following schedule: Customers with street addresses that end with an odd number may irrigate only on Tuesday, Thursday, and Saturday; customers with street addresses that end with an even number may irrigate only on Monday, Wednesday, and Friday. Common areas may be irrigated only on Monday, Wednesday, and Friday.

11.54.060 – Enforcement and Penalties.

Violations of any provision of Section 11.54.050 shall be enforced as follows:
a. For a first violation, the customer shall receive a notice of violation.
b. For a second violation, the customer shall receive an administrative citation with a fine of $200.
c. For a third violation, the customer shall receive an administrative citation with a fine of $500.
d. Administrative citations shall be issued pursuant to chapter 1.15.

SECTION 2. SEVERABILITY

If any section, subsection, sentence, clause, phrase, or word of this Ordinance is for any reason held to be invalid by a court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have passed and adopted this Ordinance, and each and all provisions hereof, irrespective of the fact that one or more provisions may be declared invalid.

SECTION 3. EFFECTIVE DATE

This Ordinance shall take effect and be in full force thirty (30) days from and after its final passage.

FIRST READ at a regular meeting of the Council of the City of Vallejo held on the 28th day of April, 2015 and finally passed and adopted a regular meeting of the Council held on the 12th day of May, 2015 by the following vote:

AYES:	Mayor Davis, Vice Mayor Malgapo, Councilmembers Dew-Costa, McConnell, Miessner, Sampayan and Verder-Aliga
NOES:	None
ABSTAIN:	None
ABSENT:	None

OSBY DAVIS, MAYOR

ATTEST:

DAWN G. ABRAHAMSON, CITY CLERK

Appendix E. 2015 SWP Delivery Reliability Report

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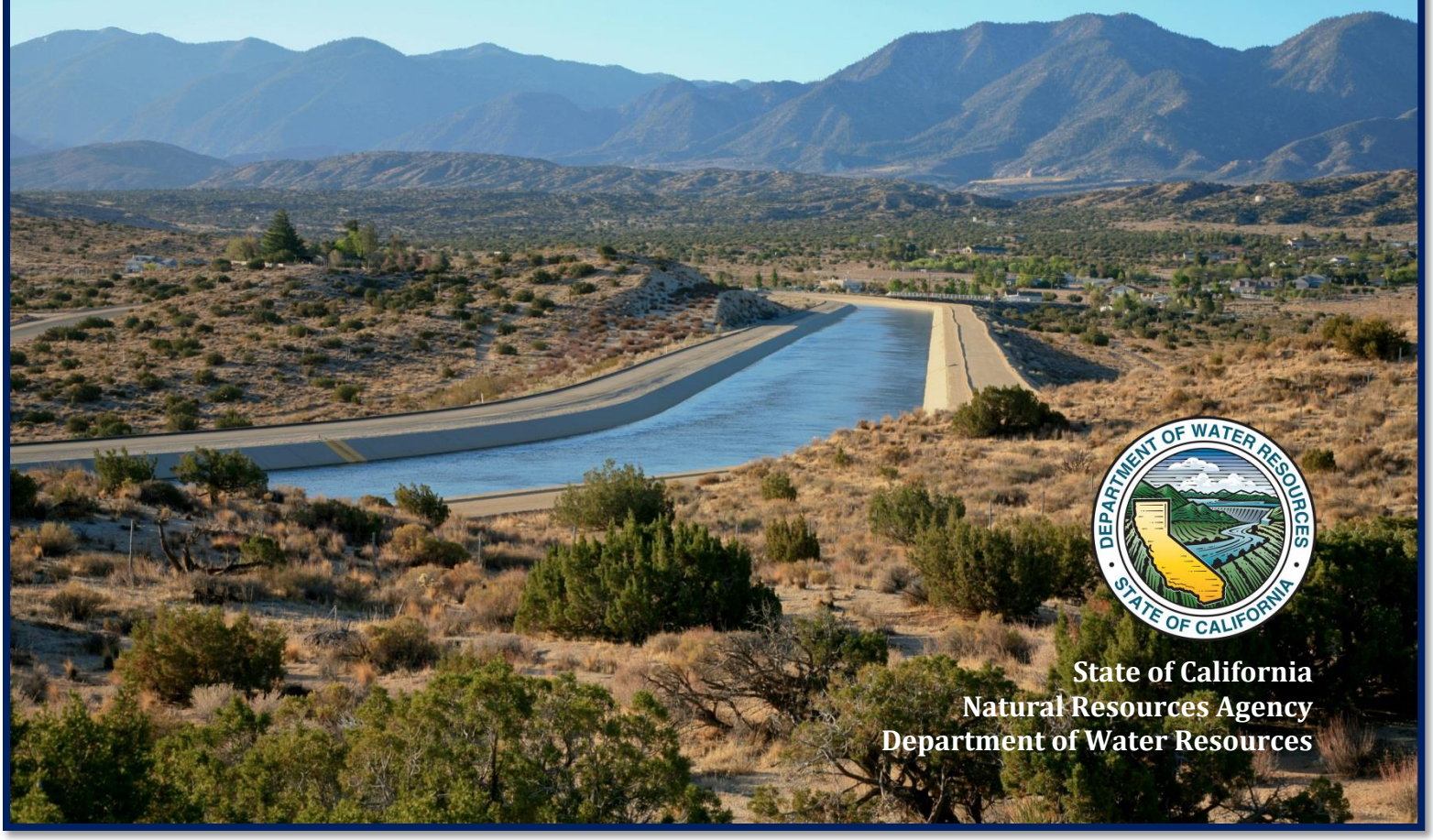
The State Water Project
Final Delivery Capability Report 2015

July 2015



State of California
Natural Resources Agency
Department of Water Resources

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Table of Contents

List of Tables

List of Figures

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Summary

This report is intended to inform the public about key factors important to the operation of the State Water Project (SWP) and an estimate of its current delivery capability.

For many SWP water contractors, water provided by the SWP is a major component of the water supplies available to them. SWP contractors include cities, counties, urban water agencies, and agricultural irrigation districts. These local utilities and other public and private entities provide the water that Californians use at home and work every day and that helps to nourish the state's bountiful crops. Thus, the availability of water from the SWP is an important component to the water supply planning of its recipients and ultimately affects the amount of water that local residents and communities can use.

The availability of these water supplies may be highly variable. A wet water year may be followed by a dry or critically dry year. Knowing the probability that they will receive a certain amount of SWP water in a given year—whether it be a wet water year, a critical year, or somewhere in between—gives contractors a better sense of the degree to which they may need to implement increased conservation measures or plan for new additional, or back up sources of water supply to meet their needs.

The Delta is the key to the SWP's ability to deliver water to its agricultural and urban contractors in the North Bay, the South Bay, California Central Valley, and Southern California. All but five of the 29 SWP contractors receive water deliveries from the Delta (pumped by either the Harvey O. Banks or Barker Slough pumping plants).

Yet the Delta faces numerous challenges to its long-term sustainability. For example, climate change poses the threat of increased variability in floods and droughts, and sea level rise complicates efforts to manage salinity levels and preserve water quality in the Delta so that the water remains suitable for urban and agricultural uses. Among the other challenges are continued subsidence of Delta islands, many of which are already below sea level, and the related threat of a catastrophic levee failure as water pressure increases on fragile levees.

Protection of endangered and threatened fish species, such as the delta smelt, is also an important factor of concern for the Delta environment. Ongoing regulatory restrictions, such as those imposed by federal biological opinions on the effects of SWP and Central Valley Project (CVP) operations on these species also contribute to the challenges of determining the SWP's water delivery capability.

Two large-scale plans for the Delta that are being developed could affect SWP water delivery capability: the Delta Plan and the Bay Delta Conservation Plan (BDCP). When complete, the BDCP will provide the basis for issuing endangered species permits to operate the SWP and CVP. The BDCP seeks to improve the health of the ecological system as a whole.

The analyses in this report factor in all of the regulations governing SWP operations in the Delta and upstream, and assumptions about water uses in the upstream watersheds. Analyses were conducted that considered the amounts of water that SWP

contractors use and the amounts of water they choose to hold for use in a subsequent year.

Many of the same specific challenges to SWP operations described in the *State Water Project Delivery Reliability Report 2013* remain in 2015. Most notably, the effects on SWP pumping caused by issuance of the 2008 and 2009 federal biological opinions (BOs), which were reflected in the 2013 Report, continue to affect SWP delivery capability today. Hence, the differences between the 2013 and 2015 reports can be attributed primarily to updates in the assumptions and inputs to the simulation studies.

SWP exports have decreased since 2005, although the bulk of the change occurred by 2009 as the federal BOs went into effect, restricting operations. These effects are also reflected in the SWP delivery estimates. The most salient findings in this report are as follows:

- Under existing conditions, the average annual delivery of Table A water estimated for this 2015 Report is 2,550 taf/year, 3 taf less than the 2,553 taf/year estimated for the 2013 Report.

- The likelihood of existing-condition SWP Article 21 deliveries (supplemental deliveries to Table A water) being greater than 20 taf/year has decreased by 3% relative to the likelihood presented in the 2013 Report.

Section 1

Reasons to Assess SWP Water Delivery Capability

Two major factors underscore the importance of assessing the SWP's water delivery capability: the effects of population growth on California's balance of water supply and demand, and State legislation intended to help maintain a reliable water supply.

Population Growth, Land Use, and Water Supply

California's population has grown rapidly in recent years, with resulting changes in land use. This growth is expected to continue. From 1990 to 2005, California's population increased from about 29.8 million to about 36 million. Based on this trend, California's population has been projected to be more than 40.8 million by 2020. The "current trends" scenario depicted in the *California Water Plan 2013* for year-2050 conditions, based on the California Department of Finance's projections of 2010 U.S. Census data, assumes a population of nearly 51 million—a 75% increase in the 1990 population.

The amount of water available in California—or in different parts of the state—can vary greatly from year to year. Some areas may receive 2 inches of rain a year, while others are deluged with 100 inches or more. As land uses have changed, population centers have emerged in many locations without sufficient local water supplies. Thus, Californians have always been faced with the problem of how best to conserve, control, and move water from areas of abundant water to areas of water need and use.

Legislation on Ensuring a Reliable Water Supply

The laws described below impose specific requirements on both urban and agricultural water suppliers. These laws increase the importance of SWP water delivery capability estimates to water suppliers.

California Urban Water Management Planning Act

The Urban Water Management Planning Act was enacted in 1983(California Water Code, Sections 10610–10656). As amended, this law requires urban water suppliers to adopt urban water management plans (UWMPs) every 5 years and submit those plans to DWR. DWR reviews submitted plans to report to the legislature on the status of submitted plans and for the purposes of grant eligibility requirements.

UWMPs must include an estimate of water supply and demand for the 20-year planning time frame for three water year types, normal, single dry year and multi dry years. SWP contractors rely on the SWP water delivery capability estimates to develop the water supply estimates.

The most recent round of UWMPs (2010) was required to be adopted by July 1, 2011 and submitted to DWR by August 1, 2011.

Urban Water Conservation Law requires that the State of California reduce urban per capita water use statewide by 10% by the end of 2015 and 20% by the end of 2020. Water suppliers calculated baseline water use and set 2015 and 2020 water use targets in their 2010 UWMPs. Water suppliers will report on water use target compliance in the 2015 and 2020 UWMPs. DWR is required to report to the Legislature on progress toward meeting the State's 20% by 2020 goals.

DWR publishes a guidebook to assist water suppliers prepare their urban water management plans. DWR is currently updating the guidebook for the 2015 round of plans. Guidance documents are available at http://www.water.ca.gov/urbanwatermanagement.

The municipalities and water districts that have adopted 2010 UWMPs and submitted them to DWR are listed at http://www.water.ca.gov/urbanwatermanagement/2010uwmps/.

Water Conservation Act

The Water Conservation Act of 2009 (Senate Bill X7.7, Steinberg), enacted in November 2009, includes requirements for urban and agricultural suppliers. Water suppliers report on compliance with these requirements in either the urban or agricultural water management plans. DWR reviews submitted plans for consistency with Water Conservation Act requirements.

In addition, as part of the Water Conservation Act, agricultural water suppliers with 25,000 acres or more of irrigated land were required to prepare and adopt agricultural water management plans and submit the plans to DWR by the end of 2012 and then once every five years beginning in 2015. The Act also required suppliers to measure volumetrically water deliveries to farms and base the price of water sales at least in part on the volume of water delivered. Water suppliers were required to report on water measurement and water pricing in their water management plans.

In November 2012, DWR released a guidebook for developing agricultural water management plans: http://www.water.ca.gov/wateruseefficiency/sb7/docs/AgWaterManagementPlanGuidebook-FINAL.pdf.

Water agencies filing agricultural water management plans as of July 2013 are listed on a Web page maintained by DWR's Water Use and Efficiency Branch: http://www.water.ca.gov/wateruseefficiency/sb7/docs/2012_AWMPs_Received_07-16-2013.pdf.

Section 2
Regulatory Restrictions on SWP Delta Exports

Multiple needs converge in the Delta: the need to protect a fragile ecosystem, to support Delta recreation and farming, and to provide water for agricultural and urban needs throughout much of California. Various regulatory requirements are placed on the SWP's Delta operations to protect special-status species such as delta smelt and spring- and winter-run Chinook salmon. As a result, as described below, restrictions on SWP operations imposed by State and federal agencies contribute substantially to the challenges of accurately determining the SWP's water delivery capability in any given year.

Biological Opinions on Effects of Coordinated SWP and CVP Operations

Several fish species listed under the federal Endangered Species Act (ESA) as threatened or endangered are found in the Delta. The continued viability of populations of these species in the Delta depends in part on Delta flow levels. For this reason, the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have issued several BOs since the 1990s on the effects of coordinated SWP/CVP operations on several listed species.

These BOs affect the SWP's water delivery capability for two reasons. Most notably, they include terms that restrict SWP exports from the Delta to specific amounts at certain times under certain conditions. In addition, the BOs' requirements are predicated on physical and biological conditions that occur daily while DWR's water supply models are based on monthly data.

The first BOs on the effects of SWP (and CVP) operations were issued in February 1993 (NMFS BO on effects of project operations on winter-run Chinook salmon) and March 1995 (USFWS BO on project effects on delta smelt and splittail). Among other things, the BOs contained requirements for Delta inflow, Delta outflow, and export pumping restrictions in order to protect listed species. These requirements imposed substantial constraints on Delta water supply operations. Many were incorporated into the 1995 *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta* (1995 WQCP), as described under "Water Quality Objectives" later in this section.

The terms of the USFWS and NMFS BOs have become increasingly restrictive over the years. In 2004 the United States Bureau of Reclamation (Reclamation) sought a new BO from USFWS regarding the operation of the CVP and SWP (collectively, Projects). USFWS issued the opinion in 2005, finding that the proposed coordinated operations of the Projects were not likely to jeopardize the continued existence of the delta smelt or result in the destruction or adverse modification of its critical habitat. After judicial review, the 2005 BO was vacated and USFWS was ordered to prepare a new one. USFWS found that the proposed operations of the Project would result in jeopardy to

the delta smelt and in December 2008 issued a Jeopardy BO which included a Reasonable and Prudent Alternative (RPA) with more protective export restrictions and other actions intended to protect the delta smelt.

Similarly, in 2004 NMFS issued a BO on the effects of the coordinated operation of the Projects on salmonids, green sturgeon and Southern Resident killer whales and found that the proposed operations of the Projects were not likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of their critical habitat. After judicial review, the 2004 BO was also vacated and NMFS was ordered to prepare a new one. In June 2009, NMFS issued a new Jeopardy BO covering effects on winter-run and spring-run Chinook salmon, steelhead, green sturgeon, and killer whales. Like the 2008 smelt BO, the salmon BO included an RPA with more protective export restrictions and other actions intended to protect listed species.

The USFWS BO includes requirements on operations in all but 2 months of the year. The BO calls for "adaptively managed" (adjusted as necessary based on the results of monitoring) flow restrictions in the Delta intended to protect delta smelt at various life stages. USFWS determines the required target flow, with the reductions accomplished primarily by reducing SWP and CVP exports. Because this flow restriction is determined based on fish location and decisions by USFWS staff, predicting the flow restriction and corresponding effects on export pumping with any great certainty poses a challenge. The USFWS BO also includes an additional salinity requirement in the Delta for September and October in wet and above-normal water years, calling for increased releases from SWP and CVP reservoirs to reduce salinity. Among other provisions included in the NMFS BO, limits on total Delta exports have been established for the months of April and May. These limits are mandated for all but extremely wet years.

The 2008 and 2009 BOs were issued shortly before and shortly after the Governor proclaimed a statewide water shortage state of emergency in February 2009, amid the threat of a third consecutive dry year. NMFS calculated that implementing its BO would reduce SWP and CVP Delta exports by a combined 5% to 7%, but DWR's initial estimates showed an impact on exports closer to 10% in average years, combined with the effects of pumping restrictions imposed by BOs to protect delta smelt and other species. Both the 2008 USFWS and 2009 NMFS BOs were challenged in federal court on various grounds, including the failure by the services to use the best available science in the development of the BOs. U.S. District Judge Oliver Wanger found both BOs were not legally sufficient and remanded them to the agencies for further review and analysis. Both decisions were appealed to the Ninth Circuit, and in two separate decisions (March 2014 for the USFWS BO and December 2014 for the NMFS BO) the Ninth Circuit reversed in part and affirmed in part Judge Wanger's rulings, finding the BOs complied with the ESA and upholding them in their entirety. As a result, the operational rules specified in the 2008 and 2009 BOs continue to be legally required and are the rules used in the analyses presented in Section 6 of this report.

The California Department of Fish and Wildlife (DFW) issued consistency determinations for both BOs under Section 2080.1 of the California Fish and Wildlife Code. The consistency determinations stated that the USFWS BO and the NMFS BO

would be consistent with the California Endangered Species Act (CESA). Thus, DFW allowed incidental take of species listed under both the federal ESA and CESA to occur during SWP and CVP operations without requiring DWR or the Reclamation to obtain a separate State-issued permit.

Delta Inflows

Delta inflows vary considerably from season to season, and from year to year. For example, in an above-normal year, nearly 85% of the total Delta inflow comes from the Sacramento River, more than 10% comes from the San Joaquin River, and the rest comes from the three eastside streams (the Mokelumne, Cosumnes, and Calaveras rivers).

The type of water year is also an important factor affecting the volume of Delta inflows. When hydrology is analyzed, water years are designated by DWR as “wet” (W), “above normal” (AN), “below normal” (BN), “dry” (D), or “critical” (C). All other factors (such as upstream level of development) being equal, much less water will flow into the Delta during a dry or critical water year (that is, during a drought) than during a wet or above-normal water year. Fluctuations in inflows are a substantial overall concern for the Delta, and a specific concern for the SWP; such fluctuations affect Delta water quality and fish habitat, which in turn trigger regulatory requirements that constrain SWP Delta pumping.

Delta inflows will also vary by time of year as the amount of precipitation varies by season. About 80% of annual precipitation occurs between November and March, and very little rain typically falls from June through September. Upstream reservoirs regulate this variability by reducing flood flows during the rainy season, and storing water to be released later in the year to meet water demands and flow and water quality requirements.

Water Quality Objectives

Because the Delta is an estuary, salinity is a particular concern. In the 1995 WQCP, the State Water Board set water quality objectives to protect beneficial uses of water in the Delta and Suisun Bay. The objectives must be met by the SWP (and federal CVP), as specified in the water right permits issued to DWR (and the U.S. Bureau of Reclamation). Those objectives—minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity levels—are enforced through the provisions of the State Water Board's Water Right Decision 1641 (D-1641), issued in December 1999 and updated in March 2000.

DWR and Reclamation must monitor the effects of diversions and SWP and CVP operations to ensure compliance with existing water quality standards.

Among the objectives established in the 1995 WQCP and D-1641 are the “X2” objectives. X2 is defined as the distance in kilometers from Golden Gate

where salinity concentration in the Delta is 2 parts per thousand. The location of X2 is used as a surrogate measure of Delta ecosystem health.

D-1641 mandates the X2 objectives so that the State Water Board can regulate the location of the Delta estuary's salinity gradient during the 5-month period of February–June.

For the X2 objective to be achieved, the X2 position must remain downstream of Collinsville in the Delta for the entire 5-month period, and downstream of other specific locations in the Delta on a certain number of days each month from February through June. This means that Delta outflow must be at certain specified levels at certain times, which can limit the amount of water the SWP may pump at those times at its Harvey O. Banks Pumping Plant in the Delta.

Because of the relationship between seawater intrusion and interior Delta water quality, meeting the X2 objective also improves water quality at Delta drinking water intakes; however, meeting the X2 objectives can require a relatively large volume of water for outflow during dry months that follow months with large storms.

The 1995 WQCP and D-1641 also established an export/inflow (E/I) ratio. The E/I ratio is designed to provide protection for the fish and wildlife beneficial uses in the Bay Delta estuary. The E/I ratio limits the fraction of Delta inflows that are exported. When other restrictions are not controlling, Delta exports are limited to 35% of total Delta inflow from February through June and 65% of inflow from July through January.

Section 3
Ongoing Environmental and Policy Planning Efforts

It is hard to overstate the Delta's importance to California's economy and natural heritage. The Delta supplies a large share of the water used in the state. California would not be the same without that water — hundreds of billions of dollars of economic activity depend upon it. Southern California, with half of the state's population, gets almost a quarter of its average water supply from the Delta; Kern County, which produces nearly $3 billion annually in grapes, almonds, pistachios, milk, citrus and carrots, depends on the Delta for about a fifth of its irrigation supply; the west side of the San Joaquin Valley also produces billions of dollars' worth of food and depends on the Delta for about three-quarters of its irrigation supply; and the San Francisco Bay Area, including the innovation hub of Silicon Valley, takes about half of its water supply from the Delta and its tributaries.

At the same time, the hundreds of miles of river channels that crisscross the Delta's farmed islands provide a migratory pathway for Chinook salmon, which support an important West Coast fishing industry. Other native fish species depend upon the complex mix of fresh and salt water in the Delta estuary. Multiple stressors have impaired the ecological functions of the Delta, and concerns have been growing over the ability to balance the many needs of both people and the ecosystem.

In order to respond to these concerns considerable effort by government agencies and California water community as a whole has been spent during the past several decades to study ways that the problems in the Delta can be addressed, and the more recent attention to the effects of climate change has helped the water community to realize the urgency of addressing these problems. The essential part of all these efforts has been to find a comprehensive solution that brings various, sometimes competing, interests together in a coordinated and concerted set of actions. The Delta Plan and the Bay Delta Conservation Plan (BDCP) are two large-scale plans that are in development. Both plans could affect SWP water delivery capability in different ways, and at different scales.

Delta Plan

After years of concern about the Delta amid rising water demand and habitat degradation, the Delta Stewardship Council was created in legislation to achieve State-mandated coequal goals for the Delta. As specified in Section 85054 of the California Water Code:

> "Coequal goals" means the two goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

The final Delta Plan was adopted by the Council on May 16, 2013. The Delta Plan contains a set of 14 regulatory policies that will be enforced by the Delta Stewardship Council's appellate authority and oversight. The Delta Plan also contains 73 recommendations, which are non-regulatory but call out actions essential to achieving the coequal goals. The State Office of Administrative Law (OAL) approved the 14 regulations to implement the Delta Plan, which became effective with legally-enforceable regulations on September 1, 2013.

The 14 regulatory policies approved by the OAL include:

- Requiring those who use water from the Delta to certify in their water management plans that they are implementing all feasible efforts to use water efficiently and are developing additional local and regional water supplies;
- Reserving six high-priority areas for habitat restoration;
- Protecting agricultural land by requiring developers to locate new residential, commercial, or industrial development in areas planned for urban use;
- Requiring state and local agencies to locate, when feasible, water management facilities, ecosystem projects, and flood management infrastructure in ways that would reduce or avoid conflicts with agriculture and other existing planned uses; and requiring those agencies to consider locating the facilities on public land before using private land;
- Prohibiting encroachment on floodways and floodplains;
- Requiring developers of new residential subdivisions to include a level of flood protection that anticipates sea levels rising due to climate change; and
- Setting priorities for State investment in Delta flood levees.

Among the 73 recommendations in the Delta Plan are:

- Updating statewide water-use efficiency goals, groundwater management plans for areas using Delta water, streamlining water transfer procedures and developing a statewide system for reporting how much water is used;
- Having the State Water Resources Control Board update water quality objectives for the Sacramento and San Joaquin Rivers, controlling or reducing other Delta stressors such as contaminants and invasive species, expanding floodplains and riparian habitats and locating habitat restoration to accommodate sea-level rise;
- Encouraging agritourism, wildlife friendly farming practices, and recreational opportunities in the Delta; and

- Creating a Delta Flood Risk Management District to provide adequate funding for flood control and emergency preparedness.

In 2014, the Delta Stewardship Council launched the Delta Levees Investment Strategy (DLIS) that will combine economics, engineering, and decision-making techniques to identify funding priorities and assemble a comprehensive investment strategy for the Delta levees.

This investment strategy will be developed in collaboration with state agencies, local reclamation districts, Delta landowners and businesses, and other important stakeholders. It will be based on the best available data, research, and lessons learned from other state and local programs and planning efforts.

Bay Delta Conservation Plan (BDCP)

The Bay Delta Conservation Plan (BDCP) is a comprehensive plan prepared by a group of local water agencies, environmental and conservation organizations, State and federal agencies, and other interest groups to address a wide array of challenges that the water community in California has been facing for decades in the Sacramento-San Joaquin Delta.

The BDCP is being developed in compliance with the Federal Endangered Species Act (ESA) and the California Natural Communities Conservation Planning Act (NCCPA). When complete, the BDCP will provide the basis for the issuance of endangered species permits for the operation of the state and federal water projects. In the most basic sense, the BDCP provides a regulatory vehicle for project proponents to agree to implement a suite of habitat restoration measures, other stressor reduction activities, and water operations criteria in return for regulatory agency approval of the necessary long-term permits for the various projects and water operations (covered activities) to proceed. The heart of the BDCP is a long-term conservation strategy that sets forth actions needed for a healthy Delta.

The BDCP approach to addressing the Delta's challenges reflects a significant departure from the species-by-species approach utilized in previous efforts to manage Delta-specific species and habitats. Instead, the BDCP seeks to improve the health of the ecological system as a whole. Each conservation measure plays a part in an interconnected web of conservation activities designed to improve the health of natural communities and, in so doing, improve the overall health of the Delta ecosystem.

The BDCP attempts to balance contributions to the conservation of species in a way that is feasible given the variety of important uses in the Delta including flood protection, agriculture, and recreation, to name a few. Implementation of the Plan will occur over a 50-year time frame by a number of agencies and organizations with specific roles and responsibilities as prescribed by the Plan. A major part of implementation will be monitoring conservation measures to evaluate effectiveness, and revising actions through the adaptive management decision process.

The Plan, which has been in development since 2006, is undergoing intensive environmental review in the form of a state Environmental Impact Report and federal Environmental Impact Statement (EIR/S) to evaluate the impact of the Plan on all aspects of the environment, including the human environment, and identify alternatives and potential mitigation actions.

The draft BDCP and its associated EIR/S were released for public review in late 2013. Public comments were received until mid-2014. Partially-recirculated public draft documents are scheduled to be released in mid-2015. The reports are targeted to be final in 2016, after which a decision to proceed with the program would be made.

Section 4
Delta Levee Failure and the Delta Risk Management Strategy

The fragile Delta faces a multitude of risks that could affect millions of Californians. Foremost among those risks, as they could affect the SWP's water delivery capability, are the potential for levee failure and the ensuing flooding and water quality issues.

The Delta Risk Management Strategy (DRMS) was initiated in response to Assembly Bill 1200 (2005), which directed DWR to use 50-, 100-, and 200-year projections to evaluate the potential impacts on Delta water supplies associated with continued land subsidence, earthquakes, floods, and climate change. The discussions below describe DRMS Phase 1, which evaluated the risks, and DRMS Phase 2, which is proposing various solutions. Also discussed are other efforts currently being undertaken by DWR and other agencies to reduce risks to the Delta, enhance emergency response capabilities, and reduce the risk of interruption of Delta water exports by the SWP and CVP.

Effects of Emergencies on Water Supplies: Delta Risk Management Strategy (DRMS), Phase 1

Phase 1 of the DRMS, completed in 2008, assessed the performance of Delta and Suisun Marsh levees under various stressors and hazards and evaluated the consequences of levee failures to California as a whole.

The Delta is protected by levees built about 150 years ago. The levees are vulnerable to failure because most original levees were simply built with soils dredged from nearby channels, and were never engineered. Most islands in the Delta have flooded at least once over the past 100 years. For example, on June 3, 2004, a huge dry-weather levee failure occurred without warning on Upper Jones Tract in the south Delta, inundating 12,000 acres of farmland with about 160,000 acre-feet of water. Because many Delta islands are below sea level, deep and prolonged flooding could occur during a levee failure event, which could disrupt the quality and use of Delta water.

Levee failure can result from the combination of high river inflows, high tide, and high winds; however, levees can also fail in fair weather—even in the absence of a flood or seismic event—in a so-called "sunny day event." Damage caused by rodents, piping (in which a pipe-like opening develops below the base of the levee), or foundation movement could cause sunny-day levee breaches.

A breach of one or more levees and island flooding may affect Delta water quality and SWP operations. Depending on the hydrology and the size and locations of the breaches and flooded islands, a large amount of salt water may be pulled into the interior Delta from Suisun and San Pablo bays. When islands are flooded, DWR may

need to drastically decrease or even cease SWP Delta exports to evaluate the distribution of salinity in the Delta and avoid drawing saltier water toward the pumps.

An earthquake could also put Delta levees, and thus SWP water supplies, at risk. In 2008, the 2007 Working Group on California Earthquake Probabilities estimated a probability of 63% that a magnitude 6.7 or greater earthquake would strike the San Francisco Bay Area in the next 30 years. An earthquake could severely damage Delta levees, causing islands to flood with salty water. The locations most likely to be affected by an earthquake are the west and southwest portions of the Delta because these areas are closer to potential earthquake sources. Flooding of the west and southwest Delta is also more likely to interfere with conveyance of freshwater to export pumps.

Modeling of the effects of earthquakes on Delta islands was conducted by DWR for the DRMS Phase 1 report. Described in the *California Water Plan Update 2009,* the assessment found a 40% probability that a major earthquake occurring between 2030 and 2050 would cause 27 or more islands to flood at the same time. If 20 islands were flooded as a result of a major earthquake, the export of freshwater from the Delta could be interrupted by about a year and a half. Water supply losses of up to 8 million acre-feet would be incurred by SWP (and CVP) contractors and local water districts.

Managing and Reducing Risks: Delta Risk Management Strategy (DRMS), Phase 2

The Phase 2 report for the DRMS, issued in June 2011, evaluates alternatives to reduce the risk to the Delta and the state from adverse consequences of levee failure. “Building blocks” (individual improvements or projects, such as improving levees or raising highways) and trial scenarios (various combinations of building blocks) were developed for the DRMS Phase 2 report. The building blocks fall into three main categories:

- Conveyance improvements/
  flood risk reduction and life safety,
- Infrastructure risk reduction, and
- Environmental risk mitigation.

The first of these categories is most relevant to the SWP in terms of reducing the risk of disruption of SWP Delta exports, but the environmental risk mitigation category includes a building block calling for reduction of water exports from the Delta.

Four trial scenarios were developed to represent a range of possible risk reduction strategies:

- Trial Scenario 1—Improved Levees: Improve the reliability of Delta levees against flood-induced failures by providing up to 100-year flood protection.

- Trial Scenario 2—Armored Pathway (Through-Delta Conveyance): Improve the reliability of water conveyance by creating a route through the Delta that has high reliability and the ability to minimize saltwater intrusion into the south Delta.

- Trial Scenario 3—Isolated Conveyance Facility: Provide high reliability for conveyance of export water by building an isolated conveyance facility on the east side of the Delta.

- Trial Scenario 4—Dual Conveyance: Improve reliability and flexibility for conveyance of export water by constructing an isolated conveyance facility and a through-Delta conveyance. (This scenario would be much like a combination of Trial Scenarios 2 and 3.)

The findings of the DRMS Phase 2 report on these scenarios, as they apply to seismic risk and potential for disruption of SWP Delta exports, are as follows:

- Trial Scenario 1 (Improved Levees) would not reduce the risk of potential water export interruptions, nor would it change the seismic risk of most levees.

- Trial Scenario 2 (Armored Pathway [Through-Delta Conveyance]) would have the joint benefit of reducing the likelihood of levee failures from flood events and earthquakes and of significantly reducing the likelihood of export disruptions.

- The effects of Trial Scenario 3 (Isolated Conveyance) would be similar to those for the Armored Pathway scenario, but Trial Scenario 3 would not reduce the seismic risk of levee failure on islands that are not part of the isolated conveyance facility.

- Trial Scenario 4 (Dual Conveyance) would avoid the vulnerability of water exports associated with Delta levee vulnerability and would offer flexibility in water exports from the Delta and/or the isolated conveyance facility. However, seismic risk would not be reduced on islands not part of the export conveyance system or infrastructure pathway.

As noted in the discussion of the “enhanced emergency preparedness/response” building block in the DRMS Phase 2 report, analyses on resuming water exports after a levee failure were conducted by the Metropolitan Water District of Southern California, an SWP contractor. The studies found that a promising way to resume water exports would be to place structural barriers at selected channel locations in the Delta and complete strategic levee repairs, thus isolating an emergency freshwater conveyance “pathway” through channels that may be surrounded by islands flooded with saline water.

The DRMS study was the first comprehensive risk-based assessment of Delta levee failure and potential consequences to the State. Since the completion of the DRMS report several projects funded under the Delta Knowledge Improvement Program (DKIP) have been completed to fill the data gaps identified in DRMS. A goal of the DKIP is to complete bathymetry surveys of the entire Delta. Approximately 20% of the Delta has been surveyed thus far. Major on-going activities being funded by DKIP

include an economic study to assist the Delta Stewardship Council develop a comprehensive investment strategy for the Delta levees, a feasibility study to assist the Delta Protection Commission make recommendations on how to implement a Delta Flood Risk Management Assessment District, an investigation to determine how Delta levees on peat soils respond under seismic loading and development of potential designs of setback levees in the Delta to meet stability requirements while also incorporating desired habitat features.

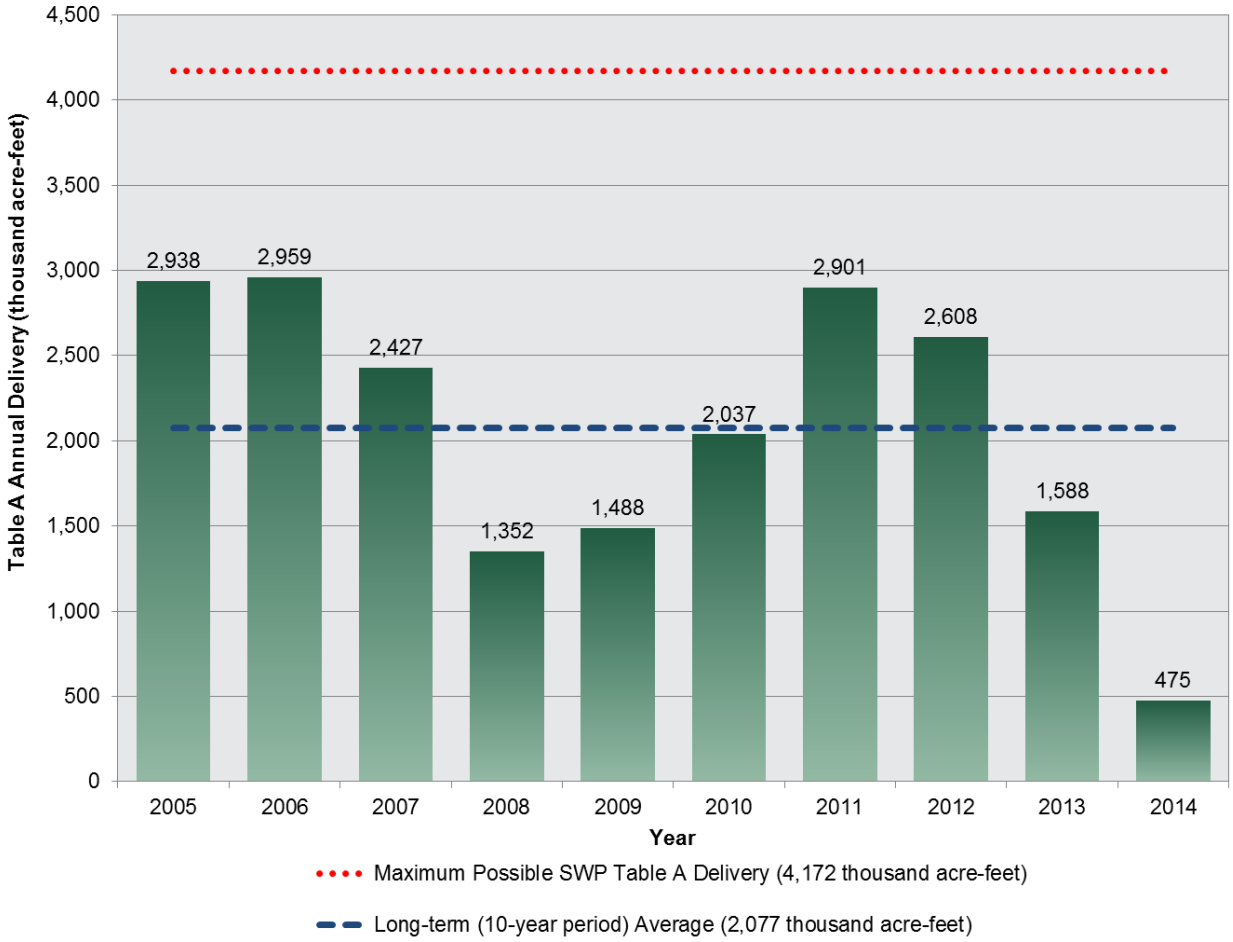
Section 5
State Water Project Historical Delivery Capability (2005-2014)

Section 7 of this report includes tables listing annual historical deliveries by various water classifications for each SWP contractor for 2005–2014.

Table 5-1 lists the maximum annual SWP Table A water delivery amounts for SWP Contractors. Figure 5-1 shows that deliveries of SWP Table A water for 2005–2014 range from an annual minimum of 475 taf to a maximum of 2,959 taf, with an average of 2,077 taf. Historical deliveries of SWP Table A water over this 10-year period are less than the maximum of 4,172 taf/year.

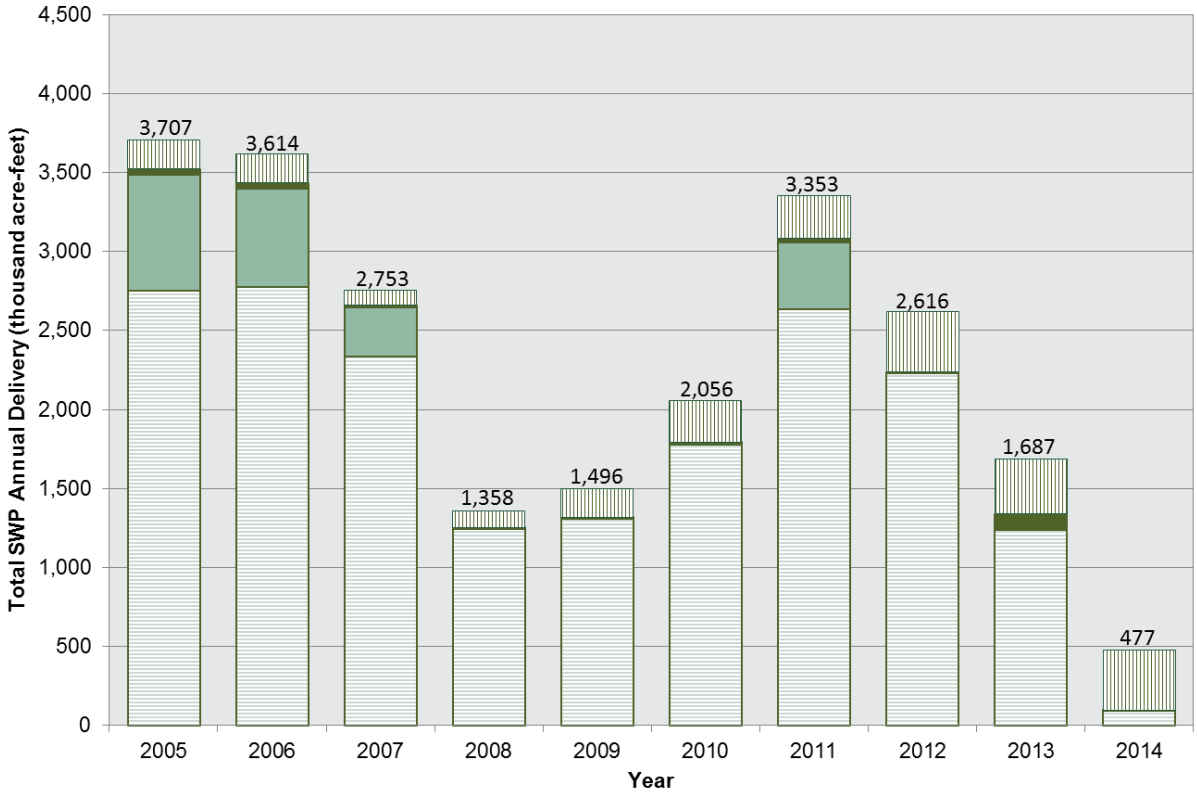
Total historical SWP deliveries, including Table A, Article 21, turnback pool, and carryover water, range from 3,707 to 477 taf/ year, with an average of 2,312 taf/year for the period of 2005–2014 (Figure 5-2).

Table 5-1. Maximum Annual SWP Table A Water Delivery Amounts for SWP Contractors	
Contractor	Maximum Table A Delivery Amounts (acre-feet)
Feather River Area Contractors	
Butte County	27,500
Yuba City	9,600
Plumas County Flood Control and Water Conservation District	2,700
Subtotal	**39,800**
North Bay Area Contractors	
Napa County Flood Control and Water Conservation District	29,025
Solano County Water Agency	47,506
Subtotal	**76,531**
South Bay Area Contractors	
Alameda County Flood Control and Water Conservation District, Zone 7	80,619
Alameda County Water District	42,000
Santa Clara Valley Water District	100,000
Subtotal	**222,619**
San Joaquin Valley Area Contractors	
Dudley Ridge Water District	50,343
Empire West Side Irrigation District	2,000
Kern County Water Agency	982,730
Kings County	9,305
Oak Flat Water District	5,700
Tulare Lake Basin Water Storage District	88,922
Subtotal	**1,139,000**
Central Coastal Area Contractors	
San Luis Obispo County Flood Control and Water Conservation District	25,000
Santa Barbara County Flood Control and Water Conservation District	45,486
Subtotal	**70,486**
Southern California Area Contractors	
Antelope Valley–East Kern Water Agency	141,400
Castaic Lake Water Agency	95,200
Coachella Valley Water District	138,350
Crestline–Lake Arrowhead Water Agency	5,800
Desert Water Agency	55,750
Littlerock Creek Irrigation District	2,300
Metropolitan Water District of Southern California	1,911,500
Mojave Water Agency	82,800
Palmdale Water District	21,300
San Bernardino Valley Municipal Water District	102,600
San Gabriel Valley Municipal Water District	28,800
San Gorgonio Pass Water Agency	17,300
Ventura County Watershed Protection District	20,000
Subtotal	**2,623,100**
TOTAL TABLE A AMOUNTS	**4,171,536**



Note: The differences in historical deliveries from the State Water Project Delivery Reliability Report 2013 are due to reclassification of the various components of water delivered to SWP contractors

Figure 5-1. Historical Deliveries of SWP Table A Water, 2005–2014



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Carryover	185	182	95	110	180	264	268	381	351	383
Turnback	38	34	16	3	2	11	31	8	99	1
Article 21	731	621	310	3	6	8	421	0	0	1
Table A	2753	2776	2332	1242	1308	1774	2633	2227	1238	92

Note: The differences in historical deliveries from the State Water Project Delivery Reliability Report 2013 are due to reclassification of the various components of water delivered to SWP contractors

Figure 5-2. Total Historical SWP Deliveries, 2005–2014 (by Delivery Type)

Section 6
Existing SWP Water Delivery Capability (2015)

This Section presents estimates of the SWP's existing (2015) water delivery capability. The estimates are presented below, alongside the results obtained from the 2013 Report. Like this 2015 Report, the 2013 Report incorporated the requirements of BOs issued by USFWS and NMFS in December 2008 and June 2009, respectively, on the effects of coordinated operations of the SWP and CVP. These BOs are discussed in detail in Section 2, "Regulatory Restrictions on SWP Delta Exports."

The discussions of SWP water delivery capability in this Section presents the results of DWR's updated modeling of the SWP's water delivery capability. A tabular summary of the modeling results is presented in Appendix B of this report, which is available online at http://baydeltaoffice.water.ca.gov/.

Appendix B also contains annual delivery probability curves (i.e., exceedance plots) to graphically show the estimated percentage of years in which a given annual delivery is equaled or exceeded.

Hydrologic Sequence

SWP delivery amounts are estimated in this 2015 Report for existing conditions using computer modeling that incorporates the historic range of hydrologic conditions (i.e., precipitation and runoff) that occurred from water years 1922 through 2003. The historic hydrologic conditions are adjusted to account for land-use changes (i.e., the current level of development) and upstream flow regulations that characterize 2015. By using this 82-year historical flow record, the delivery estimates modeled for existing conditions reflect a reasonable range of potential hydrologic conditions from wet years to critically dry years.

Existing Demand for Delta Water

Demand levels for the SWP water users in this report are derived from historical data and information from the SWP contractors themselves. The amount of water that SWP contractors request each year (i.e., demand) is related to:

- The magnitude and type of water demands,
- The extent of water conservation measures,
- Local weather patterns, and
- Water costs.

The existing level of development (i.e., the level of water use in the source areas from which the water supply originates) is based on recent land uses, and is assumed to be representative of existing conditions for the purposes of this 2015 Report.

SWP Table A Water Demands

The current combined maximum Table A amount is 4,172 taf/year. See Table 5-1 in Section 5, "State Water Project Historical Delivery Capability (2005-2014). Of the combined maximum Table A amount, 4,132 taf/year is the SWP's maximum Table A water available for delivery from the Delta.

The estimated demands by SWP contractors for deliveries of Table A water from the Delta under existing conditions is assumed to be the maximum SWP Table A delivery amount for the 2015 Report, similar to the 2013 Report (Table 6-1). Due to the fact that SWP contractors have been requesting the full amount in recent years, the 2013, and the 2015 Reports more accurately reflect the trend in demand.

Table 6-1. Comparison of Estimated Average, Maximum, and Minimum Demands for SWP Table A Water (Existing Conditions, in taf/year)

	2013 Report	2015 Report
Average	4,132	4,132
Maximum	4,132	4,132
Minimum	4,132	4,132

SWP Article 21 Water Demands

Under Article 21 of the SWP's long-term water supply contracts, contractors may receive additional water deliveries only under the following specific conditions:

- Such deliveries do not interfere with SWP Table A allocations and SWP operations;
- Excess water is available in the Delta;
- Capacity is not being used for SWP purposes or scheduled SWP deliveries; and
- Contractors can use the SWP Article 21 water directly or can store it in their own system (i.e., the water cannot be stored in the SWP system).

The demand for SWP Article 21 water by SWP contractors is assumed to vary depending on the month and weather conditions (i.e., amounts of precipitation and runoff). For the purposes of this discussion of SWP Article 21 water demands, a Kern wet year is defined as a year when the annual Kern River flow is projected to be greater than 1,500 taf. Kern River inflows are important because they are a major component of

the local water supply for Kern County Water Agency (KCWA), which is the second largest SWP contractor and possesses significant local groundwater recharge capability. During Kern wet years, KCWA uses more Kern River flows to recharge its groundwater storage and reduce its demand for Article 21 water.

As shown in Figure 6-1, existing demands for SWP Article 21 water estimated for this 2015 Report are assumed to be high during the spring and late fall in non–Kern wet years (214 taf/month) because the contractors cannot rely as heavily on the Kern River flows to recharge their groundwater storage. Demand for Article 21 water is also high during the winter months of December through March in all year types (202 taf in Kern wet years and 414 taf in non–Kern wet years). Demands are assumed to be very low (2 taf/month) from April through November of Kern wet years (because high Kern River flows provide groundwater recharge water) and from July through October of Kern dry years.

These demand patterns for SWP Article 21 water are identical to what was presented in the 2013 Report for existing conditions.

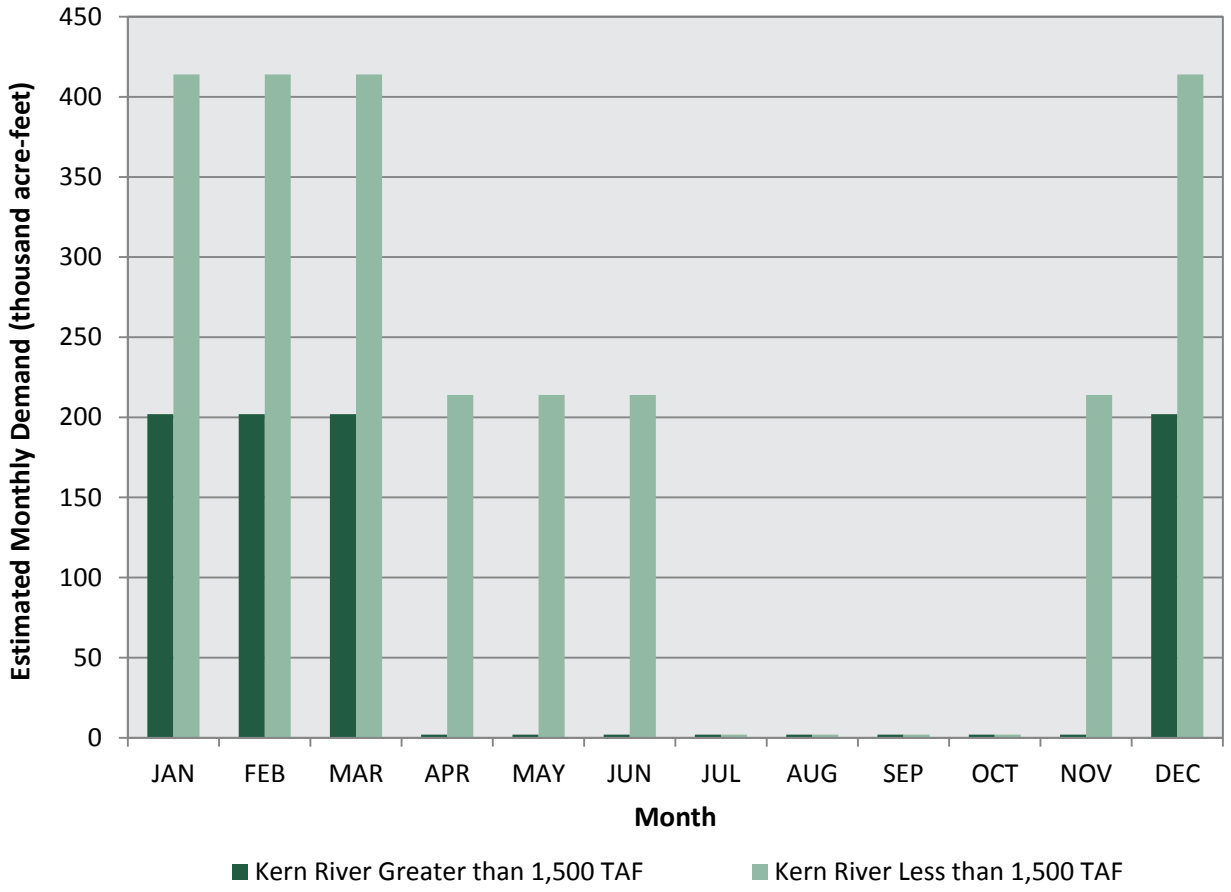
Estimates of SWP Table A Water Deliveries

Table 6-2 presents the annual average, maximum, and minimum estimates of SWP Table A deliveries from the Delta for existing conditions, as calculated for the 2013 and 2015 Reports. The average, maximum, and minimum Table A deliveries are relatively close in the 2013 and 2015 Reports.

Table 6-2. Comparison of Estimated Average, Maximum, and Minimum Deliveries of SWP Table A Water (Existing Conditions, in taf/year)

	2013 Report	2015 Report
Average	2,553	2,550
Maximum	3,996	4,055
Minimum	495	454

Assumptions about Table A and Article 21 water demands, along with operations for carryover water, have been updated in the model based on discussions with State Water Contractors staff and DWR's Operations and Control Office.



Note: Values shown are the maximum amount that can be delivered monthly. However, the actual capability of SWP water contractors to take this amount of SWP Article 21 water is not the sum of these maximum monthly values.

Figure 6-1. SWP Article 21 Demands during Non–Kern Wet Years and Kern Wet Years (Existing Conditions)

Figure 6-2 presents the estimated likelihood of delivery of a given amount of SWP Table A water under the existing conditions scenario, as estimated for both the 2013 and 2015 Reports. This figure shows that there is a 74% likelihood (79% with the 2013 Report) that more than 2,000 taf/year of Table A water will be delivered under the current estimates. The distribution of the delivery ranges has also changed since the 2013 Report. For example, Figure 6-2 shows a shift of Table A deliveries from the 2,500–3,000 taf/year range to the 3,000–3,500 taf/year range.

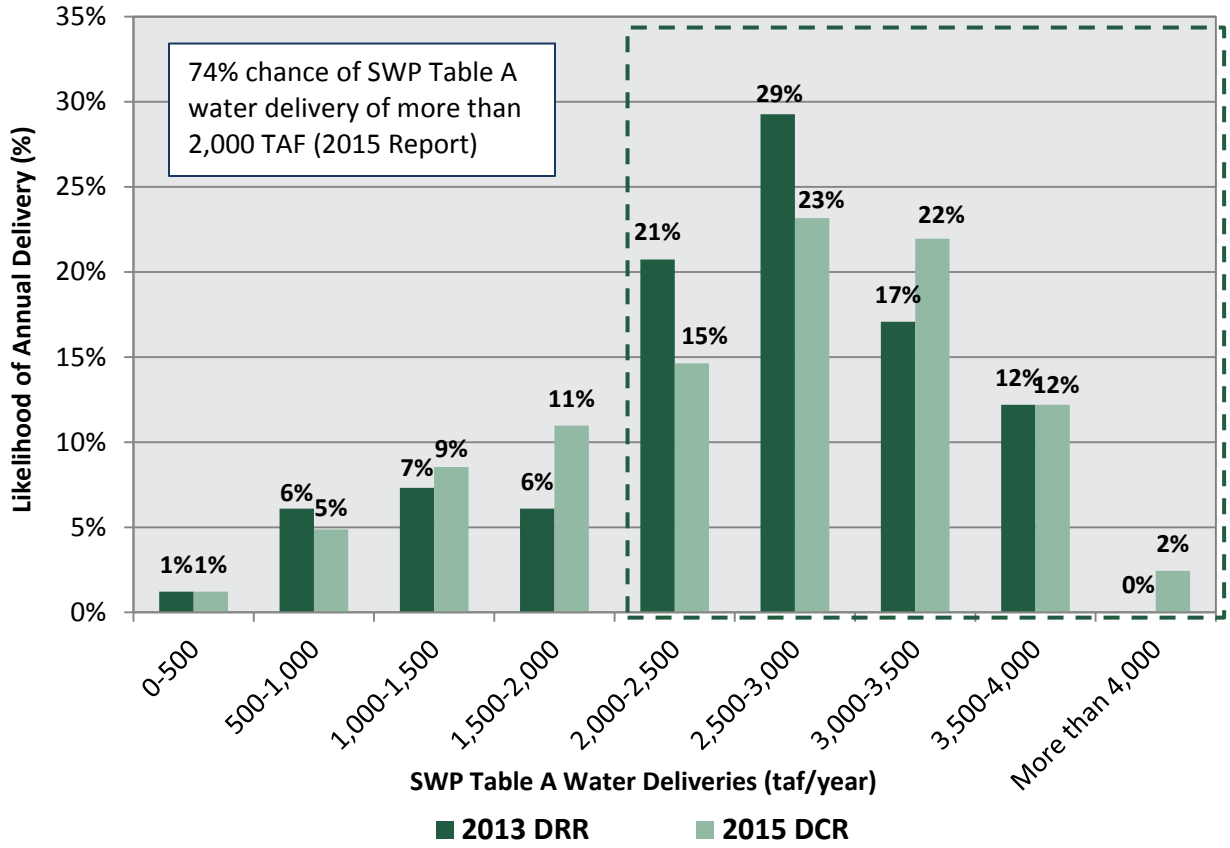


Figure 6-2. Estimated Likelihood of SWP Table A Water Deliveries, by Increments of 500 taf (Existing Conditions)

Wet-Year Deliveries of SWP Table A Water

Table 6-3 and Figure 6-3 present estimates of SWP Table A water deliveries under existing conditions during possible wet conditions and compares them with corresponding delivery estimates calculated for the 2013 Report. Wet periods for 2015 are analyzed using historical precipitation and runoff patterns from 1922–2003 as a reference, while accounting for existing 2015 conditions (e.g., land use, water infrastructure). For reference, the wettest single year on record was 1983.

The results of modeling existing conditions over historical wet years indicate that SWP Table A water deliveries during wet periods can be estimated to range between yearly averages of 4,055 to 3,123 taf.

Table 6-3 shows that the 2015 deliveries of SWP Table A water increased in wet periods (in comparison to the 2013 Report).

Table 6-3. Estimated Average and Wet-Period Deliveries of SWP Table A Water (Existing Conditions, in taf/year) and Percent of Maximum SWP Table A Amount, 4,132 taf/year

	Long-term Average (1921–2003)		Single Wet Year (1983)		Wet Periods							
					2 Years (1982–1983)		4 Years (1980–1983)		6 Years (1978–1983)		10 Years (1978–1987)	
2013 Report	2,553	62%	3,996	97%	3,880	94%	3,501	85%	3,361	81%	3,086	75%
2015 Report	2,550	62%	4,055	98%	3,946	95%	3,558	86%	3,414	83%	3,123	76%

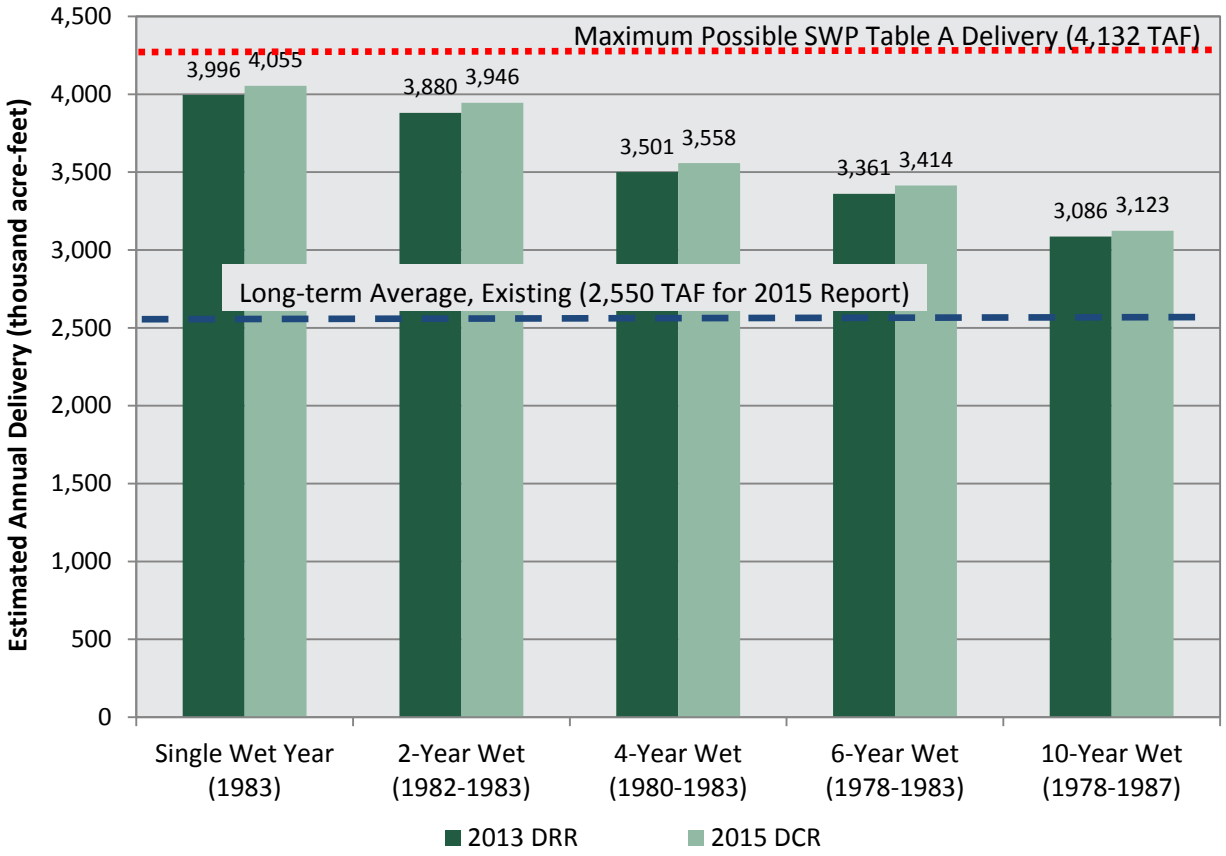


Figure 6-3. Estimated Wet-Period SWP Table A Water Deliveries (Existing Conditions)

Dry-Year Deliveries of SWP Table A Water

Table 6-4 and Figure 6-4 display estimates of existing-conditions deliveries of SWP Table A water during possible drought conditions and compares them with the corresponding delivery estimates calculated for the 2013 Report. Droughts are analyzed using the historical drought-period precipitation and runoff patterns from 1922 through 2003 as a reference, although existing 2015 conditions (e.g., land use, water infrastructure) are also accounted for in the modeling. For reference, the worst multiyear

drought on record was the 1929–1934 drought, although the brief drought of 1976–1977 was more intensely dry.

The results of modeling existing conditions under historical drought scenarios indicate that SWP Table A water deliveries during dry years can be estimated to range between yearly averages of 454 and 1,356 taf.

On average, the dry-period deliveries of Table A water are higher in this 2015 Report than in the 2013 Report because of model refinements (discussed in detail in Appendix B).

Table 6-4. Estimated Average and Dry-Period Deliveries of SWP Table A Water (Existing Conditions, in taf/year) and Percent of Maximum SWP Table A Amount, 4,132 taf/year

	Long-term Average (1921–2003)		Single Dry Year (1977)		Dry Periods							
					2-Year Drought (1976–1977)		4-Year Drought (1931–1934)		6-Year Drought (1987–1992)		6-Year Drought (1929–1934)	
2013 Report	2,553	62%	495	12%	1,269	31%	1,263	31%	1,176	28%	1,260	30%
2015 Report	2,550	62%	454	11%	1,165	28%	1,356	33%	1,182	29%	1,349	33%

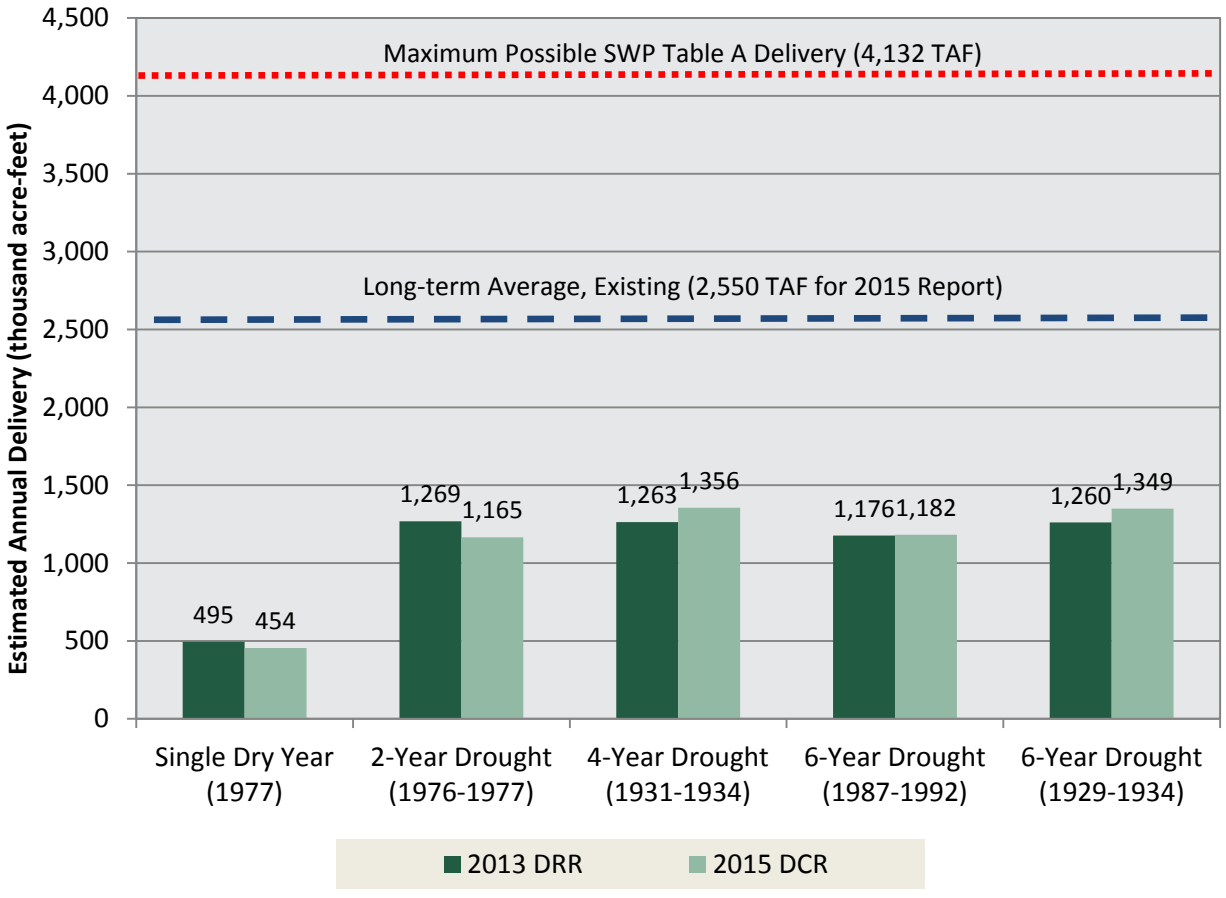


Figure 6-4. Estimated Dry-Period SWP Table A Water Deliveries (Existing Conditions)

Estimates of SWP Article 21 Water Deliveries

SWP water delivery is a combination of deliveries of Table A water and Article 21 water. Some SWP contractors store Article 21 water locally when extra water and capacity are available beyond that needed by normal SWP operations. Deliveries of SWP Article 21 water vary not only by year, but also by month. The estimated range of monthly deliveries of SWP Article 21 water is displayed in Figure 6-5. In May through October, essentially no Article 21 water is estimated to be delivered. In the late fall and winter (November through April), maximum monthly deliveries range from 82 to 339 taf/month.

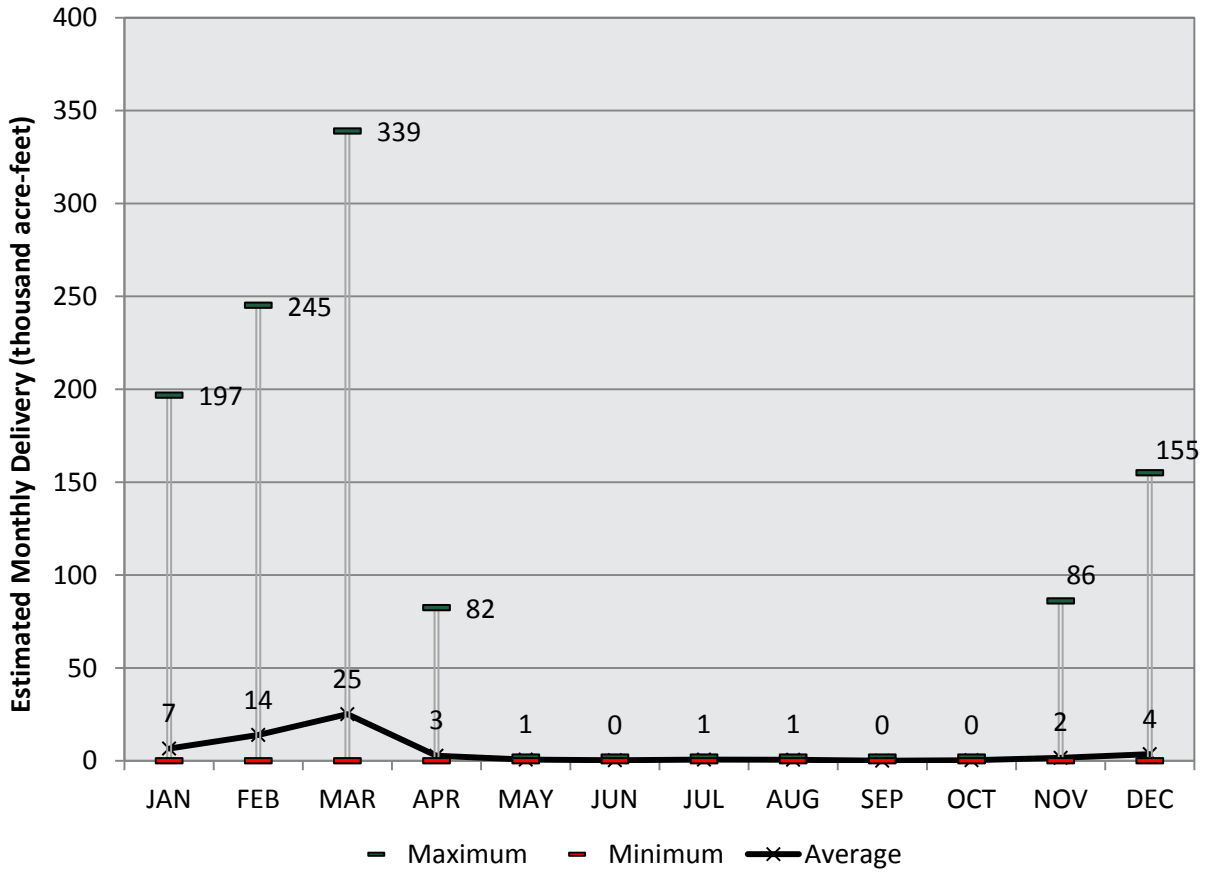


Figure 6-5. Estimated Range of Monthly Deliveries of SWP Article 21 Water (Existing Conditions)

The estimated likelihood that a given amount of SWP Article 21 water will be delivered is presented in Figure 6-6.

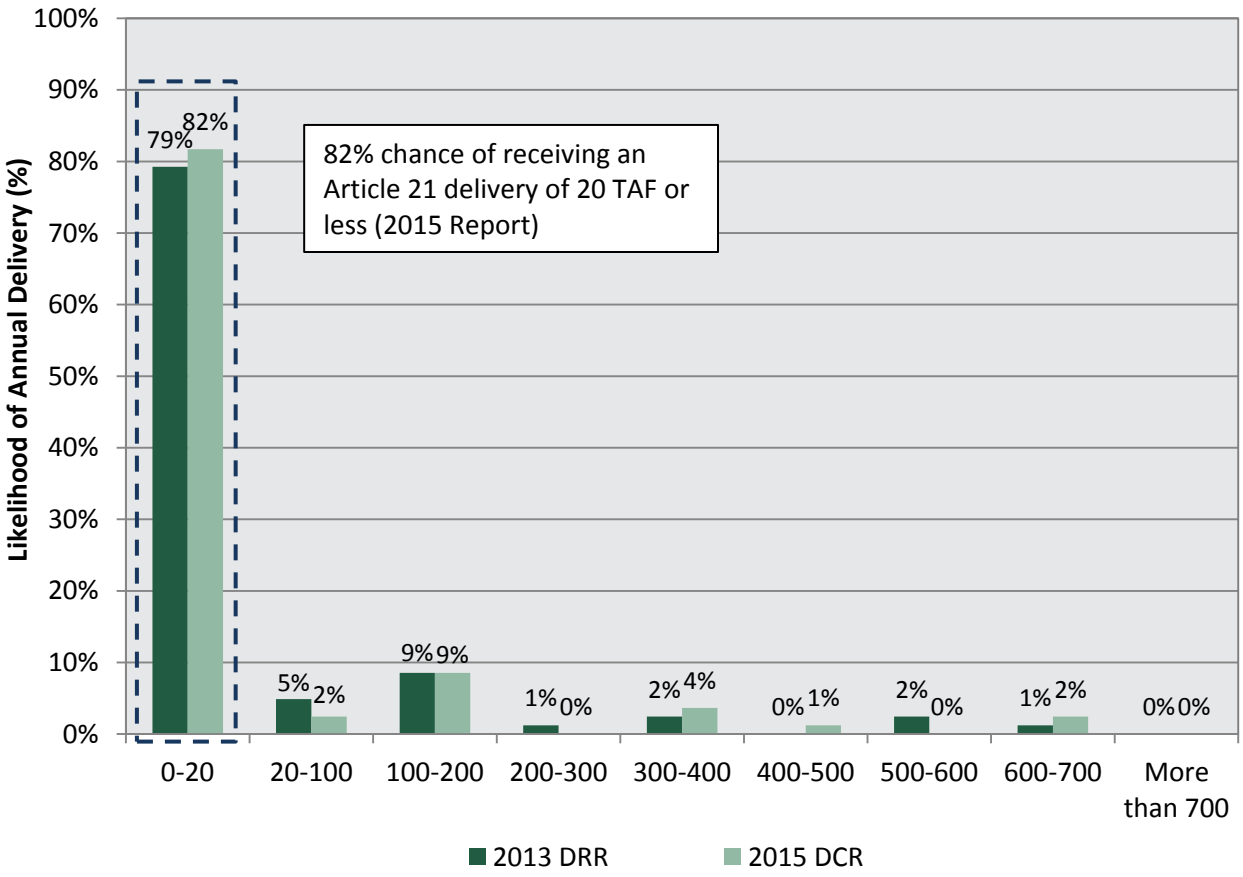


Figure 6-6. Estimated Likelihood of Annual Deliveries of SWP Article 21 Water (Existing Conditions)

Wet-Year Deliveries of SWP Article 21 Water

Table 6-5 shows the estimates of deliveries of SWP Article 21 water during wet periods under existing conditions. Estimated deliveries in wet years are approximately 1.7 to 5.6 times larger than the average existing-conditions delivery of SWP Article 21 water.

In general, the wet-period Article 21 deliveries in this 2015 Report are lower than in the 2013 Report.

Table 6-5. Estimated Average and Wet-Period Deliveries of SWP Article 21 Water (Existing Conditions, in taf/year)

	Long-term Average (1921–2003)	Single Wet Year (1983)	Wet Periods			
			2 Years (1982–1983)	4 Years (1980–1983)	6 Years (1978–1983)	10 Years (1978–1987)
2013 Report	58	333	265	196	135	152
2015 Report	56	316	204	134	93	134

Dry-Year Deliveries of SWP Article 21 Water

Although deliveries of SWP Article 21 water are smaller during dry years than during wet ones, opportunities exist to deliver SWP Article 21 water during multiyear drought periods. As modeled, deliveries in dry years are often small (less than 5 taf); however, longer drought periods can include several years that support Article 21 deliveries. Annual average Article 21 estimates for drought periods of 4 and 6 years vary greatly and can approach a significant fraction of the long-term average annual estimate, as shown in Table 6-6.

Table 6-6. Estimated Average and Dry-Period Deliveries of SWP Article 21 Water (Existing Conditions, in taf/year)

	Long-term Average (1921–2003)	Single Dry Year (1977)	Wet Periods			
			2-Year Drought (1976–1977)	4-Year Drought (1931–1934)	6-Year Drought (1987–1992)	6-Year Drought (1929–1934)
2013 Report	58	10	13	46	11	35
2015 Report	56	8	12	41	13	31

Section 7
Historical SWP Delivery Tables for 2005–2014

The State Water Project (SWP) contracts define several types of SWP water available for delivery to contractors under specific circumstances: Table A water, Article 21 water, turnback pool water, and carryover water. Many SWP contractors frequently use Article 21, turnback pool, and carryover water to increase or decrease the amount of water available to them under SWP Table A.

The Sacramento River Index, previously referred to as the "4 River Index" or "4 Basin Index," is the sum of the unimpaired runoff of four rivers: the Sacramento River above Bend Bridge near Red Bluff, Feather River inflow to Lake Oroville Reservoir, Yuba River at Smartville, and American River inflow to Folsom Lake. The five water year types used in the Sacramento River Index are as follows:

Table 7-1. Water year types used in the Sacramento River Index

Sacramento River Index	Water Year Type
1	Wet
2	Above Normal
3	Below Normal
4	Dry
5	Critical

Tables 7-2 through 7-11 list annual historical deliveries by SWP water type for each contractor for 2005 through 2014. Similar delivery tables are presented for years 2003–2012 in the *State Water Project Delivery Reliability Report 2013.* Any differences in values presented in this 2015 report and those in the 2013 report are due to reclassification of deliveries since the production of the 2013 report.

Table 7–2. Historical State Water Project Deliveries, Calendar Year 2005						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	527	-	-	-	527
	Plumas County FCWCD	-	-	-	-	-
	Yuba City	1,894	-	-	-	1,894
	Subtotal	**2,421**	**-**	**-**	**-**	**2,421**
North Bay Area	Napa County FCWCD	5,322	606	1,741	-	7,669
	Solano County WA	24,515	10,421	83	-	35,019
	Subtotal	**29,837**	**11,027**	**1,824**	**-**	**42,688**
South Bay Area	Alameda County FCWCD, Zone 7	38,388	-	7,849	275	46,512
	Alameda County WD	36,469	846	6,341	943	44,599
	Santa Clara Valley WD	89,476	6,298	12,133	342	108,249
	Subtotal	**164,333**	**7,144**	**26,323**	**1,560**	**199,360**
San Joaquin Valley Area	Dudley Ridge WD	51,609	28,197	821	1,286	81,913
	Empire West Side ID	1,448	1,799	587	-	3,834
	Kern County WA	893,439	453,078	8,985	22,397	1,377,899
	Kings County	8,100	11,504	-	202	19,806
	Oak Flat WD	4,067	-	-	127	4,194
	Tulare Lake Basin WSD	86,604	47,267	3,973	2,158	140,002
	Subtotal	**1,045,267**	**541,845**	**14,366**	**26,170**	**1,627,648**
Central Coastal Area	San Luis Obispo County FCWCD	4,006	245	-	-	4,251
	Santa Barbara County FCWCD	22,981	-	208	155	23,344
	Subtotal	**26,987**	**245**	**208**	**155**	**27,595**
Southern California Area	Antelope Valley–East Kern WA	57,205	-	2,626	-	59,831
	Castaic Lake WA	54,303	2,451	2,702	-	59,456
	Coachella Valley WD	26,984	-	12,819	2,716	42,519
	Crestline–Lake Arrowhead WA	807	-	-	-	807
	Desert WA	33,168	-	14,799	1,122	49,089
	Littlerock Creek ID	-	-	-	-	-
	Metropolitan WD of Southern California	1,247,183	168,300	106,032	6,530	1,528,045
	Mojave WA	10,360	-	1,201	-	11,561
	Palmdale WD	10,174	-	1,538	-	11,712
	San Bernardino Valley MWD	31,205	56	282	-	31,543
	San Gabriel Valley MWD	10,500	-	-	-	10,500
	San Gorgonio Pass WA	655	15	-	22	692
	Ventura County WPD	1,665	-	-	-	1,665
	Subtotal	**1,484,209**	**170,822**	**141,999**	**10,390**	**1,807,420**
TOTAL SWP DELIVERIES		**2,753,054**	**731,083**	**184,720**	**38,275**	**3,707,132**

Table 7–3. Historical State Water Project Deliveries, Calendar Year 2006						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	468	-	-	-	468
	Plumas County FCWCD	-	-	-	-	-
	Yuba City	4,148	1,194	-	-	5,342
	Subtotal	**4,616**	**1,194**	**-**	**-**	**5,810**
North Bay Area	Napa County FCWCD	7,317	300	172	-	7,789
	Solano County WA	12,070	18,195	390	-	30,655
	Subtotal	**19,387**	**18,495**	**562**	**-**	**38,444**
South Bay Area	Alameda County FCWCD, Zone 7	50,784	-	2,252	491	53,527
	Alameda County WD	39,570	1,922	1,331	256	43,079
	Santa Clara Valley WD	47,344	26,769	524	-	74,637
	Subtotal	**137,698**	**28,691**	**4,107**	**747**	**171,243**
San Joaquin Valley Area	Dudley Ridge WD	55,343	18,429	-	1,068	74,840
	Empire West Side ID	1,500	1,124	658	-	3,282
	Kern County WA	970,689	247,914	5,418	18,610	1,242,631
	Kings County	8,991	366	-	173	9,530
	Oak Flat WD	4,118	-	17	107	4,242
	Tulare Lake Basin WSD	48,361	58,059	-	1,787	108,207
	Subtotal	**1,089,002**	**325,892**	**6,093**	**21,745**	**1,442,732**
Central Coastal Area	San Luis Obispo County FCWCD	3,382	827	-	-	4,209
	Santa Barbara County FCWCD	19,255	4,020	-	-	23,275
	Subtotal	**22,637**	**4,847**	**-**	**-**	**27,484**
Southern California Area	Antelope Valley–East Kern WA	76,623	-	3,761	-	80,384
	Castaic Lake WA	56,758	2,089	3,905	-	62,752
	Coachella Valley WD	121,100	-	-	-	121,100
	Crestline–Lake Arrowhead WA	641	-	-	-	641
	Desert WA	50,000	-	-	-	50,000
	Littlerock Creek ID	-	-	-	-	-
	Metropolitan WD of Southern California	1,103,538	238,478	158,532	11,638	1,512,186
	Mojave WA	32,496	-	1,518	-	34,014
	Palmdale WD	10,374	1,653	335	130	12,492
	San Bernardino Valley MWD	31,902	-	3,427	-	35,329
	San Gabriel Valley MWD	13,524	-	-	-	13,524
	San Gorgonio Pass WA	4,278	-	-	-	4,278
	Ventura County WPD	1,850	-	-	-	1,850
	Subtotal	**1,503,084**	**242,220**	**171,478**	**11,768**	**1,928,550**
TOTAL SWP DELIVERIES		**2,776,424**	**621,339**	**182,240**	**34,260**	**3,614,263**

Table 7–4. Historical State Water Project Deliveries, Calendar Year 2007						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	720	-	-	-	720
	Plumas County FCWCD	-	-	-	-	-
	Yuba City	2,327	-	-	-	2,327
	Subtotal	**3,047**	**-**	**-**	**-**	**3,047**
North Bay Area	Napa County FCWCD	6,362	3,597	998	-	10,957
	Solano County WA	14,892	8,217	1,822	-	24,931
	Subtotal	**21,254**	**11,814**	**2,820**	**-**	**35,888**
South Bay Area	Alameda County FCWCD, Zone 7	32,972	912	2,895	378	37,157
	Alameda County WD	16,541	550	2,103	197	19,391
	Santa Clara Valley WD	38,812	4,840	8,161	469	52,282
	Subtotal	**88,325**	**6,302**	**13,159**	**1,044**	**108,830**
San Joaquin Valley Area	Dudley Ridge WD	28,457	8,953	2,000	269	39,679
	Empire West Side ID	397	1,172	515	-	2,084
	Kern County WA	592,423	99,861	19,645	4,683	716,612
	Kings County	4,924	474	305	43	5,746
	Oak Flat WD	3,420	41	69	27	3,557
	Tulare Lake Basin WSD	57,272	12,902	16,459	450	87,083
	Subtotal	**686,893**	**123,403**	**38,993**	**5,472**	**854,761**
Central Coastal Area	San Luis Obispo County FCWCD	3,752	24	-	-	3,776
	Santa Barbara County FCWCD	24,760	1,070	1,390	-	27,220
	Subtotal	**28,512**	**1,094**	**1,390**	**-**	**30,996**
Southern California Area	Antelope Valley–East Kern WA	74,459	-	4,364	-	78,823
	Castaic Lake WA	44,974	-	4,216	-	49,190
	Coachella Valley WD	72,660	-	-	568	73,228
	Crestline–Lake Arrowhead WA	1,768	-	-	-	1,768
	Desert WA	30,000	-	-	234	30,234
	Littlerock Creek ID	1,380	-	-	-	1,380
	Metropolitan WD of Southern California	1,146,900	166,517	28,098	8,962	1,350,477
	Mojave WA	45,372	-	737	-	46,109
	Palmdale WD	12,780	843	985	100	14,708
	San Bernardino Valley MWD	57,116	-	-	-	57,116
	San Gabriel Valley MWD	10,000	-	-	-	10,000
	San Gorgonio Pass WA	3,935	-	-	-	3,935
	Ventura County WPD	3,000	-	-	-	3,000
	Subtotal	**1,504,344**	**167,360**	**38,400**	**9,864**	**1,719,968**
TOTAL SWP DELIVERIES		**2,332,375**	**309,973**	**94,762**	**16,380**	**2,753,490**

Table 7–5. Historical State Water Project Deliveries, Calendar Year 2008						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	9,436	-	-	-	9,436
	Plumas County FCWCD	243	-	-	-	243
	Yuba City	1,923	-	-	-	1,923
	Subtotal	**11,602**	**-**	**-**	**-**	**11,602**
North Bay Area	Napa County FCWCD	3,636	1,219	7,363	21	12,239
	Solano County WA	10,436	1,510	12,389	-	24,335
	Subtotal	**14,072**	**2,729**	**19,752**	**21**	**36,574**
South Bay Area	Alameda County FCWCD, Zone 7	13,633	-	15,400	-	29,033
	Alameda County WD	4,206	-	8,659	37	12,902
	Santa Clara Valley WD	11,133	-	21,188	88	32,409
	Subtotal	**28,972**	**-**	**45,247**	**125**	**74,344**
San Joaquin Valley Area	Dudley Ridge WD	12,260	-	5,949	51	18,260
	Empire West Side ID	-	-	915	-	915
	Kern County WA	271,636	-	6,815	883	279,334
	Kings County	3,187	-	541	8	3,736
	Oak Flat WD	1,929	-	-	5	1,934
	Tulare Lake Basin WSD	32,302	-	281	85	32,668
	Subtotal	**321,314**	**-**	**14,501**	**1,032**	**336,847**
Central Coastal Area	San Luis Obispo County FCWCD	8,512	-	-	-	8,512
	Santa Barbara County FCWCD	11,311	-	2,532	40	13,883
	Subtotal	**19,823**	**-**	**2,532**	**40**	**22,395**
Southern California Area	Antelope Valley–East Kern WA	31,082	-	10,381	125	41,588
	Castaic Lake WA	18,710	-	12,146	-	30,856
	Coachella Valley WD	42,385	-	-	107	42,492
	Crestline–Lake Arrowhead WA	1,159	-	689	-	1,848
	Desert WA	17,500	-	-	44	17,544
	Littlerock Creek ID	805	-	-	-	805
	Metropolitan WD of Southern California	658,304	-	-	1,689	659,993
	Mojave WA	26,288	-	108	-	26,396
	Palmdale WD	4,226	-	-	19	4,245
	San Bernardino Valley MWD	26,562	-	4,444	-	31,006
	San Gabriel Valley MWD	10,080	-	-	-	10,080
	San Gorgonio Pass WA	5,419	-	300	-	5,719
	Ventura County WPD	3,798	-	-	-	3,798
	Subtotal	**846,318**	**-**	**28,068**	**1,984**	**876,370**
TOTAL SWP DELIVERIES		**1,242,101**	**2,729**	**110,100**	**3,202**	**1,358,132**

Table 7–6. Historical State Water Project Deliveries, Calendar Year 2009						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	10,206	-	-	-	10,206
	Plumas County FCWCD	200	-	-	-	200
	Yuba City	2,114	-	-	-	2,114
	Subtotal	**12,520**	**-**	**-**	**-**	**12,520**
North Bay Area	Napa County FCWCD	2,723	1,588	4,475	13	8,799
	Solano County WA	7,118	4,444	3,123	-	14,685
	Subtotal	**9,841**	**6,032**	**7,598**	**13**	**23,484**
South Bay Area	Alameda County FCWCD, Zone 7	11,745	-	14,584	-	26,329
	Alameda County WD	5,911	-	10,494	8	16,413
	Santa Clara Valley WD	9,188	-	23,867	54	33,109
	Subtotal	**26,844**	**-**	**48,945**	**62**	**75,851**
San Joaquin Valley Area	Dudley Ridge WD	13,185	-	7,810	32	21,027
	Empire West Side ID	1,034	-	-	-	1,034
	Kern County WA	325,426	-	56,367	544	382,337
	Kings County	3,153	-	70	5	3,228
	Oak Flat WD	1,825	-	66	3	1,894
	Tulare Lake Basin WSD	35,160	-	1,271	52	36,483
	Subtotal	**379,783**	**-**	**65,584**	**636**	**446,003**
Central Coastal Area	San Luis Obispo County FCWCD	9,723	-	-	-	9,723
	Santa Barbara County FCWCD	4,961	-	4,523	25	9,509
	Subtotal	**14,684**	**-**	**4,523**	**25**	**19,232**
Southern California Area	Antelope Valley–East Kern WA	13,499	-	18,408	77	31,984
	Castaic Lake WA	14,858	-	9,529	52	24,439
	Coachella Valley WD	40,845	-	-	66	40,911
	Crestline–Lake Arrowhead WA	1,000	-	893	-	1,893
	Desert WA	16,865	-	-	27	16,892
	Littlerock Creek ID	920	-	-	-	920
	Metropolitan WD of Southern California	696,817	-	10,721	1,042	708,580
	Mojave WA	30,300	-	242	-	30,542
	Palmdale WD	2,470	-	3,229	-	5,699
	San Bernardino Valley MWD	26,085	-	9,348	-	35,433
	San Gabriel Valley MWD	11,516	-	-	-	11,516
	San Gorgonio Pass WA	5,312	-	480	-	5,792
	Ventura County WPD	3,890	-	-	-	3,890
	Subtotal	**864,377**	**-**	**52,850**	**1,264**	**918,491**
TOTAL SWP DELIVERIES		**1,308,049**	**6,032**	**179,500**	**2,000**	**1,495,581**

Table 7–7. Historical State Water Project Deliveries, Calendar Year 2010						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	807	-	-	-	807
	Plumas County FCWCD	243	-	-	-	243
	Yuba City	2,331	-	-	-	2,331
	Subtotal	**3,381**	**-**	**-**	**-**	**3,381**
North Bay Area	Napa County FCWCD	7,275	2,207	2,845	90	12,417
	Solano County WA	13,793	5,298	3,661	-	22,752
	Subtotal	**21,068**	**7,505**	**6,506**	**90**	**35,169**
South Bay Area	Alameda County FCWCD, Zone 7	28,694	-	13,104	249	42,047
	Alameda County WD	11,668	-	10,889	14	22,571
	Santa Clara Valley WD	37,850	-	22,471	34	60,355
	Subtotal	**78,212**	**-**	**46,464**	**297**	**124,973**
San Joaquin Valley Area	Dudley Ridge WD	19,650	-	9,750	156	29,556
	Empire West Side ID	380	-	166	-	546
	Kern County WA	411,821	-	55,419	3,044	470,284
	Kings County	4,094	-	522	29	4,645
	Oak Flat WD	2,412	-	455	18	2,885
	Tulare Lake Basin WSD	39,835	-	3,199	275	43,309
	Subtotal	**478,192**	**-**	**69,511**	**3,522**	**551,225**
Central Coastal Area	San Luis Obispo County FCWCD	3,480	-	277	-	3,757
	Santa Barbara County FCWCD	8,640	-	8,995	140	17,775
	Subtotal	**12,120**	**-**	**9,272**	**140**	**21,532**
Southern California Area	Antelope Valley–East Kern WA	35,312	-	20,813	438	56,563
	Castaic Lake WA	37,054	-	14,501	295	51,850
	Coachella Valley WD	69,175	-	7,595	429	77,199
	Crestline–Lake Arrowhead WA	1,357	-	-	-	1,357
	Desert WA	27,875	-	3,135	173	31,183
	Littlerock Creek ID	1,150	-	-	-	1,150
	Metropolitan WD of Southern California	900,210	-	67,783	5,922	973,915
	Mojave WA	41,132	-	20	-	41,152
	Palmdale WD	5,585	-	5,325	59	10,969
	San Bernardino Valley MWD	38,133	-	11,273	-	49,406
	San Gabriel Valley MWD	14,400	-	-	-	14,400
	San Gorgonio Pass WA	5,226	-	1,608	6	6,840
	Ventura County WPD	4,075	-	-	-	4,075
	Subtotal	**1,180,684**	**-**	**132,053**	**7,322**	**1,320,059**
TOTAL SWP DELIVERIES		**1,773,657**	**7,505**	**263,806**	**11,371**	**2,056,339**

Table 7–8. Historical State Water Project Deliveries, Calendar Year 2011						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	1,092	-	-	-	1,092
	Plumas County FCWCD	98	-	-	-	98
	Yuba City	2,297	-	-	-	2,297
	Subtotal	**3,487**	**-**	**-**	**-**	**3,487**
North Bay Area	Napa County FCWCD	9,426	-	1,388	-	10,814
	Solano County WA	9,620	14,739	-	-	24,359
	Subtotal	**19,046**	**14,739**	**1,388**	**-**	**35,173**
South Bay Area	Alameda County FCWCD, Zone 7	39,066	-	11,675	1,319	52,060
	Alameda County WD	24,813	1,959	9,332	506	36,610
	Santa Clara Valley WD	64,538	970	20,491	-	85,999
	Subtotal	**128,417**	**2,929**	**41,498**	**1,825**	**174,669**
San Joaquin Valley Area	Dudley Ridge WD	40,141	11,666	5,524	823	58,154
	Empire West Side ID	1,626	138	151	-	1,915
	Kern County WA	753,707	194,119	119,773	16,068	1,083,667
	Kings County	5,294	552	558	152	6,556
	Oak Flat WD	2,644	-	71	-	2,715
	Tulare Lake Basin WSD	39,056	6,909	4,626	1,454	52,045
	Subtotal	**842,468**	**213,384**	**130,703**	**18,497**	**1,205,052**
Central Coastal Area	San Luis Obispo County FCWCD	3,340	-	479	-	3,819
	Santa Barbara County FCWCD	29,132	-	9,318	-	38,450
	Subtotal	**32,472**	**-**	**9,797**	**-**	**42,269**
Southern California Area	Antelope Valley–East Kern WA	77,549	7,629	5,888	-	91,066
	Castaic Lake WA	34,067	400	9,332	-	43,799
	Coachella Valley WD	88,017	-	-	2,262	90,279
	Crestline–Lake Arrowhead WA	423	-	51	-	474
	Desert WA	36,139	-	-	240	36,379
	Littlerock Creek ID	-	-	-	-	-
	Metropolitan WD of Southern California	1,286,935	181,610	55,540	8,237	1,532,322
	Mojave WA	4,831	-	268	-	5,099
	Palmdale WD	12,294	-	5,019	-	17,313
	San Bernardino Valley MWD	30,916	-	7,210	-	38,126
	San Gabriel Valley MWD	23,040	-	-	-	23,040
	San Gorgonio Pass WA	8,884	-	1,619	-	10,503
	Ventura County WPD	4,000	-	-	-	4,000
	Subtotal	**1,607,095**	**189,639**	**84,927**	**10,739**	**1,892,400**
TOTAL SWP DELIVERIES		**2,632,985**	**420,691**	**268,313**	**31,061**	**3,353,050**

Table 7–9. Historical State Water Project Deliveries, Calendar Year 2012						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	17,875	-	-	-	17,875
	Plumas County FCWCD	79	-	-	-	79
	Yuba City	2,695	-	-	-	2,695
	Subtotal	**20,649**	**-**	**-**	**-**	**20,649**
North Bay Area	Napa County FCWCD	5,065	-	4,278	64	9,407
	Solano County WA	11,673	-	9,641	-	21,314
	Subtotal	**16,738**	**-**	**13,919**	**64**	**30,721**
South Bay Area	Alameda County FCWCD, Zone 7	32,301	-	20,357	179	52,837
	Alameda County WD	11,951	-	8,787	93	20,831
	Santa Clara Valley WD	34,612	-	11,462	222	46,296
	Subtotal	**78,864**	**-**	**40,606**	**494**	**119,964**
San Joaquin Valley Area	Dudley Ridge WD	17,694	-	-	112	17,806
	Empire West Side ID	1,468	-	774	-	2,242
	Kern County WA	560,969	-	32,477	2,180	595,626
	Kings County	5,337	-	2,001	21	7,359
	Oak Flat WD	2,596	-	612	-	3,208
	Tulare Lake Basin WSD	53,630	-	32,081	197	85,908
	Subtotal	**641,694**	**-**	**67,945**	**2,510**	**712,149**
Central Coastal Area	San Luis Obispo County FCWCD	3,111	-	833	-	3,944
	Santa Barbara County FCWCD	20,874	-	43	-	20,917
	Subtotal	**23,985**	**-**	**876**	**-**	**24,861**
Southern California Area	Antelope Valley–East Kern WA	80,694	-	32,854	-	113,548
	Castaic Lake WA	42,707	-	11,350	-	54,057
	Coachella Valley WD	89,928	-	22,663	307	112,898
	Crestline–Lake Arrowhead WA	624	-	-	-	624
	Desert WA	36,238	-	8,461	124	44,823
	Littlerock Creek ID	-	-	-	-	-
	Metropolitan WD of Southern California	1,086,084	-	118,172	4,241	1,208,497
	Mojave WA	4,672	-	6,572	-	11,244
	Palmdale WD	9,959	-	4,736	-	14,695
	San Bernardino Valley MWD	65,102	-	47,870	-	112,972
	San Gabriel Valley MWD	18,720	-	-	-	18,720
	San Gorgonio Pass WA	5,968	-	4,956	-	10,924
	Ventura County WPD	4,353	-	-	-	4,353
	Subtotal	**1,445,049**	**-**	**257,634**	**4,672**	**1,707,355**
TOTAL SWP DELIVERIES		**2,226,979**	**-**	**380,980**	**7,740**	**2,615,699**

Table 7–10. Historical State Water Project Deliveries, Calendar Year 2013						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	9,233	-	-	-	9,233
	Plumas County FCWCD	366	-	-	-	366
	Yuba City	3,360	-	1,490	-	4,850
	Subtotal	**12,959**	**-**	**1,490**	**-**	**14,449**
North Bay Area	Napa County FCWCD	2,963	-	9,075	-	12,038
	Solano County WA	5,355	-	17,805	-	23,160
	Subtotal	**8,318**	**-**	**26,880**	**-**	**35,198**
South Bay Area	Alameda County FCWCD, Zone 7	14,059	-	21,042	2,596	37,697
	Alameda County WD	4,241	-	15,349	50	19,640
	Santa Clara Valley WD	9,353	-	16,261	10,749	36,363
	Subtotal	**27,653**	**-**	**52,652**	**13,395**	**93,700**
San Joaquin Valley Area	Dudley Ridge WD	6,113	-	9,951	5,412	21,476
	Empire West Side ID	1,004	-	482	16	1,502
	Kern County WA	314,466	-	73,303	37,005	424,774
	Kings County	2,851	-	591	1,000	4,442
	Oak Flat WD	583	-	2,200	7	2,790
	Tulare Lake Basin WSD	27,803	-	4,169	8,400	40,372
	Subtotal	**352,820**	**-**	**90,696**	**51,840**	**495,356**
Central Coastal Area	San Luis Obispo County FCWCD	1,178	-	2,503	-	3,681
	Santa Barbara County FCWCD	3,252	-	12,233	-	15,485
	Subtotal	**4,430**	**-**	**14,736**	**-**	**19,166**
Southern California Area	Antelope Valley–East Kern WA	37,628	-	13,386	-	51,014
	Castaic Lake WA	33,320	-	28,434	-	61,754
	Coachella Valley WD	48,423	-	-	164	48,587
	Crestline–Lake Arrowhead WA	1,368	-	2,000	-	3,368
	Desert WA	19,513	-	-	66	19,579
	Littlerock Creek ID	-	-	-	-	-
	Metropolitan WD of Southern California	619,863	-	106,288	32,267	758,418
	Mojave WA	25,294	-	2,852	-	28,146
	Palmdale WD	4,559	-	3,122	-	7,681
	San Bernardino Valley MWD	26,159	-	4,426	-	30,585
	San Gabriel Valley MWD	10,080	-	-	-	10,080
	San Gorgonio Pass WA	2,339	-	3,729	1,000	7,068
	Ventura County WPD	2,890	-	-	-	2,890
	Subtotal	**831,436**	**-**	**164,237**	**33,497**	**1,029,170**
TOTAL SWP DELIVERIES		**1,237,616**	**-**	**350,691**	**98,732**	**1,687,039**

Table 7–11. Historical State Water Project Deliveries, Calendar Year 2014						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	2,596	-	-	-	2,596
	Plumas County FCWCD	251	-	-	-	251
	Yuba City	96	-	4,085	-	4,181
	Subtotal	**2,943**	**-**	**4,085**	**-**	**7,028**
North Bay Area	Napa County FCWCD	41	1,444	9,731	-	11,216
	Solano County WA	450	-	9,231	-	9,681
	Subtotal	**491**	**1,444**	**18,962**	**-**	**20,897**
South Bay Area	Alameda County FCWCD, Zone 7	1,367	-	17,609	-	18,976
	Alameda County WD	-	-	10,326	-	10,326
	Santa Clara Valley WD	-	-	12,339	79	12,418
	Subtotal	**1,367**	**-**	**40,274**	**79**	**41,720**
San Joaquin Valley Area	Dudley Ridge WD	1,783	-	15,783	40	17,606
	Empire West Side ID	104	-	349	-	453
	Kern County WA	1,393	-	24,717	520	26,630
	Kings County	112	-	360	-	472
	Oak Flat WD	-	-	983	-	983
	Tulare Lake Basin WSD	3,942	-	3,181	-	7,123
	Subtotal	**7,334**	**-**	**45,373**	**560**	**53,267**
Central Coastal Area	San Luis Obispo County FCWCD	379	-	2,693	-	3,072
	Santa Barbara County FCWCD	289	-	10,533	-	10,822
	Subtotal	**668**	**-**	**13,226**	**-**	**13,894**
Southern California Area	Antelope Valley–East Kern WA	2,186	-	12,213	111	14,510
	Castaic Lake WA	451	-	7,743	-	8,194
	Coachella Valley WD	6,918	-	-	-	6,918
	Crestline–Lake Arrowhead WA	83	-	658	-	741
	Desert WA	2,788	-	-	-	2,788
	Littlerock Creek ID	115	-	-	-	115
	Metropolitan WD of Southern California	59,909	-	223,358	-	283,267
	Mojave WA	3,347	-	2,228	-	5,575
	Palmdale WD	1,005	-	3,670	-	4,675
	San Bernardino Valley MWD	-	-	6,452	-	6,452
	San Gabriel Valley MWD	1,434	-	-	-	1,434
	San Gorgonio Pass WA	603	-	4,572	-	5,175
	Ventura County WPD	93	-	-	-	93
	Subtotal	**78,932**	**-**	**260,894**	**111**	**339,937**
TOTAL SWP DELIVERIES		**91,735**	**1,444**	**382,814**	**750**	**476,743**

Appendix F. Draft Water Shortage Contingency Plan Resolution

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SAMPLE WATER SHORTAGE CONTINGENCY RESOLUTION

City of Vallejo

RESOLUTION NO. _____

WHEREAS, the California Legislature enacted Assembly Bill 1lX during the 1991 Extraordinary Session of the California Legislature (an act to amend California Water Code Sections 10620, 10631, and 10652, and to add Section 10656 to the California Water Code, relating to water); and

WHEREAS, AB11X requires that every urban water supplier providing potable water directly to more than 3,000 customers or supplying more than 3,000 acre feet of water to develop a Water Shortage Contingency Plan; and

WHEREAS, AB11X mandates that said Water Shortage Contingency Plan be filed with the California Department of Water Resources by January 31, 1992; and

WHEREAS, The City of Vallejo is an urban water supplier providing water to more than 3,000 customers, and therefore, has prepared and filed a Water Shortage Contingency Plan, in compliance with requirements of AB11X; and

WHEREAS, The City of Vallejo (City) obtains water from the State Water Project, Solano Project and Lakes Frey and Madigan; and

WHEREAS, The City, has determined that a shortage condition exists because the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year beginning July 1; and

WHEREAS, the City of Vallejo's 2015 Urban Water Management Plan (UWMP) was approved in October 2016, and includes a Water Shortage Contingency Plan (WSCP) that sets forth five water conservation stages, attached hereto as Exhibit A, designed to reduce overall water usage; and

WHEREAS, public hearings have been conducted regarding the implementation of the City's Water Shortage Contingency Plan;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF VALLEJO:

1. The Water Shortage Contingency Plan is hereby implemented;

2. The City is hereby authorized (should the need arise) to declare a Water Shortage Emergency and implement the Water Shortage Contingency Plan;

3. The City shall take necessary actions to mitigate the effects on customers of the water shortage while continuing to fulfill its duties as a public utility water company.

I hereby certify that the foregoing resolution was adopted by the City of Vallejo at its meeting of

_____

_____

(signee)

Appendix G. Water Savings Incentive Program Terms and Conditions

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Solano County Water Agency
Commercial, Industrial, Institutional (CII)
Water Savings Incentive Pilot Program
Terms and Conditions for Participation

Purpose: To provide financial incentives for CII accounts to upgrade their irrigation systems, plumbing fixtures, and/or water-using appliances for the purpose of water use efficiency.

Terms: Financial incentives will be provided after analyzing the cost benefit ratio of each proposed project. Incentives are tailored to each individual site as each site has varying water savings potential. Incentives will be granted at the sole discretion of the Solano County Water Agency and its water retailers.

Eligibility: Participants must be CII water customers in Solano County, have a water service account that has been active for at least twelve months, and, for irrigation upgrade requests, use potable water for irrigation. Properties using recycled water or well water do not qualify. (California Water Service customers within the City of Dixon do not qualify). Large landscapes for schools, parks, and publicly funded common areas with a minimum of 30,000 square feet of irrigated landscape will be targeted. Preference will be given to areas of irrigated turf.

Requirements: Water retailers will submit potential site candidates to SCWA for consideration. Potential participants must receive a SCWA water use efficiency survey to determine the potential for water savings at the site. Acceptance into the program will be based on the findings and recommendations outlined in the water survey report. If the survey findings indicate the scope of repairs for a particular site are or found unlikely to be cost-effective, as the costs of upgrade would not significantly improve the water efficiency of the site, the water retailer and/ or water customer will be notified that no repair actions are authorized under this program. Participating customers must submit receipts to SCWA within 90 days of receiving the water use efficiency survey report. An extension of the 90 days may be requested from SCWA, however that request must be submitted to the SCWA within 90 days of the customer receiving the water use efficiency report.

Rebate or Direct Installation Amount: Each publicly-funded site (non-residential, non-commercial), defined as a water account, will be eligible for *up to a maximum of $10,000* in rebates or upgrades in addition to rebates or direct installations received by other SCWA water conservation programs including High Efficiency Toilet installations or weather-based irrigation controllers. Publicly funded sites will receive 100% reimbursement up to $10,000 per account on a pre-approved basis.

When the program serves commercial accounts, reimbursements will be 50% of expenditures, on a pre-approved basis, up to a maximum of $5,000 total expenditures.

Irrigation System elements eligible for reimbursement:
Water customers will be reimbursed for the cost of replacing existing irrigation system parts and equipment only. **No labor costs will be covered by this program.** Eligible expenses include:

- Replacement or upgrade to irrigation equipment (replacement of rotor or spray equipment, replacement with drip, etc.)
- Replacement of sprinkler heads for matching precipitation rates
- Pressure regulators and station control devices
- Rain sensors/ shut-off devices
- On a limited basis, new parts and equipment may be eligible for reimbursements to accommodate small modifications to existing systems to improve overall water efficiency (e.g. adding additional spray heads to an existing line.) Such requests must be requested and approved by SCWA. It is recommended that these requests be made prior to installation to ensure eligibility for reimbursement.

Indoor Water Use Systems or Fixtures Eligible for reimbursement:
Replacement or upgrades of indoor water use systems or fixtures will be determined on a case by case basis depending on the results of the survey, and the needs and water savings potential for the site.

How to Participate:

- Accept a water efficiency survey. If the results of the survey suggest a significant potential for water savings with installation of efficiency upgrades to irrigation or water using fixtures, apply for the Solano County Water savings Incentive Program.
- Obtain written confirmation from Solano County Water Agency water conservation program for upgrades.
- Purchase and install, or hire a contractor to install, the efficiency equipment.
- Provide original receipts to SCWA for reimbursement within 90 days of receiving the results of the water conservation survey.

Additional Information:

- Applicant name must be the same as water account customer of record.
- This program shall at all times be subject to change or termination without prior notice.

- Funding is limited. Program participation is available on a first come, first-served basis only. Program participation is subject to availability of funds and will end upon depletion of program funding.
- SCWA reserves the right to deny any application that does not meet all requirements for program participation. Due to variables beyond the control of SCWA, the Agency cannot guarantee that the installation of any of the program elements will result in a lower utility bill. Applicant waives and releases SCWA, participating water utilities, and their contractors or agents from any and all claims and causes of action arising out of the installation and use of this product. SCWA is not responsible for any damage that may occur to participants' property as a result of the program.

Appendix H. Public and Agency Notices, Meeting Agenda and Comments

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60 Day Notice Letters

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Roland Sanford, General Manager
Solano County Water Agency
810 Vaca Valley Pkwy., Ste. 203
Vacaville, CA 95688

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Sanford:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

We anticipate having a draft plan available for public review in July 2016. Please contact me at (707) 648-4307 if you have any questions about the City's UWMP update.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Andrew Florendo, Water Conservation Coordinator
Solano County Water Agency
810 Vaca Valley Pkwy., Ste. 203
Vacaville, CA 95688

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Florendo:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

We anticipate having a draft plan available for public review in July 2016. Please contact me at (707) 648-4307 if you have any questions about the City's UWMP update.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Graham Wadsworth, P.E.
Public Works Director/City Engineer
City of Benicia
250 East L St.
Benicia, CA 94510

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Wadsworth:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Felix Riesenberg
Asst. Public Works Director/Utilities
City of Fairfield
1000 Webster St., 3rd Fl.
Fairfield, CA 94533

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Riesenberg:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Shawn Cunningham
Public Works Director
City of Vacaville
650 Merchant St.
Vacaville, CA 95688

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Cunningham:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Dave Melilli
Public Works Director
City of Rio Vista
One Main St.
Rio Vista, CA 94571

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Melilli:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Joe Leach
Public Works Director
City of Dixon
600 East A St.
Dixon, CA 95620

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Leach:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

We anticipate having a draft plan available for public review in July 2016. Please contact me at (707) 648-4307 if you have any questions about the City's UWMP update.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Bill Emlen, Director
County of Solano
Dept. of Resource Management
675 Texas St., Ste. 5500
Fairfield, CA 94533

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Emlen:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Solano Irrigation District
810 Vaca Valley Pkwy., Ste. 201
Vacaville, CA 95688

Subject: City of Vallejo 2015 Urban Water Management Plan

To Whom It May Concern:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Tim McSorley
Building & Public Works Director
Suisun City
701 Civic Center Blvd.
Suisun City, CA 94585

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. McSorley:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Jason Holley, P.E.
Public Works Director
City of American Canyon
4381 Broadway St., Ste. 201
American Canyon, CA 94503

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Holley:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

We anticipate having a draft plan available for public review in July 2016. Please contact me at (707) 648-4307 if you have any questions about the City's UWMP update.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

James Christensen, P.E.
GS-12 USAF AMC 60 CES/CEPM
401 Hickam Ave., Bldg. 571
Travis AFB, CA 94535-2001

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Christensen:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

We anticipate having a draft plan available for public review in July 2016. Please contact me at (707) 648-4307 if you have any questions about the City's UWMP update.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Steve Lederer
Public Works Director
County of Napa
1195 3rd St., Ste. 101
Napa, CA 94559

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Lederer:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Phillip Miller
Deputy Director of Public Works/
Flood Control & Water
County of Napa
804 1st St.
Napa, CA 94559

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. Miller:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

The City's 2015 UWMP will document plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages. As such and in conformance with California Water Code Division 6, Part 2.6, Section 10621, the City is notifying the county within which the City provides water supplies that the UWMP is being prepared.

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Melissa Morton
District Manager
Vallejo Sanitation & Flood Control District
450 Ryder St.
Vallejo, CA 94590

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Ms. Morton:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

June 28, 2016

Shane McAffee
General Manager
Greater Vallejo Recreation District
395 Amador St.
Vallejo, CA 94590

Subject: City of Vallejo 2015 Urban Water Management Plan

Dear Mr. McAffee:

Existing state law requires each urban water supplier to prepare and adopt an urban water management plan at least once every 5 years. The City of Vallejo (City) is currently preparing a 2015 Urban Water Management Plan (UWMP).

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Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

Newspaper Notices

(copies of Daily Republic notice placements followed by confirmation of placement in Times-Herald)

Father: Son's killing is a 'turning point' to change police

THE ASSOCIATED PRESS

EL CAJON — The father of an unarmed black man who was fatally shot by police in a San Diego suburb on Saturday told hundreds of demonstrators who peacefully marched through downtown streets that his son's death was a turning point in a struggle to change police practices.

Richard Olango Abuka called the El Cajon officer who fired his gun "a coward" and demanded that Police Chief Jeff Davis resign.

The orderly protest followed days of angry, sometimes unruly, protests that led to Friday's release of two videos by the authorities, something that the family and community had urged.

The videos show the officer fired four times at close range almost immediately after Alfred Olango, 38, suddenly raised both hands to chest level and took what police described as a shooting stance. In addition to the videos, police showed the 4-inch electronic cigarette device Olango had in his hands when he was shot.

The shots came less than a minute after police arrived at the scene in response to Olango's sister calling 911 and reporting he was acting erratically.

There was a modest police presence Saturday to direct traffic as demonstrators walked from one rally to another, shouting Olango's name in unison as they made a short loop through the heart of the city of 104,000 people to Civic Center Plaza, which includes police headquarters. There were no reports of arrests or property damage.

"We must be united in this fight until we achieve our goals," Richard Olango Abuka told the crowd. "Alfred's death is going to be a turning point, and the change is now."

The father didn't directly address the videos but other speakers did. The Rev. Frank Placone-Willey of Summit Unitarian Universalist Fellowship in nearby Santee, California, read an email from a parishioner who watched them and questioned if police would have responded less aggressively if Olango were white.

"As long as Mr. Olango was not causing harm other than possibly blocking traffic, the officers should have taken steps to deescalate the situation," Placone-Willey read from the email, sparking applause.

Several speakers said the incident highlighted a need for more police training on how to handle people who are in mental distress.

The incident is the latest in a series of fatal shootings of black men that have roiled communities across the U.S. It came weeks after fatal shootings by police in Tulsa, Oklahoma, and Charlotte, North Carolina.

Olango, a Ugandan refugee who arrived in the U.S. as a boy, had a criminal record that included drug and weapon charges but no violence. His family described him as a loving father and a joyful, happy person.

His mother said he suffered a mental breakdown recently after the death of his best friend. On Tuesday, his sister called 911 and reported he was acting strangely and walking into traffic by a strip mall.

The longer of the two videos released by police came from a surveillance camera in the drive-thru of a restaurant. It is roughly a minute, has no sound and police blurred out the heads of everyone in it.

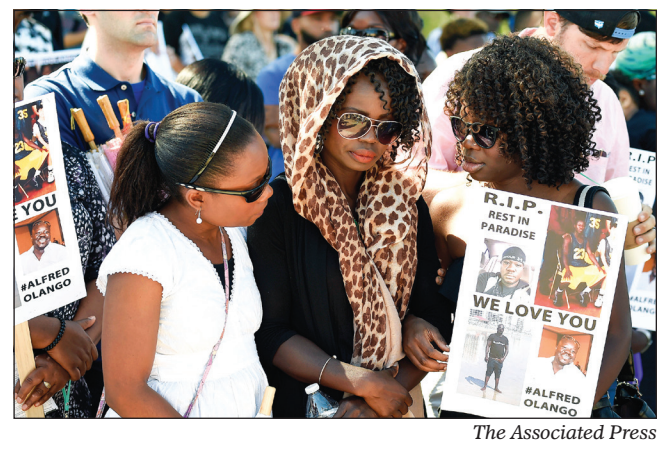
Olango is seen walking through the parking lot and then stopping suddenly as Officer Richard Gonsalves approached, his weapon drawn at his side.

Olango, his right hand in his pants pocket, moved side to side and backed up toward a white pickup truck.

As Gonsalves moved in from the front, a second officer got out of a cruiser and approached from the side.

In the second video, taken on a cellphone by a witness in the drive-thru, Olango's sister is seen approaching Gonsalves from behind and a woman can be heard screaming at Olango to put up his hands and telling police not to shoot.

Olango then bent over and assumed the shooting stance. Gonsalves quickly fired four shots at close range.



The Associated Press

Winnie Olango, center, sister of Alfred Olango, is consoled by two friends before a march Saturday, in reaction to the fatal police shooting of her brother, in El Cajon.

State opens pathway for cars that lack steering wheel

THE ASSOCIATED PRESS

California regulators have changed course and opened a pathway for the public to get self-driving cars of the future that lack a steering wheel or pedals.

It's not going to happen immediately – automakers and tech companies are still testing prototypes.

But, in a shift, the state's Department of Motor Vehicles said in a revision of draft regulations released late Friday that the most advanced self-driving cars would no longer be required to have a licensed driver if federal officials deem them safe enough.

The redrafted regulations will be the subject of a public hearing Oct. 19 in Sacramento.

The DMV has been wrestling for several years with how to oversee the emerging technology.

In December, the agency released an initial draft of self-driving car regulations that required a licensed driver in any self-driving vehicle. The industry reacted with great disappointment, as the ultimate vision of many companies is a car that has no wheel or pedals.

That approach is based on the argument that humans are not very good at driving, and anyway cannot be relied on as a backup to a car that typically drives itself but might fail in a way that required a person in the driver's seat who might be distracted or even asleep to snap to attention.

The DMV's new document coincides with the release last week of a 112-page federal proposal under which any self-driving car should pass a 15-point safety assessment before the public can get ahold of it. Among other things, the safety assessment asks automakers to document how the car detects and avoids objects and pedestrians, how hardened it is against cyberattacks and what how its backup systems will cope should the software fail. In incorporating the federal approach, California dropped a proposal that a third-party company certify the safety of self-driving cars.

The new draft regulations released Friday include several other new provisions. Among them is wording that would prohibit advertising vehicles with lower levels of automation – such as Tesla Motors' Autopilot, which on divided highways can keep a car's lane, brake and accelerate on the understanding that a person is paying attention all the time – from being advertised as "autonomous" or "self-driving."

In brief

Earthquake alert issued for SoCal

SANTA ANA — Southern California residents should remain on heightened alert until Tuesday for the increased possibility of a major earthquake, officials said.

The warning by the Governor's Office of Emergency Services follows a series of small temblors deep under the Salton Sea, which is located on the 800-mile-long San Andreas fault, the Orange County Register reported Saturday.

— The Associated Press

NOTICE OF PUBLIC HEARING AND AVAILABILITY OF CITY OF VALLEJO DRAFT 2015 URBAN WATER MANAGEMENT PLAN

Notice is hereby given that a public hearing will be held Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of a proposed Urban Water Management Plan (UWMP) dated September 2016. A draft Water Shortage Contingency Plan (Section 8 of the UWMP) will also be under consideration for adoption.

Urban water suppliers, such as the City of Vallejo, are required by the Urban Water Management Planning Act (Water Code section 10610 et seq.) to update their UWMP and submit a completed UWMP to the Department of Water Resources every five years. A UWMP is required in order for a water supplier to be eligible for State administered grants, loans, and drought assistance. The UWMP describes and evaluates the City's water sources, water use patterns, Year 2020 Water Use Target, and actions the City will take to ensure that water is used efficiently within the service area, including during potential water shortages.

A Water Shortage Contingency Plan examines the potential for water shortages and provides an action plan for reducing water demand. Additional Council action would be required to authorize implementation of the Water Shortage Contingency Plan during a water shortage.

The UWMP, including the Water Shortage Contingency Plan and Year 2020 Water Use Target, is available for public review on the City's website www.cityofvallejo.net and at the following physical locations:

Vallejo City Clerk's Office
Vallejo City Hall (3rd Floor)
555 Santa Clara Street
Vallejo, CA 94590
[For hours call: (707) 648-4527]

Vallejo Public Works Dept. Office
Vallejo City Hall (4th Floor)
555 Santa Clara Street
Vallejo, CA 94590
[For hours call: (707) 648-4315]

John F. Kennedy Library
Adult Reference Desk
505 Santa Clara Street
Vallejo, CA 94590
{For hours call: 1-866-57-ASKUS]

Springstowne Library – Reference Desk
1003 Oakwood Avenue
Vallejo, CA 94591
[For hours call: 1-866-57-ASKUS]

Solano Community College – Vallejo Center Library
545 Columbus Parkway, Room 124
Vallejo, CA 94591
[Hours: M – Th, 9 a.m. – 2 p.m.]

Fairfield Civic Center Library
1150 Kentucky Street
Fairfield, CA 94533
[For hours call: 1-866-57-ASKUS]

Fairfield Cordelia Library
5050 Business Center Drive
Fairfield, CA 94534
[For hours call: 1-866-57-ASKUS]

Persons wishing to comment can do so either in writing or in person. Comments can also be presented at the public hearing. Please return written comments on the draft Urban Water Management Plan, including the draft Water Shortage Contingency Plan, to Pamela Sahin.

For further information, please contact:
Pamela Sahin, Water Conservation Coordinator
PHONE: (707) 648-4479
FAX: (707) 648-4060
E-MAIL: Pam.Sahin@cityofvallejo.net
MAIL: 202 Fleming Hill Road, Vallejo, CA 94589

Dawn G. Abrahamson
City Clerk

Date of Notice: October 2, 2016

Josh Redsun/Daily Republic

Tunnel vision

Matias Ilmas, 5 slides down a slide at Larry's Produce Pumpkin patch, Fairfield. Tuesday.

Suspect in Allan Witt Park assault back in court

JESS SULLIVAN
DAILY REPUBLIC

FAIRFIELD — A former Solano Community College basketball player is once again in trouble with the law.

Shackled, chained and wearing jailhouse garb, Jainice Robinson was in court Tuesday afternoon after having been arrested last week in Contra Costa County.

Robinson's court appearance was brief. She was ordered to appear in court Friday in front of Judge Wendy G. Getty. Robinson will remain locked up until then.

Getty ordered Robinson in April to serve six months in the county jail for her role in a 2015 ambush attack of a former friend in Allan Witt Park along with her sister and a friend, both of whom were also on the college's basketball team. The former friend was beaten and the car she was in was damaged with baseball bats.

A jury trial earlier this year ended with Robinson being found guilty of felony vandalism and felony assault with intent to cause great bodily injury.

When Robinson, who faced a possible five-year prison term, was sentenced, she was allowed to turn herself in to the jail by June 30.

She never showed up.

A warrant for her arrest went out in early July and she remained on the lam until authorities recently rounded her up.

Getty and prosecutors may reconsider Robinson's six-month jail sentence.

Robinson and her sister sued the college in federal court after the fight in the park led to their expulsion. The racial discrimination lawsuit is currently set for a jury trial in October and November 2017.

Reach Jess Sullivan at 427-6919 or jsullivan@dailyrepublic.net. Follow him on Twitter at www.twitter.com/jsullivandr.

In brief

Procession, crowning of Mary set in Oakville

FAIRFIELD — The Carmelite House of Prayer will host a rosary procession and crowning to honor the Virgin Mary at 2 p.m. Sunday.

The event is at 20 Mount Carmel Drive, Oakville. All are welcome.

For more information, call 434-0605 or visit www.oakvillecarmelites.com/marian-rosary-and-crowning.html.

Free flu shots available at Solano libraries

FAIRFIELD — Solano County Library is partnering with the county's Public Health Services department to keep residents flu-free this fall.

"We welcome the opportunity to provide a service that is helpful to just about everyone. Getting the flu is miserable and it can be dangerous as well," said Bonnie Katz, Solano County's director of library services, in a press release.

The free, drop-in flu clinics are from 1 to 4 p.m.:

- Oct. 20 at Rio Vista Library, 44 S. 2nd St.
- Oct. 24 at Vacaville Public Library-Town Square, 1 Town Square Place.
- Oct. 27 at Suisun City Library, 601 Pintail Drive.
- Oct. 28 at Fairfield Civic Center Library, 1150 Kentucky St.
- Nov. 1 at John F. Kennedy Library, 505 Santa Clara St., Vallejo.
- Nov. 2 at Vacaville Public Library-Cultural Center, 1020 Ulatis Drive.

For more information, visit www.solanolibrary.com.

Paranormal group talks Solano haunts

VACAVILLE — Ever wonder what lurks in the shadows or goes bump in the night in Solano County?

The Solano County paranormal team will give an insight into local haunts around the county starting at 5:30 p.m. Thursday at the Vacaville Public Library-Town Square, 1 Town Square Pace.

Team members will discuss their experiences and share the paranormal evidence they've discovered. The program is free. Seating is limited.

For more information, call 1-866-57-ASKUS or visit the Solano County Library events calendar at www.solanolibrary.com.

DAR chapter to mark golden anniversary

FAIRFIELD — The Chief Solano Chapter of the National Society Daughters of the American Revolution will meet at 11 a.m. Saturday at the Courtyard by Marriott, 1350 Holiday Lane.

The organization will celebrate its 50th anniversary. The chapter was formed Oct. 15, 1966, in Vacaville.

Those attending are asked to wear something pink to help promote Breast Cancer Awareness Month. Prospective members and guests are invited. Reservations are required and needed by Wednesday.

For more information, call 429-3470.

Elks Lodge to sponsor scholarship applicants

VACAVILLE — The Vacaville Elks Lodge will sponsor student applicants from Fairfield, Vacaville, Dixon, Winters and Rio Vista-area high schools at the national finals.

Information concerning the Elks scholarship program has been provided to all local high schools.

Applications and full instructions are also available online at enf.elks.org/mvs. The deadline for applications is Nov. 30. All applications must be submitted online.

The Elks will award more than $2.4 million in scholarships this year. The 500 national four-year scholarships range from $4,000 to $50,000.

Males and females compete separately and judging criteria includes, but is not limited to, scholastics, SAT scores, leadership, community service and financial need. Applicants need not be related to a member of the Elks.

Several local applicants have advanced to the national finals over the past 20 years, according to a press release from the Vacaville Elks.

For more information, call Bob Meador, the Vacaville Elks scholarship chairman, at 480-7866 or send him an email at bobmeador@sbcglobal.net.

Juvenile justice council sets Fairfield meet

FAIRFIELD — The Juvenile Justice Coordinating Council will meet at 1:30 p.m. Wednesday at the county administration center, 675 Texas St., in Conference Room 6004 on the sixth floor.

The agenda includes a review of the diversion programs available for juveniles through local police departments and the Probation Department. An update on the County Multi-Agency Juvenile Justice Action Plan is also on the agenda.

For more information, visit www.solanocounty.com/depts/probation/jjcc/default.asp.

Libraries partner with Hoopla for free streaming

DAILY REPUBLIC STAFF

FAIRFIELD — Thousands of movies, TV shows, music albums, e-books, audio books and comics are now available to Solano County residents for mobile and online devices through a new partnership with Hoopla Digital.

"We continually strive to serve the community in new and inventive ways that empower our customers to explore and grow," said Bonnie Katz, Solano County's director of library services, in a press release.

Library card-holders can download the free Hoopla digital mobile app on their Android or iOS device or visit www.solanolibrary.com/ebooks-and-more to begin enjoying thousands of titles – from Hollywood studios, record companies and publishers.

The content is available to borrow 24/7, for instant streaming or temporary downloading to smartphones, tablets and computers.

"This new service will give Solano residents the ability to instantly enjoy thousands of new titles on their mobile devices and computers, giving them access to the library, any time, any place. Hoopla is easy to use and because it is digital, there is no need to return an item and no late fees," Katz said in the release.

Reach the Daily Republic newsroom at 425-4646.

CHP helicopter crew rescues 2 men after boat crashes, sinks

DAILY REPUBLIC STAFF

MARE ISLAND — Two boaters were rescued Saturday afternoon after their boat began to take on water and later sank, the California Highway Patrol reports.

The rescue operation began at 1:20 p.m. when the CHP was notified that a boat had crashed near the south end of Mare Island. A CHP helicopter responded to the area and, after a brief search, found the sinking boat and two men standing on a rock jetty.

They were trapped by the rising tide and windswept waves were crashing around them, the CHP reports. The U.S. Coast Guard station in Vallejo was notified of the situation and a rescue boat was sent to the scene. Vallejo Fire Department personnel were notified as well and establish a landing area nearby on Mare Island.

The CHP helicopter crew hoisted the two men individually from the rocks in winds that gusted to 30 mph, the CHP reports, and took them to the landing zone, where emergency personnel established that both men were not injured.

Their boat, however, sank as the rescue operation was taking place, the CHP reports. The cause of the boat crash was not released.

Reach the Daily Republic newsroom at 425-4545.

Susan Hiland/*Daily Republic*

Sheila Nipper and Carol Piel, both of Fairfield, admire the bowls created by students at Solano Community College for the Empty Bowls fundraiser hosted by the Food Bank of Contra Costa and Solano, Saturday.

Empty Bowls meal raises cash, awareness to help Solano's hungry

SUSAN HILAND
DAILY REPUBLIC

FAIRFIELD — The ceramic bowls made by Solano Community College art students covered three tables Saturday at the Food Bank of Contra Costa and Solano's warehouse in Fairfield.

The hand-crafted bowls were made for the Empty Bowls fundraiser and came in blues, grays and browns.

Some of the people have been taking them home each year for the past eight years as a reminder that people are going hungry right here at home. Others came for the first time and admired the workmanship of the bowls before they got up for some soup and bread.

The Food Bank of Contra Costa and Solano helps thousands of people each year put food on the table for at least one good meal. The Empty Bowls fundraiser looks to bring in money to help with the holiday season at the food bank.

"The theme of this is Empty Bowls because thousands face empty bowls each night, and we want people to remember that when they look at these bowls," said Larry Sly, executive director of the Food Bank of Contra Costa and Solano.

He said the organization feeds 190,000 people each month between Solano and Contra Costa counties.

About 85 people came to have supper, take a tour of the facility and learn about what the food bank does for the county.

Sheila Nipper and Carol Piel, both of Fairfield, have wanted to attend the event for the past few years but said something always would come up.

"We really wanted to come this year," Nipper said.

She commented on the beauty of the bowls and the fine work that was put into making them.

"It was hard to decide which bowl to pick," Piel said.

The meal was a choice of three soups: cream of broccoli, chicken noodle and lentil with bacon. Each soup came from a different sponsor: Englund's Cafe and Catering, Tony's 2 Go and Loaves and Fishes. The bread was donated by Boudin SF.

This was the third time Valisa Langhorne of Vacaville attended the event. She brought her family, including her sister and brother-in-law. She brought her children last year but they had a school event this year.

"I really like what the food bank does," she said. "I wanted to support that and brought my kids because they need to know about helping people."

Langhorne has volunteered at the food bank but recently has slowed down on her volunteer work.

"I was surprised at how many people are struggling greatly in this county," she said. "We really need (the) food bank to help people."

Reach Susan Hiland at 427-6981 or shiland@dailyrepublic.net.

In brief

Solano supervisors next meet Oct. 25

FAIRFIELD — The Solano County Board of Supervisors will not meet Tuesday – their regularly scheduled third Tuesday off-day in the month.

The board, which also took Oct. 11 off due to the Columbus Day holiday, will next meet at 9 a.m. Oct. 25 in the first-floor chamber of the county building, 675 Texas St. in Fairfield.

The agenda for the meeting will be posted Friday.

Edwards Theatres offers free final debate viewing

FAIRFIELD — Edwards Fairfield Stadium 16 & IMAX, at Solano Town Center, will show the final presidential debate live at 6 p.m. Wednesday.

"See Clinton vs. Trump 'face off' one more time," said Steve Bunnell, chief content and programming officer at Regal Entertainment Group, in a press release. "After the success of airing the last debate, including many full auditoriums, we want to continue to encourage our local communities to be engaged in public policy and provide Regal guests the unique opportunity to experience the political process on the big screen."

Admission is free.

For more information, visit www.regmovies.com/promotions/presidential-debate.

CHP announces Age Well Drive Smart class

BENICIA — The California Highway Patrol is hosting a free Age Well Drive Smart class from 9 a.m. to noon Monday at the Benicia Library, 150 E. L St.

The program is designed specifically to help seniors tune their driving skills, refresh their knowledge of the rules of the road and learn more about how normal age-related physical changes can affect driving ability.

To register for the class or for more information, call 428-2100 or visit www.chp.ca.gov.

Adult Recreation Center site of 'Money Talks'

FAIRFIELD — "Money Talks," a panel discussion by expert professionals on estate planning, inheritance and tax law, family law and other topics, will take place Monday at the Adult Recreation Center.

The free event begins at 1:30 p.m.

Attorney Brian Tubis, accountant Randy Peace and fiduciaries and financial consultants Tom Kiernan, Mark Sievers and Leo Martinez are among panelists.

The center is located at 1200 Civic Center Drive.

GITI, Continental recall defective tires

GITI Tire and Continental Tire have issued recalls affecting about 265,000 vehicles.

GITI is recalling various sizes of its Primewell Valera Touring II, GT Radial Champiro Touring and Dextero Touring DTR1 tires because of a defect that causes cracks in the lower sidewall, causing air to leak out. The potentially dangerous tires will be replaced for free on the more than 250,600 affected vehicles. For more information, call GITI at 877-342-0882.

Continental Tire is recalling certain Crosscontact LX20 tires made in May 2015 that were installed on more than 14,500 General Motors trucks and sports utility vehicles. The tires have a problem that could cause excessive tread wear, vibration, noise, or bulging areas. They also will be replaced for free. For more information, call Continental at 888-799-2168.

— Staff, wire reports

SF officer shot in head, suspect in custody

THE ASSOCIATED PRESS

SAN FRANCISCO — A San Francisco police officer was critically injured after being shot in the head while responding to reports of a mentally disturbed person. The officer is expected to survive.

San Francisco Police spokeswoman Officer Giselle Talkoff says officers were responding Friday night to the Lakeshore Shopping Center on a call about a man causing a disturbance and threatening people.

Talkoff says that when the officers made contact with the suspect he fired multiple shots, striking the officer in the head.

She says officers fired shots at the suspect as he fled. He went down but wouldn't drop the gun and refused to surrender. Police distracted him with flash-bang grenades and were able to arrest him. He was taken to a hospital for treatment.

Talkoff says the wounded officer, who was not identified, is in critical condition. He is conscious and with his family members.

NOTICE OF PUBLIC HEARING AND AVAILABILITY OF CITY OF VALLEJO DRAFT 2015 URBAN WATER MANAGEMENT PLAN

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Vallejo, CA 94590
[For hours call: (707) 648-4527]

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Persons wishing to comment can do so either in writing or in person. Comments can also be presented at the public hearing. Please return written comments on the draft Urban Water Management Plan, including the draft Water Shortage Contingency Plan, to Pamela Sahin.

For further information, please contact: Pamela Sahin, Water Convservation Coordinator
PHONE: (707) 648-4479 • FAX: (707) 648-4060
E-MAIL: Pam.Sahin@cityofvallejo.net • MAIL: 202 Fleming Hill Road, Vallejo, CA 94589

Dawn G. Abrahamson - City Clerk
Date of Notice: October 2, 2016

'Stop whining,' Obama tells Trump

THE ASSOCIATED PRESS

WASHINGTON — "Stop whining," President Barack Obama rebuked Donald Trump on Tuesday, speaking out as seldom before on next month's election and chiding the Republican for sowing suspicion about the integrity of America's presidential vote.

Obama also accused Trump of cozying up to Russia's Vladimir Putin to a degree "unprecedented in American politics."

The president said Trump's intensifying preemptive warnings about voter fraud are unheard of in modern politics. The rhetoric is not based on any evidence, Obama said, but is simply aimed at discrediting the outcome before the first votes are counted.

"You start whining before the game is even over?" Obama said at a Rose Garden news conference. "If whenever things are going badly for you and you lose you start blaming somebody else — then you don't have what it takes to be in this job."

Campaigning in Colorado, the GOP candidate repeated his assertions about "corrupt" elections but did not respond directly to the president. Trump vowed to "drain the swamp" in Washington, and for the first time promised to push for a constitutional amendment to impose term limits on all members of Congress.

Witnesses back account of Trump sex assault

THE ASSOCIATED PRESS

WASHINGTON — People Magazine reported Tuesday that a half-dozen people have come forward to corroborate its writer's account of being sexually assaulted by Donald Trump and its aftermath.

Natasha Stoynoff, a former staff writer at the celebrity magazine, wrote last week that Trump grabbed her, pinned her against a wall and forcibly kissed her in a room at his Mar-a-Lago mansion in Florida in 2005. She was on assignment to write a profile of the billionaire businessman and his then-pregnant wife, who Stoynoff said was upstairs when it happened.

The Republican presidential nominee has denied the accusation, saying Stoynoff fabricated the incident. He also suggested Stoynoff, 51, is not physically attractive enough to merit his attention.

"She lies! Look at her, I don't think so," Trump, 70, said at a campaign rally last week.

Stoynoff is one of about a dozen women who have recently accused Trump of such misconduct as groping, unexpected kisses on the mouth and unwanted sexual advances.

Though Stoynoff says she and Trump were alone when he accosted her, the magazine's latest story quotes five friends and former co-workers who say the writer told them about the incident shortly after it happened.

In Stoynoff's first-person account, she also wrote of a chance meeting and brief conversation with Melania Trump along New York's Fifth Avenue weeks later. She said Trump's third wife was by then carrying the couple's infant son, Barron, in her arms while outside Trump Tower.

Amid talk of 'rigged' election, experts say fraud is rare

THE ASSOCIATED PRESS

ATLANTA — Donald Trump has repeatedly warned of a "rigged" election, saying large-scale voter fraud is happening in the U.S. and suggesting it will affect the outcome of this year's presidential race. There is no evidence that such widespread fraud exists.

Trump's comments have alarmed voting rights experts and civil rights groups, who say they threaten to undermine faith in the nation's elections. Meanwhile, House Speaker Paul Ryan and other Republicans are expressing confidence in the voting systems, while state election officials are saying they are committed to conducting fair and impartial elections.

It's worth noting, too, that 29 of the nation's secretaries of state are Republican.

Here's a look at what Trump has been saying, along with historical data about voter fraud and what this could mean for Election Day.

The Associated Press

Republican presidential candidate Donald Trump speaks to the Republican Hindu Coalition, Saturday, in Edison, N.J.

What Trump has said

In recent weeks, Trump has repeatedly raised questions about the integrity of the nation's voting systems and called for his supporters to monitor polling places in "certain areas" to guard against voter fraud. He's made the comments during campaign stops in battleground states such as Michigan and Pennsylvania, singling out Philadelphia as a city to watch.

Recently, Trump sent a series of tweets in which he called Republican leaders "naive" for dismissing his claims of widespread voter fraud and saying the election is being rigged "by the dishonest and distorted media" for Democrat Hillary Clinton.

Trump's supporters appear to share his concerns. A poll last month by the Associated Press-NORC Center for Public Affairs Research found half of all those with a favorable opinion of Trump said they have little to no confidence in the integrity of the vote count.

Is voter fraud a widespread problem

No. While there have been isolated cases of voter fraud in the U.S., there is no evidence of it being a widespread problem as Trump suggests.

The type of fraud that Trump appears to be talking about would involve people casting ballots who know they are not eligible to vote, as well as people impersonating others to cast ballots for their preferred candidate. Experts say this would be an inefficient way to rig an election, given the fraud would have to be conducted one voter at a time, and would only be effective in places where the race is close enough that the outcome could be swayed.

Studies have shown voter impersonation to be quite rare. In one study, a Loyola Law School professor found 31 instances involving allegations of voter impersonation out of 1 billion votes cast in U.S. elections between 2000 and 2014. Another study by the Brennan Center for Justice at New York University Law School found many reports of people voting twice or ballots being cast on behalf of dead people were largely the result of clerical errors that suggested wrongdoing when none had occurred.

"Voter fraud is so incredibly rare that it has no impact on the integrity of our elections," said Wendy Weiser, head of the democracy program at the Brennan Center. "You are more likely to be struck by lightning, more likely to see a UFO, than to be a victim of voter fraud."

In Philadelphia on Monday, Republican election commissioner Al Schmidt dismissed the idea that election fraud could take place in the nation's fifth-largest city. "The real threat to the integrity of elections is irresponsible accusations that undermine confidence in the electoral process," he said.

Voter fraud vs. election fraud

Other types of fraud are possible, such as voting machines being intentionally manipulated to report false results. So-called "ballot stuffing" would be considered election fraud, rather than voter fraud, because it would be orchestrated by someone involved in administering the election or someone who has gained access to the election administration system.

Experts say federal elections would be much more difficult to influence this way because of the broad, decentralized nature of the nation's voting systems. There are more than 9,000 election jurisdictions and hundreds of thousands of polling places.

That also holds true for any effort by hackers to influence this year's presidential election. Experts say it's unlikely a hacker could change votes, but one might be able to delete voters from registration files, triggering confusion and long lines at the polls.

What measures exist to combat fraud?

State election officials have several measures in place to protect the integrity of their voting systems, and both political parties have a vested interest in making sure the outcome is fair.

Voting machines are not connected to the internet, and the vast majority of ballots will be cast on systems that allow for a paper record to verify electronic results.

The process of counting the votes is not done on systems connected to the internet, and tabulation systems are not connected to a single network, according to the National Association of Secretaries of State.

As in past presidential elections, individual campaigns, political parties and special interest and civil rights groups will have operations designed to assist voters and monitor for any problems at the polls.

Does voter ID combat fraud?

There have been efforts in recent years, largely in Republican-led states, to pass laws requiring voters to show photo identification at the polls. Supporters say such laws are needed to combat voter fraud, while critics argue the laws disproportionately affect minorities and the poor who may face challenges obtaining a government-issued photo ID.

Courts have recently agreed. In striking down parts of a voter ID law in North Carolina this year, a federal appeals court judge wrote they "target African Americans with almost surgical precision."

The courts have also largely found there is little documented evidence of voter fraud. In a decision finding Texas' photo ID law was discriminatory, a federal appeals court noted there were two convictions related to in-person voter fraud out of 20 million votes cast in the decade before the law was enacted.

Experts note that fraud, when it occurs, usually involves absentee ballots or voter registration – problems that could not be solved by requiring an ID at the polls.

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E-MAIL: Pam.Sahin@cityofvallejo.net • MAIL: 202 Fleming Hill Road, Vallejo, CA 94589

Dawn G. Abrahamson - City Clerk
Date of Notice: October 2, 2016

Times-Herald
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2133240

VALLEJO CITY CLERK
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VALLEJO, CA 94590

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VALLEJO, CA 94590

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PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA
COUNTY OF SOLANO, S.S.

FILE NO. NOH- UWMP

I am a citizen of the United States. I am over the age of eighteen years and not a party to or interested in the above-entitled matter. I am the Legal Advertising Clerk of the printer and publisher of the Vallejo Times-Herald, a newspaper published in the English language in the City of Vallejo, County of Solano, State of California.

I declare that the Vallejo Times-Herald is a newspaper of general circulation as defined by the laws of the State of California as determined by this court's order dated June 12, 1952 in the action entitled In the Matter of the Ascertainment and Establishment of the Standing of Vallejo Times-Herald as a Newspaper of General Circulation, Case Number 25864. Said order states "Vallejo Times-Herald" has been established, printed and published in the City of Vallejo, County of Solano, State of California; That it is a newspaper published daily for the dissemination of local and telegraphic news and intelligence of general character and has a bona fide subscription list of paying subscribers; and...THEREFORE, IT IS ORDERED, ADJUDGED AND DECREED:...That "Vallejo Times-Herald" is a newspaper of general circulation for the City of Vallejo, County of Solano, California. Said order has not been revoked.

I declare that this notice, of which the annexed is a printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

10/02/2016, 10/11/2016, 10/16/2016, 10/18/2016

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Dated at Vallejo, California, this
18th day of October 2016

(Signature) Haleigh Hernandez

NOTICE OF PUBLIC HEARING AND AVAILABILITY OF CITY OF VALLEJO DRAFT 2015 URBAN WATER MANAGEMENT PLAN

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For further information, please contact:

Pamela Sahin, Water Conservation Coordinator
PHONE: (707) 648-4479 • FAX: (707) 648-4060
E-MAIL: Pam.Sahin@cityofvallejo.net • MAIL: 202 Fleming Hill Road, Vallejo, CA 94589

Dawn G. Abrahamson
City Clerk

Date of Notice: October 2, 2016

Notices of Availability of Public Draft UWMP

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Roland Sanford
General Manager
Solano County Water Agency
810 Vaca Valley Pkwy., Ste. 203
Vacaville, CA 95688

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Sanford:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Andrew Florendo
Water Conservation Coordinator
Solano County Water Agency
810 Vaca Valley Pkwy., Ste. 203
Vacaville, CA 95688

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Florendo:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Graham Wadsworth, P.E.
Public Works Director / City Engineer
City of Benicia
250 East L. Street
Benicia, CA 94510

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Wadsworth:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works - Water Division section.

Although our current agreement to provide 1,100 Acre-Feet (358 MG) per year to American Canyon expires in 2025, it is assumed in the UWMP to be extended for purposes of the report. Terms of any agreement extension would need to be negotiated at a future time.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

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October 4, 2016

Felix Riesenberg
Asst. Public Works Director/Utilities
City of Fairfield
1000 Webster St., 3rd Fl.
Fairfield, CA 94533

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Riesenberg:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

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October 4, 2016

Shawn Cunningham
Public Works Director
City of Vacaville
650 Merchant St.
Vacaville, CA 95688

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Cunningham:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

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October 4, 2016

Dave Melilli
Public Works Director
City of Rio Vista
One Main St.
Rio Vista, CA 94571

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Melilli:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Joe Leach
Public Works Director
City of Dixon
600 East A St.
Dixon, CA 95620

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Leach:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Bill Emlen, Director
County of Solano
Dept. of Resource Management
675 Texas St., Ste. 5500
Fairfield, CA 94533

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Emlen:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Solano Irrigation District
District Office
810 Vaca Valley Pkwy., Ste. 201
Vacaville, CA 95688

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

To Whom It May Concern:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Tim McSorley
Building & Public Works Director
Suisun City
701 Civic Center Blvd.
Suisun City, CA 94585

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. McSorley:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Jason Holley, P.E.
Public Works Director
City of American Canyon
4381 Broadway St., Suite 201
American Canyon, CA 94503

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Holley:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works - Water Division section.

In the plan we have assumed that the City of American Canyon will purchase all remaining available capacity options, resulting in a demand projection of 2,640 Acre-Feet in 2020, and 3,206 Acre-Feet in 2025 through 2040 for potable water. The 500 Acre-Feet of raw water per year is projected to be continued through the 2040 time frame of the plan.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

James Christensen, P.E.
GS-12 USAF AMC 60 CES/CEPM
Travis Air Force Base
401 Hickam Ave. Bldg. 571
Travis AFB, CA 94535-2001

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Christensen:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works - Water Division section.

In the plan we have included projections of maximum annual water demand from the base at 2.9 MGD or 1,058 MG per year. We relied on information provided from your 2005 Water Supply Master Plan.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Steve Lederer
Public Works Director
County of Napa
1195 3rd St., Ste. 101
Napa, CA 94559

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Lederer:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Phillip Miller
Deputy Director of Public Works/
Flood Control & Water
County of Napa
804 1st St.
Napa, CA 94559

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. Miller:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Melissa Morton
District Manager
VSFCD
450 Ryder St.
Vallejo, CA 94590

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Ms. Morton:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of VALLEJO California

Water Division • 202 Fleming Hill Road • Vallejo, CA 94589 • 707.648.4307 • Fax 707.648.4060

October 4, 2016

Shane McAffee
General Manager
GVRD
395 Amador St.
Vallejo, CA 94590

Subject: City of Vallejo Draft 2015 Urban Water Management Plan

Dear Mr. McAfee:

The City completed a Draft 2015 Urban Water Management Plan, which is available for review online on the City's website, www.cityofvallejo.net under the Public Works Water Division section.

Be advised that a public hearing will be held on Tuesday, October 25, 2016 at 7:00 p.m. in the City Council Chambers, 555 Santa Clara Street, to consider the adoption of the plan.

Please contact me at (707) 648-4307 if you have any questions about the City's Draft 2015 Urban Water Management Plan.

Sincerely,

Richard Wilson, P.E.
Engineering Manager

cc: David Kleinschmidt, Public Works Director
PW Chron

City of Vallejo - City Council Meeting Agenda

10/25/16

City Hall
555 Santa Clara Street
Vallejo, CA 94590
www.cityofvallejo.net

AGENDA

VALLEJO CITY COUNCIL
SPECIAL MEETING – 5:00 P.M.

VALLEJO CITY COUNCIL
REGULAR MEETING – 7:00 P.M.

OCTOBER 25, 2016

MAYOR
Osby Davis

CITY COUNCIL
Vice Mayor, Rozzana Verder-Aliga, EdD
Pippin Dew-Costa
Jesus "Jess" Malgapo
Robert H. McConnell
Katy Miessner
Bob Sampayan

This AGENDA contains a brief general description of each item to be considered. The posting of the recommended actions does not indicate what action may be taken. If comments come to the City Council without prior notice and are not listed on the AGENDA, no specific answers or response should be expected at this meeting per State law.

Pursuant to the Government Code Section 54954.3 (The Brown Act), members of the public shall be afforded the opportunity to speak on any agenda item of interest to them provided they are first recognized by the presiding officer. Members of the public wishing to be so recognized are requested to submit a completed speaker card to the City Clerk prior to the consideration of the item.

Those wishing to address the Council on any matter for which another opportunity to speak is not provided on the AGENDA but which is within the jurisdiction of the City Council to resolve may come forward to the podium during the "COMMUNITY FORUM" portion of the AGENDA.

Members of the public have the right to speak on any item on this agenda. Those wishing to address the Council: 1) during the Community Forum are limited to three minutes pursuant to Vallejo Municipal Code Section 2.20.300; 2) on a Consent Calendar item are limited to three minutes pursuant to Vallejo Municipal Code Section 2.02.310; and an Action Calendar item are limited to five minutes pursuant to Vallejo Municipal Code Section 2.02.420.

Notice of Availability of Public Records: All public records relating to an open session item, which are not exempt from disclosure pursuant to the Public Records Act, that are distributed to a majority of the City Council will be available for public inspection at the City Clerk's Office, 555 Santa Clara Street, Vallejo, CA at the same time that the public records are distributed or made available to the City Council. Such documents may also be available on the City of Vallejo website subject to staff's ability to post the documents prior to the meeting. Information may be obtained by calling (707) 648-4527, TDD (707) 649-3562.

Want more City Information - Members of the public can:
Like us on Facebook (www.facebook.com/cityofvallejo)
Sign up to receive City Communications via e-mail (www.cityofvallejo.net/living/connect)
Sign up to receive City updates and get connected with your neighbors on Nextdoor (www.nextdoor.com)

	Vallejo City Council Chambers is ADA compliant. Devices for the hearing impaired are available from the City Clerk. Requests for disability related modifications or accommodations, aids or services may be made by a person with a disability to the City Clerk's office no less than 72 hours prior to the meeting as required by Section 202 of the Americans with Disabilities Act of 1990 and the federal rules and regulations adopted in implementation thereof.

CALL AND NOTICE OF SPECIAL MEETING AT 5:00 PM OF THE VALLEJO CITY COUNCIL OCTOBER 25, 2016

TO THE MEMBERS OF THE VALLEJO CITY COUNCIL:

You are hereby notified that I do hereby call the Vallejo City Council in special session to consider only the matters stated on the agenda listed below.

NOTICE: Members of the public shall have the opportunity to address the City Council concerning any item listed on the agenda *before or during consideration of that item. No other items may be discussed at this special meeting.*

1. CALL TO ORDER

2. ROLL CALL

3. CLOSED SESSION

A. Conference with Legal Counsel - Existing Litigation: Acme Transfer and Storage, Inc. v. City of Vallejo, Solano County Superior Court, FCS 041008, pursuant to subsection (a) of Government Code section 54956.9

B. Conference with Labor Negotiators: pursuant to Government Code Section 54957.6. Negotiators: Daniel E. Keen, City Manager; Jasmin Loi, Human Resources Director; and Austris Rungis, IEDA. Employee Organizations: International Association of Firefighters, Local 1186 (IAFF); Vallejo Police Officers Association (VPOA); International Brotherhood of Electrical Workers, Local 1245 (IBEW); Confidential, Administrative and Managerial Professionals (CAMP); and Unrepresented Employees: Executive Management Group.

C. Conference with Real Property Negotiators pursuant to Government Code Section 54956.8 - Property: the parcels generally known as "North Mare Island" including APNS (1) 0066-020-110, (2) 0066-020-130 and (3) 0066-020-150; City Negotiators: Daniel E. Keen, City Manager; and Andrea Ouse, Community & Economic Development Director; Negotiating Parties: FF LLC, a California Liability Company; Under Negotiations: Price and Terms of Payment

4. ADJOURNMENT

Dated: Thursday, October 20, 2016

Osby Davis, Mayor

I, Dawn Abrahamson, City Clerk, do herby certify that I have caused a true copy of the above notice and agenda to be delivered to each of the members of the Vallejo City Council, at the time and in the manner prescribed by law and that this agenda was posted at City Hall, 555 Santa Clara Street, CA at 5:00 p.m., Thursday, October 20, 2016.

Dated: Thursday, October 20, 2016

Dawn G. Abrahamson, City Clerk

VALLEJO CITY COUNCIL
REGULAR MEETING – 7:00 PM
COUNCIL CHAMBERS
OCTOBER 25, 2016

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL

4. PRESENTATIONS AND COMMENDATIONS

5. FIRST COMMUNITY FORUM

Anyone wishing to address the Council on any matter for which another opportunity to speak is not provided on the agenda, and which is within the jurisdiction of the Council to resolve, is requested to submit a completed speaker card to the City Clerk. When called upon, each speaker should step to the podium, state his /her name, and address for the record. The conduct of the community forum shall be limited to a maximum of fifteen (15) minutes, with each speaker limited to three minutes pursuant to Vallejo Municipal Code Section 2.20.300.

6. PUBLIC COMMENT REGARDING CONSENT CALENDAR ITEMS

Members of the public wishing to address the Council on Consent Calendar Items are requested to submit a completed speaker card to the City Clerk. Each speaker is limited to three minutes pursuant to Vallejo Municipal Code Section 2.02.310. Requests for removal of Consent Items received from the public are subject to approval by a majority vote of the Council. Items removed from the Consent Calendar will be heard immediately after approval of the Consent Calendar and Agenda.

7. CONSENT CALENDAR AND APPROVAL OF AGENDA

A. APPROVAL OF MINUTES

Recommendation: By motion, approve City Council minutes for the meetings of 1) October 11, 2016 (special) and 2) October 11, 2016 (regular).

Contact: Dawn G. Abrahamson, City Clerk (707) 648-4528
dawn.abrahamson@cityofvallejo.net

B. PAYMENT OF CLAIMS - SEPTEMBER 2016

Recommendation: By motion, ratify the payment of claims totaling $5,824,054.26 for the period September 1, 2016, through September 30, 2016.

Contact: Ron Millard, Finance Director, (707) 649-3559
ron.millard@cityofvallejo.net

C. **ADOPT A RESOLUTION AWARDING CONSTRUCTION CONTRACT TO R & R MAHER CONSTRUCTION COMPANY, INC., FOR CDBG WINCHESTER STREET CONCRETE REHABILITATION PROJECT IN THE AMOUNT OF $307,094**

Recommendation: Adopt a Resolution approving the project plans and specifications for the CDBG Winchester Street Concrete Rehabilitation Project, and authorizing the City Manager to execute a construction contract in the amount of $307,094 to R & R Maher Construction Company, Inc., of Vallejo, CA as the lowest responsive and responsible bidder, in accordance with the approved plans and specifications.

Contact: David A. Kleinschmidt, Public Works Director, (707) 648-4301 david.kleinschmidt@cityofvallejo.net

D. **AUTHORIZE THE CITY MANAGER TO EXECUTE A PURCHASE AGREEMENT IN THE AMOUNT OF $155,985.35 FOR THE PURCHASE AND INSTALLATION OF PUBLIC SAFETY RADIO EQUIPMENT, PURSUANT TO THE SOLE SOURCE EXCEPTION TO COMPETITIVE BIDDING**

Recommendation: Authorize the City Manager to sign a purchase agreement in the amount of $155,985.35 for the purchase and installation of public safety radio equipment from Day Wireless, as a sole source exception to competitive bidding pursuant to VMC 3.20.080(A)(3).

Contact: Gregory Taylor, Chief Information Officer, (707) 648-4468 gregory.taylor@cityofvallejo.net

E. **ADOPT A RESOLUTION EXPRESSING THE CITY OF VALLEJO'S SUPPORT IN RECOGNIZING OCTOBER AS NATIONAL BULLYING PREVENTION MONTH**

Recommendation: Adopt a resolution expressing the City of Vallejo's support in recognizing October as National Bullying Prevention Month.

Contact: Councilmember McConnell, (707) 648-4135 Robert.McConnell@cityofvallejo.net

F. **ADOPT A RESOLUTION RATIFYING AND APPROVING THE IMPLEMENTATION OF A SIDE LETTER OF AGREEMENT BETWEEN THE CITY OF VALLEJO AND THE INTERNATIONAL BROTHERHOOD OF ELECTRICAL WORKERS, LOCAL 1245, AFL-CIO REGARDING ALTERNATIVE RETIREMENT HEALTH SAVINGS PROGRAMS FOR ELIGIBLE RETIREE ANNUITANTS**

Recommendation: Adopt a resolution to ratify and approve the implementation

of the Side Letter of Agreement ("SLA") between the City of Vallejo ("City") and the International Brotherhood of Electrical Workers, Local 1245, AFL-CIO (IBEW) regarding alternative retirement health savings programs for eligible retiree annuitants.

Contact: Jasmin Loi, Human Resources Director, (707) 648-4317
jasmin.loi@cityofvallejo.net

G. **SECOND READING AND ADOPTION OF AN ORDINANCE AMENDING SECTION 2.60.340 OF THE VALLEJO MUNICIPAL CODE REGARDING ADMINISTRATION OF OFFICIAL SALARY PLAN INVOLVING CHANGE IN PAY WHEN EMPLOYEES PROMOTE**

Recommendation: By motion, hold second reading and adopt an Ordinance amending Section 2.60.340 of the Vallejo Municipal Code to reflect that when an employee is promoted, the employee shall be placed at step one of the new salary range, or placed at that salary step which is a minimum five percent salary increase for the employee, whichever is the greater, not to exceed the top step of the new salary range.

Contact: Jasmin Loi, Human Resources Director (707) 648-4137
Jasmin.Loi@cityofvallejo.net

8. ACTION CALENDAR

NOTICE: Members of the public wishing to address the Council on Action Calendar Items are requested to submit a completed speaker card to the City Clerk. Each speaker is limited to five minutes pursuant to Vallejo Municipal Code Section 2.02.420.

A. **PUBLIC HEARING AND ADOPTION OF A RESOLUTION APPROVING THE 2015 URBAN WATER MANAGEMENT PLAN**

Recommendation: Hold the Public Hearing and take public input, and adopt a Resolution approving and adopting the 2015 Urban Water Management Plan (UWMP), which includes the Water Shortage Contingency Plan and Year 2020 Water Use Target, as prepared or as modified after the hearing as directed by the City Council.

Contact: David A. Kleinschmidt, Public Works Director, (707) 648-4301
David.Kleinschmidt@cityofvallejo.net

B. **ADOPT THREE RESOLUTIONS IMPLEMENTING THE RETIREE HEALTH SECURITY PLAN (RHSP) BENEFIT FOR THE IBEW BARGAINING UNIT: 1) AUTHORIZING THE CITY MANAGER TO EXECUTE A PARTICIPATION AGREEMENT ; 2) FIXING THE EMPLOYER'S CONTRIBUTION FOR IBEW EMPLOYEES AND ANNUITANTS UNDER THE PUBLIC EMPLOYEES' MEDICAL AND HOSPITAL CARE ACT (P.E.M.H.C.A) AND 3) MODIFYING**

THE MECHANISM TO PAY RETIREES A $300 PER MONTH MEDICAL BENEFIT.

Recommendation:

Adopt the following attached resolutions:

1. Authorizing the City Manager to execute a Participation Agreement between the City of Vallejo and the Operating Engineers Local Union No. 3 Public Employees and Miscellaneous Health and Welfare Trust ("Trust"), and all other necessary documents, to allow eligible members of the International Brotherhood of Electrical Workers, Local 1245, AFL-CIO ("IBEW") to participate in the Trust's Retiree Health Security Plan ("RHSP").
2. Under the Public Employees' Medical and Hospital Care Act ("PEMHCA") only with respect to members of the bargaining unit represented by IBEW, fixing the City's contribution for employees and the City's contribution for annuitants.
3. Modifying the mechanism to pay the $300 medical benefit to retired annuitants.

Contact: Jasmin Loi, Human Resources Director (707)648-4317
Jasmin.Loi@cityofvallejo.net

9. INFORMATION CALENDAR

10. CITY MANAGER'S REPORT

11. CITY ATTORNEY'S REPORT

A. **QUARTERLY REPORT FOR FISCAL YEAR 2016/2017, FIRST QUARTER (JULY 1 THROUGH SEPTEMBER 30, 2016)**

Recommendation: Informational item only. No action is required.

Contact: Claudia Quintana, City Attorney (707) 648-4545
Claudia.Quintana@cityofvallejo.net

12. COMMUNITY FORUM

Anyone wishing to address the Council on any matter for which another opportunity to speak is not provided on the agenda, and which is within the jurisdiction of the Council to resolve, is requested to submit a completed speaker card to the City Clerk. When called upon, each speaker should step to the podium, state his /her name, and address for the record. Each speaker is limited to three minutes pursuant to Vallejo Municipal Code Section 2.20.300.

13. REPORT OF THE PRESIDING OFFICER AND MEMBERS OF THE CITY COUNCIL

14. CLOSED SESSION

15. ADJOURNMENT

ADDITIONAL CITY INFORMATION
Members of the public can:
Like us on Facebook (www.facebook.com/cityofvallejo)
Sign up to receive City Communications via e-mail (www.cityofvallejo.net/living/connect)
Sign up to receive City updates and get connected with your neighbors on Nextdoor (www.nextdoor.com)

I, Dawn Abrahamson, City Clerk do hereby certify that I have caused a true copy of the above notice and agenda to be delivered to each of the members of the Vallejo City Council, at the time and in the manner prescribed by law and that this agenda was posted at City Hall, 555 Santa Clara Street, CA at 5:00 p.m., Thursday, October 20, 2016.

Dated: Thursday, October 20, 2016

Dawn G. Abrahamson, City Clerk

Appendix I. UWMP Adoption Resolution

This page intentionally left blank.

RESOLUTION NO. 16-115 N.C.

APPROVING THE 2015 URBAN WATER MANAGEMENT PLAN

WHEREAS, the City is an urban supplier providing water to over 37,000 customer connections and is therefore subject to the Urban Water Management Planning Act, California Water Code section 10610 et. seq., requiring all urban water suppliers providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet annually to update their Urban Water Management Plan (UWMP) at least every five years and to submit the UWMP to the California Department of Water Resources; and

WHEREAS, an UWMP is required for a water supplier to be eligible for state-administered grants, loans, and drought assistance; and

WHEREAS, the City is required to adopt a Water Shortage Contingency Plan as part of an Urban Water Management Plan; and

WHEREAS, the Water Conservation Act of 2009 required water suppliers to calculate and report 2015 and 2020 Water Use Targets in the UWMP, as well as assess progress toward meeting the 2020 target; and

WHEREAS, the City has updated its UWMP in compliance with state law and consistent with the 2015 UWMP Guidebook for Urban Water Suppliers issued by the California Department of Water Resources; and

WHEREAS, the UWMP was available for public review and comment beginning October 1, 2016; and

WHEREAS, a properly noticed public hearing was held on October 25, 2016, to receive oral or written statements regarding the UWMP; and

WHEREAS, the City Council finds that the adoption and implementation of the Urban Water Management Plan, including the Water Shortage Contingency Plan, and the 2015 and 2020 Water Use Targets, will meet the existing and projected future water demand through 2040 during normal years and during multiple dry years either through existing water supplies or through the implementation of the Water Shortage Contingency Plan.

NOW THEREFORE, BE IT RESOLVED that the City Council of the City of Vallejo hereby approves and adopts the City of Vallejo's 2015 Urban Water Management Plan, dated September 2016, as prepared or as modified after the hearing as directed by the City Council.

BE IT FURTHER RESOLVED that the City Manager or his designee is directed to submit the adopted plan to the California Department of Water Resources, the California State Library and to any city or county in which the City of Vallejo provides water within 30 days of the date of adoption.

Adopted by the City Council of the City of Vallejo at a regular meeting held on October 25, 2016 with the following vote.

AYES:	Mayor Davis, Vice Mayor Verder-Aliga, Councilmembers Dew-Costa, McConnell, Miessner, and Sampayan
NOES:	None
ABSENT:	Councilmember Malgapo
ABSTAIN:	None

OSBY DAVIS, MAYOR

ATTEST:

DAWN G. ABRAHAMSON, CITY CLERK

RMC water and environment

Prepared by: RMC Water and Environment

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