DRAFT | MAY 2021

CITY OF SAN JOSE

2020 URBAN WATER MANAGEMENT PLAN

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

PREPARED WITH ASSISTANCE FROM

Luhdorff & Scalmanini
Consulting Engineers

DRAFT - Contact the Office of the City Clerk at (408) 535-1260 or CityClerk@sanjoseca.gov for final document, or access online here: https://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water

EXECUTIVE SUMMARY TABLE OF CONTENTS

EXECUTIVE SUMMARY LIST OF TABLES

TABLE OF CONTENTS

APPENDICES

DRAFT - Contact the Office of the City Clerk at (408) 535-1260 or CityClerk@sanjoseca.gov for final document, or access online here: https://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS AND ACRONYMS

ABAG	Association of Bay Area Governments
Act	1983 California Urban Water Management Act
AF	acre-feet
AFY	acre-feet per year
BAIRWMP	Bay Area Integrated Regional Water Management Plan
BARDP	Bay Area Regional Desalination Project
BARR	Bay Area Regional Reliability Partnership
BAWSCA	Bay Area Water Supply and Conservation Agency
BMO	basin management objectives
BMP	best management practices
CIMIS	California Irrigation Management Information System
City	The City of San José
CSA	City Service Area
CUWCC	California Urban Water Conservation Council
CVP	Central Valley Project
CWC	California Water Code
CY	calendar year
DMM	Demand Management Measures
DWR	Department of Water Resources
ETo	evapotranspiration
FHRP	fish habitat restoration plan
FTE	Full time employee
ISA	Interim Supply Allocations
ISG	Individual Supply Guarantees
ISL	Interim Supply Limitation
IWIP	Integrated Water Infrastructure Program
LOS	Level of Service
MAF	million acre feet
MGD	million gallons per day
MOU	Memorandum of Understanding
NCDC	National Climatic Data Center
NSJ/Alviso	North San José/Alviso
RWS	Regional Water System
SBWR	South Bay Water Recycling
SCRWA	South County Regional Wastewater Authority
SFPUC	San Francisco Public Utilities Commission
SJMWS	San José Municipal Water System
SWP	State Water Project
SWRCB	State Water Resources Control Board

ABBREVIATIONS AND ACRONYMS

TDS	total dissolved solids
USDM	U.S. Drought Monitor
UWMP	Urban Water Management Plan
WMP	Water Master Plan
WRCC	Western Regional Climate Center
WSA	Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County
WSAP	Water Shortage Allocation Plan
WSCP	Water Shortage Contingency Plan
WSIP	Water System Improvement Program
WUE	Water Use Efficiency
WTP	Water Treatment Plant
TAZ	Transportation Analysis Zone

DEFINITIONS

Chapter 2, Part 2.6, Division 6 of the California Water Code provides definitions for the construction of Urban Water Management Plans. Appendix A contains the full text of the Urban Water Management Planning Act.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code

Executive Summary

The City of San José Municipal Water System (SJMWS) has prepared this 2020 Urban Water Management Plan (UWMP) update to comply with the legislative requirements of the UWMP Act and subsequent California Water Code requirements.

An UWMP is a water supply planning tool that evaluates the agency's water supply reliability in five-year increments over a 20-to-25-year planning horizon. Thus, the UWMP provides an assessment of projected water demands and water supplies. The following summary provides a simple description of the UWMP contents (Water Code § 10630.5.).

ES 1. Introduction

UWMPs are State-mandated water supply planning documents required by the Department of Water Resources (DWR) to be completed every five years by all urban water suppliers that have 3,000 or more service connections or supply 3,000 or more acre-feet of water per year (AFY). This UWMP meets the requirements of the DWR's *UWMP Guidebook 2020.*

ES 2. Plan Preparation

The SJMWS submitted its first SJMWS UWMP in 1985 in compliance with the California Water Code and submitted updates every five years including the last update for 2015. The SJMWS supplies water to four service areas within the City of San José (City) including: North San José/Alviso, Evergreen, Edenvale, and Coyote Valley. The SJMWS operates two permitted water systems and is required to prepare an UWMP as they provide water to over 3,000 service connections and supply more than 3,000 AFY.

To prepare for the 2020 UWMP update, the SJMWS coordinated with its two wholesale water suppliers, Valley Water and the San Francisco Public Utilities Commission (SFPUC), local agencies, and the general public.

ES 3. System Description

The City of San José is located in Santa Clara County, south of the San Francisco Bay. It was founded in 1777 and incorporated in 1850 and is the third largest city in California.

The SJMWS is one of three retail water suppliers in the City and only supplies water to a portion of the City. The SJMWS provides water to the four service areas listed in ES.2 above: North San José/Alviso, Evergreen, Edenvale, and Coyote Valley.

In 2020, the SJMWS provided water service to 26,094 metered connections with a population of over 130,000 which is approximately 12% of the City. The City estimated future population projections by an alternative method utilizing Transportation Analysis Zone (TAZ) boundaries rather than Census Tracts. The current and projected population for the SJMWS service area is shown in **Table ES-1.**

Table ES-1: Population – Current and Projected						
Population[1]	2020	2025	2030	2035	2040	2045
	132,644	150,368	168,092	194,983	217,685	222,661

Notes:
[1] Population is defined as the population served by SJMWS

The City's General Plan (Envision San José 2040) identified the addition of 120,000 dwelling units and 470,000 new jobs throughout the City limits. By 2045, within the SJMWS service area, jobs are projected to increase to 118,367 as shown in **Table ES-2**.

Table ES-2. Proposed Jobs within SJMWS						
Jobs	2020	2025	2030	2035	2040	2045
Jobs	90,001	94,006	95,626	100,473	111,355	118,367

ES 4. System Water Use

Actual water use for 2020 for the City is from the City's water meter readings and billing system, except for information on water loss. Billed water use is categorized by the City as: single-family, multi-family, commercial, industrial, institutional/governmental, and landscape irrigation. In 2020, water use for the SJMWS service area was 17,546 Acre-feet (AF) of potable water and 4,097 AF of recycled water.

For water demand projections through 2040, the City used the information from its 2015 UWMP which included information on water use, sorted by service area and user type, to identify use trends. That study included projected growth as included within the Envision San José 2040 General Plan. To be consistent with that General Plan, demands for the year 2040 are the same in this UWMP, except for an update to reflect a new conservation easement over a large portion of SJMWS' Coyote Valley area. The rate of demand growth between 2020 and 2045 was adjusted to match the growth rate of current population and jobs. By 2045, potable water use is projected to be 33,552 AF and recycled water use is projected to be 7,413.

Table ES-3 provides a summary of projected water use.

Table ES-3. Water Use – Projected						
	2020	2025	2030	2035	2040	2045
Potable Water	17,546	21,080	24,156	27,343	32,815	33,552
Recycled Water	4,097	4,776	5,456	6,279	7,368	7,413
TOTAL WATER USE	21,643	25,856	29,612	33,622	40,183	40,965

ES 5. SB X7-7 Baselines and Targets

SB X7-7 required water agencies to reduce water use by 20% by 2020. In the 2010 UWMP, the SJMWS established an average baseline of 181 gallons per capita per day (gpcd). A 20% reduction of the baseline water use gave a target for 2020 of 145 gpcd. The SJMWS's actual 2020 water usage was 118 gpcd, which meets the 20% by 2020 target.

ES 6. System Supplies

Supply sources received by SJMWS are generally considered to be consistent sources, except during times of prolonged drought during which supplies would be decreased based on reduced availability of wholesale supplies. Water supply sources for each of the City's four service areas include a combination of groundwater, purchased water from its two wholesale water suppliers, Valley Water and San Francisco Public Utilities Commission (SFPUC) and recycled water. The water supply source for each service area includes:

- **North San José/Alviso** – SFPUC and groundwater
- **Evergeen** – Valley Water and groundwater
- **Edenvale** – groundwater
- **Coyote Valley** – groundwater

Each of the SJMWS supply sources is discussed below.

- **SFPUC** – the SFPUC has a Water Supply Agreement from 2009 with its wholesale customers, which was amended and restated in 2018. This supply is mostly from the Hetch Hetchy reservoir, with additional local surface water.
- **Valley Water** – The SJMWS purchases treated surface water from Valley Water (previously called the Santa Clara Valley Water District) under a treated water contract. This supply include water from the Sacramento-San Joaquin Delta, and local surface water.
- **Groundwater** – Groundwater provides about half of the County's water supply for potable use, through pumping by retail water agencies or individual well owners. Valley Water acts as the Groundwater Sustainability Agency for Santa Clara County and prepared an alternative plan to a groundwater sustainability plan in 2016 to meet the requirements of the Sustainable Groundwater Management Act of 2014.
- **Recycled Water** – The City of San José operates the South Bay Water Recycling (SBWR) system and distributes disinfected treated wastewater for non-drinking water uses.

The SJMWS is a member of the Bay Area Water Supply and Conservation Agency (BAWSCA) which represents the interests of the 26 agencies in Alameda, Santa Clara, and San Mateo counties that purchase water from SFPUC. BAWSCA provides regional water reliability planning and conservation programming for the benefit of its member agencies.

Projected water supplies for the SJMWS through 2045 are shown in Table ES-4.

Table ES-4: Water Supplies – Projected

Water Supply	Additional Detail on Water Supply	2025 Reasonably Available Volume	2030 Reasonably Available Volume	2035 Reasonably Available Volume	2040 Reasonably Available Volume	2045 Reasonably Available Volume
Purchased or Imported Water	Potable Water – Valley Water and SFPUC	21,080	24,156	27,343	32,815	33,552
Recycled Water	SBWR	4,776	5,456	6,279	7,368	7,413
Total		25,856	29,612	33,622	40,183	40,965

ES 7. Water Supply Reliability Assessment

Water wholesalers are facing various challenges associated with imported water supplies, such as operational challenges and climate change. Both Valley Water and SFPUC are addressing future supply planning and are making efforts to address these challenges.

- The supply of imported water from SFPUC is constrained by hydrology, infrastructure, and institutional parameters. In general, the SFPUC supply depends on reservoir storage for water reliability. During dry periods, imported water through SFPUC is allocated using a water shortage allocation plan. Climate change may affect the reliability of this resource.

- Valley Water supplies include groundwater, local surface water, and imported water, as well as recycled and purified water. Their sources may be vulnerable to climate change, hydrologic variability, infrastructure failure, regulatory actions, or invasive species. In general, the reservoirs are sized for annual operations, and it can be challenging to capture all the available water.

SJMWS is able to meet water demands within its service area in normal water years through 2045. However, during a single dry year or multiple dry years, the SJMWS would experience a supply shortage and would need to implement conservation measures identified in its Water Shortage Contingency Plan (WSCP). Based on total potable water supplies, SJMWS may experience supply shortages between approximately 5-10% during a drought.

The UWMP includes a discussion on drought risk assessment which shows a comparison of water supplies and demands for a drought beginning in 2021 and lasting for five consecutive years. The analysis shows that it is necessary to implement the WSCP response actions to reduce water demands to offset a water supply shortfall.

ES 8. Water Shortage Contingency Planning

The SJMWS adopted their WSCP in 2015 as part of the 2015 UWMP. The 2020 UWMP discusses the SJMWS's planned response to various water shortage stages. In periods of water shortage, the SJMWS has shortage response actions to decrease customer water demands including demand reduction actions, operational changes, and mandatory restrictions.

ES 9. Demand Management Measures

SJMWS partners with Valley Water to encourage water conservation in the SJMWS service areas and the rest of the county. Valley Water provides demand management resources for public outreach and landscape programs targeted to improve irrigation efficiency.

The City has required water conservation measures that are always in effect to prohibit waste. The City also utilizes additional demand management measures including: metering, public education and outreach, programs to assess and manage distribution system real loss, a water conservation program, rebates and retrofits, and residential water surveys.

1. INTRODUCTION

Background

The 1983 California Urban Water Management Act (Act), also referred to as Assembly Bill 797, requires all urban water suppliers who directly serve 3,000 or more customers or who provide 3,000 or more-acre feet of water per year to prepare an Urban Water Management Plan (UWMP) every 5 years and submit the UWMP to the California Department of Water Resources (DWR). The purpose of the Act is to ensure that water suppliers plan for the long-term conservation and efficient use of the State's limited urban water supplies. The City of San José (City) operates the San José Municipal Water System (SJMWS), a retail water supplier that provides water service within the City. The City submitted the first SJMWS UWMP in 1985 in compliance with the Act. The City prepared updates to the SJMWS UWMP in 1990, 1995, 2000, 2005, 2010 and 2015. The Act requires that the SJMWS UWMP be updated and submitted every five years on or before July 1, in years ending in six and one. For the 2020 UWMP update, each urban water supplier must submit its UWMP by July 1, 2021. This SJMWS UWMP is referred to as the 2020 UWMP to retain consistency with the five-year submittal cycle.

In 2009, State officials determined that for California to continue to have enough water to support its growing population, it needs to reduce the amount of water each person uses per day (Per Capita Daily Consumption). This reduction of urban per capita use, commonly called the 20x2020 plan, was codified through SBX 7-7 (Steinberg) in November 2009 with the goal of reducing California's urban per capita water use by 20% by December 31, 2020, with an interim goal of reducing urban per capita water use by 10% by December 31, 2015. Each urban water supplier is also required to meet SBX 7-7 goals by specifically identifying the Base Daily per Capita Water Use (Baseline GPCD), *2020 Urban Water Use Target, and Compliance Daily per Capita Water Use. These terms are defined in Appendix P: Calculating Baselines and Targets of DWR's UWMP 2020 Guidebook (Guidebook). The document can be found online at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans*.

In adopting SBX7-7, the Legislature found and declared, as follows:

Section 10610.2.

(a) The Legislature finds and declares all of the following:

(1) The waters of the state are a limited and renewable resource subject to ever-increasing demands.

(2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.

(6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.

(7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.

(8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.

(9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.

(b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.

Section 10610.4.

The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

(c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

Changes to the California Urban Water Management Planning Act

Major amendments made to the California Urban Water Management Plan Act (Water Code Sections 10610, *et seq*.) and obligations of urban retail water suppliers since preparation of the City's 2015 UWMP include the following:

- ***Five Consecutive Dry-Year Water Reliability Assessment:*** Water suppliers are required to analyze the reliability of its water supplies to meet its water use over an extended drought period lasting five consecutive years

- ***Drought Risk Assessment:*** Water suppliers must assess water supply reliability over a five-year period from 2021 to 2025 that examines water supplies, water uses, and the resulting water supply reliability under a reasonable prediction for five consecutive dry years

- ***Seismic Risk:*** Water suppliers are required to specifically address seismic risk to various water system facilities and to have a mitigation plan

- ***Energy Use Information:*** Water suppliers are required to include readily obtainable information on estimated amounts of energy for their water supply uses

- ***Water Loss Reporting for Five Years:*** Water suppliers are required to include the past five years of water loss audit reports as part of their UWMP

- ***Water Shortage Contingency Plan (WSCP):*** Additional specific elements are now required to be included within each water supplier's WSCP

- ***Groundwater Supplies Coordination:*** In 2014, the Legislature enacted the Sustainable Groundwater Management Act to address groundwater conditions throughout California. Water suppliers' UWMPs are required to be consistent with Groundwater Sustainability Plans in areas where such plans have been completed by Groundwater Sustainability Agencies

- ***Lay Description:*** Water suppliers must include a lay description of the fundamental determinations of the UWMP, including key information regarding water supplies, water demands, water service reliability, and drought risk assessments.

The complete text of the Act is in Appendix A of the Department of Water Resources' *Urban Water Management Plan Guidebook 2020* (2020 Guidebook). Guidance for addressing the requirements of the Act is found in the Guidebook and Guidebook appendices. Retail water agencies are required to set targets and track progress toward decreasing daily per capita urban water use in their service area, which will assist the State in meeting its 20% reduction goal by 2020.

Urban Water Management Plans in Relation to Other Planning Efforts

This UWMP provides information on water management specific to the SJMWS service areas. However, water management happens in conjunction with other planning processes that integrate with the UWMP to accomplish urban planning. Some of these plans include: the City's General Plan (Envision San José 2040) (https://www.sanjoseca.gov/home/showpublisheddocument?id=22359), Santa Clara County's General Plan (https://www.sccgov.org/sites/dpd/OrdinancesCodes/GP/Pages/GP.aspx), Recycled Water Master Plan (http://www.sanjoseca.gov/DocumentCenter/View/40416), Integrated Regional Water Management Plan, Groundwater Management Plan (https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater/sustainable-groundwater-management), and others. Each of these planning efforts is greatly enhanced when it relies upon the information found in the other documents. The City utilized other planning processes and documents when developing this UWMP and shared this UWMP with other agencies.

The 2020 UWMP must include water deliveries and uses; water supply sources; efficient water uses; and demand management measures, including the nature and extent of each water demand management measure implemented over the past five years and planned to be implemented to achieve its water use targets. The DWR has the responsibility for the review and certification process of the UWMP pursuant to the Act. A current UWMP is required to be eligible for water management grants or loans administered by DWR, the State Water Resources Control Board, or the Delta Stewardship Council.

This document presents the City's UWMP for SJMWS, the retail water supplier operated by the City. This UWMP examines SJMWS' current and projected water supplies, demands, and sources; details SJMWS' water shortage contingency plan; presents a comparison of the 20x2020 water use target; and discusses the City's conservation efforts. The UWMP documents the City's planning efforts involved in ensuring a reliable, high quality supply of water to the public.

2020 UWMP Organization

The 2020 UWMP (this document) is an update to the City's 2015 Plan. The 2020 UWMP includes new elements in accordance with DWR's 2020 Guidebook and new elements as required by law. This UWMP utilizes the organization outlined in the 2020 Guidebook. Tables provided by DWR for each section are also added into this plan.

Each section in this UWMP follows the 2020 Guidebook outline. Required elements from the Act and subsequent amendments are presented in italicized text in the beginning of each section/sub-section. A checklist of the required elements addressed in this UWMP is provided in Appendix B. The checklist has been numbered and those numbers are included at the beginning of each section in italicized text.

The requirements for Section 1 are a description of the supplier's UWMP per Water Code Sections 10615 and 10630.5 (items are from the 2020 Guidebook – Appendix F, UWMP checklist):

#1. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. (*Water Code § 10615.)*

#2. Each Plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter. (Water Code § 10630.5.)

The required simple description is fully contained within the Executive Summary of this UWMP.

In response to the requirements of the Water Code, standardized tables provided by DWR for the reporting and submittal of UWMP data have been used and are included in Appendix C. Standardization of data tables allows for more efficient data management, expedited review of UWMPs by DWR, and easier compilation of data for regional and statewide planning.

2. PLAN PREPARATION

Water Code Sections 10620 and 10642 requires a description of the basis and approach for developing the UWMP (items are from the 2020 Guidebook: Appendix F, UWMP checklist):

#3. 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. 10620(b)

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

#5. 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. 10642

This section provides the basis and approach that the City used to update its UWMP. It also includes the data reporting periods (calendar vs. fiscal year) and units of measure used by the City to report water volumes. This section also includes the details of the coordination and outreach activities conducted by the City during the preparation of this UWMP.

Basis and Approach for Preparing the UWMP

As mentioned in Section 1, the City submitted the first SJMWS UWMP in 1985 and subsequently submitted updates to the SJMWS UWMP in 1990, 1995, 2000, 2005, 2010, and 2015. The California Water Code requires urban water suppliers with 3,000 or more service connections or supplying 3,000 or more AF of water per year are required to prepare an UWMP every five years. As an urban water supplier, the City is required to update and submit the 2020 SJMWS UWMP to DWR by July 1, 2021, as SJMWS served 26,094 municipal connections and supplied 17,546 AF in 2020 (**Table 2-1**).

Table 2-1. Public Water System

Public Water System Number	Public Water System Name	Number of Municipal Connections [1]	Volume of Water Supplied (AF)
CA4310019	City of San José – North San José/Alviso	2,203	4,767
CA4310020	City of San José – Evergreen/Edenvale/Coyote	23,891	12,779
TOTAL		26,094	17,546

Notes:
1 Active potable connections as of July 2020

The City utilized DWR's Guidebook and Senate Bill X 7-7 (SB X 7-7) to prepare this UWMP. Per the SB X 7-7 requirements, each urban water supplier is required to meet its goals, which are discussed later in this UWMP. This UWMP includes projections of the future demands and supplies for SJMWS, based on estimates of future growth in its two service areas: North San José/Alviso (NSJ/Alviso) and Evergreen/Edenvale/Coyote Valley (EVG/EDV/COY). The UWMP also discusses the steps the City has taken to promote water conservation and to ensure water is being used wisely.

The City utilized planning documents that have been prepared over the years by the City and other entities to inform this UMWP. The results of those documents have been incorporated, as applicable, into this UWMP. The list of the documents is provided for reference in Section 11.

The adopted 2020 SJMWS UWMP will be made available for public review on the City of San José website (http://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water/muni-water-documents-reports). Copies of the UWMP will be submitted to DWR, cities and counties within the service area, the State Library, and other applicable institutions within 30 days after approval of the UWMP by the City Council.

The City prepared this UWMP with the assistance of its consultant, Luhdorff and Scalmanini, Consulting Engineers (LSCE), as well as additional support on some report content from Todd Groundwater, as permitted by Section 10620 (e) of the Water Code.

Level of Planning and Compliance

The City is a retail water agency, preparing an individual UWMP as mentioned in **Table 2-2**.

Table 2-2. Plan Identification

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance
X	Individual UWMP		
		Water Supplier is also a member of a RUWMP	
		Water Supplier is also a member of a Regional Alliance	
	Regional Urban Water Management Plan (RUWMP)		

The City has reported its records of water use on a calendar year (CY) basis that runs from January 1 through December 31 (**Table 2-3**). In this document, projections of water demand and water supply over the course of a year are also reported on a calendar year basis.

Table 2-3. Supplier Identification	
Type of Supplier (select one or both)	
	Supplier is a wholesaler
X	Supplier is a retailer
Fiscal or Calendar Year (select one)	
X	UWMP Tables are in calendar years
	UWMP Tables are in fiscal years
Units of Measure Used in UWMP (select from drop down)	
Unit	Acre Feet (AF)

Agency Coordination and Outreach

Wholesale and Retail Coordination

The City has coordinated the preparation of the SJMWS UWMP with other appropriate agencies in the area, including its wholesalers, i.e., San Francisco Public Utilities Commission (SFPUC) and Valley Water (**Table 2-4**). Since the City relies upon the water supply from these wholesalers, the City has worked with the wholesalers and shared information for water supply and demand projections.

Table 2-4. Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Valley Water
San Francisco Public Utilities Commission

Coordination with Other Agencies and the Community

The City implemented two key elements - coordination and outreach - in developing this UWMP. The City initiated agency coordination with e-mailed notices to the two wholesale water agencies, SFPUC and Valley Water; water management agencies within and outside its service area including other retail water suppliers that contract with the wholesalers; the regional coordinator, Bay Area Water Supply and Conservation Agency (BAWSCA); the local wastewater agency; and the County of Santa Clara. The notifications informed these agencies of the City's intent and that the planning efforts were underway and welcomed any comments or other participation. Coordination with the wholesalers also included requested data for the preparation of the UWMP. Follow up with staff from the agencies was conducted. The goal of coordination was to encourage input and participation in its planning.

To maintain a level of plan consistency throughout the planning process and to collect relevant information from other agencies, the City attended and participated in meetings among other local retailers hosted by the wholesalers, Valley Water and SFPUC, and by BAWSCA. By consulting with the planning documents completed by the wholesalers and by BAWSCA, including water supply studies and the Groundwater Management Plan, the City is better able to plan for future water supplies and minimize the need to import water from other regions by creating a realistic, consistent source supply plan.

Notification to Agencies and Public

The City encouraged community participation in its urban water management planning efforts since the first plan was developed in 1985. Pursuant to the requirement in CWC Section 10642, the City notified the appropriate agencies that the 2020 UWMP was being reviewed and changes were being considered. The notification was sent 60 days prior to the UWMP public hearing. **Table 2-5** lists the agencies contacted during the preparation of this UWMP.

For consistency in planning and reporting, the City coordinated and solicited input from other City departments and other agencies responsible for developing related reports or planning documents such as Master Plans, General Plans, and Groundwater Management Plan.

Table 2-5. Coordination with Notified Agencies				
Coordinating Agencies	Sent Notification	Participated in UWMP Development	Commented on the Draft	Was Contacted for Assistance
Wholesale Water Supplier				
Valley Water	x			x
San Francisco Public Utilities Commission	x			x
Other Coordination				
Alameda County Water District	x			
City of Hayward	x			
City of Milpitas	x			
City of Mountain View	x			
City of Palo Alto	x			
City of Sunnyvale	x			
Purissima Hills Water District	x			
City of Burlingame	x			
City of Daly City	x			
Town of Hillsborough	x			
City of Menlo Park	x			
City of Millbrae	x			
City of Redwood City	x			
City of San Bruno	x			
City of Santa Clara	x			
City of Brisbane/Guadalupe Valley Municipal Improvement District	x			
Stanford University	x			
Coastside County Water District	x			
Mid-Peninsula Water District	x			
Westborough Water District	x			
North Coast County Water District	x			
California Water Service Company - Los Altos District	x			
Great Oaks Water Company	x			
San Jose Water Company	x			

DRAFT - Contact the Office of the City Clerk at (408) 535-1260 or CityClerk@sanjoseca.gov for final document, or access online here: https://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water

Table 2-5. Coordination with Notified Agencies				
Coordinating Agencies	Sent Notification	Participated in UWMP Development	Commented on the Draft	Was Contacted for Assistance
City of East Palo Alto	x			
City of Gilroy	x			
City of Morgan Hill	x			
County of Santa Clara	x			
Bay Area Water Supply & Conservation Agency	x			x
San José/Santa Clara Regional Wastewater Facility				x
Estero Municipal Improvement District/City of Foster City	x			
General Public	x			

Plan Adoption

This 2020 UWMP was presented at a public hearing immediately prior to adoption by the City Council on the same day. Additional information on UWMP adoption is included within Section 10.

3. SYSTEM DESCRIPTION

Water Code Section 10631 (a) requires the UWMP include a detailed description of the City's service area. (items are from the 2020 Guidebook: Appendix F, UWMP checklist):

#6. Describe the service area of the supplier (10631(a)).

#7. (Describe the service area) climate (10631(a)).

#8. Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045. (10631(a)).

#9. Describe other social, economic and demographic factors affecting the supplier's water management planning. (10631(a)).

#10. Indicate the current population of the service area. (10631(a)).

#11. Describe the land uses within the service area.

This section summarizes the City's water system service area and presents an analysis of available information on demographics, population growth projections, and climate data to provide a basis for estimating future water requirements.

Service Area General Description

History

The City was founded in 1777 and incorporated in 1850. The City consists of 179.2 square miles. It is the third largest city in California following Los Angeles and San Diego, and it is the 10th largest city in the US. It is located in Santa Clara County, south of the San Francisco Bay and is the center of a large and expanding metropolitan area commonly known as Silicon Valley. The City is bordered by the Santa Cruz Mountains on the west and the Diablo Mountain range on the east. The majority of the City lies in the bay flats with various hills subdividing the valley into smaller areas such as Almaden Valley, Blossom Valley, and Evergreen Valley.

As stated earlier in Section 1, SJMWS is one of the retail water suppliers in San José. SJMWS entered the water business in May 1961 with the purchase of the Evergreen Water Company. The Evergreen system served a 6,000-acre franchise area with several hundred customers. The City was concerned that a safe, adequate, and reliable supply of water be assured for new development within this and other areas newly annexed to the City. It was felt that the extension of City services and facilities to these newly annexed areas would greatly encourage their improvement and development. When the City of Alviso was annexed, SJMWS acquired the North San José and Alviso areas. The Edenvale service area was established in 1983, and the Coyote Valley service area was established in 1988.

Organization Structure

The City operates under the City Council/City Manager form of government, a system that combines the policy leadership of elected officials in the form of a City Council, with the managerial expertise of an appointed City Manager. The City Council is the legislative body that represents the community and is empowered by the City Charter to formulate citywide policy. The City Council is comprised of the Mayor, who is elected by the community at-large, and ten council members who are elected by districts. Under the City Charter, the Mayor is responsible for recommending policy, program, and budget priorities to the City Council, which in turn approves policy direction for the City. The City Charter limits the Mayor and Council members from serving more than two consecutive terms.

The City Manager is appointed by the City Council and serves as the chief administrative officer of the organization. The City Manager is responsible for administration of City affairs, day-to-day operations, and implementation of City Council policies.

The City is organized by City Service Areas (CSAs) that best reflect the way the organization delivers services to the residents. A CSA represents the policy-making level for strategic planning, policy setting, and investment decisions in the critical functions the City provides to the community. SJMWS operates under the CSA of Environmental and Utility Services.

Service Area Boundary and Land Use

SJMWS services four different areas of the city: North San José/Alviso, Evergreen, Edenvale, and Coyote Valley (**Figure 3-1**). The service area boundaries and land use for each service area is described below. As mentioned in Section 2, the City's service area is classified as two Public Water Systems:

- CA4310019 - consists of NSJ/Alviso area
- CA4310020 - consists of Evergreen/ Edenvale/ Coyote Valley (EVG/EDV/COY) areas

North San José/Alviso

The North San José/Alviso (NSJ/Alviso) Service Area consists of 5,600 acres and extends from Trimble Road on the south to the Alviso Slough on the north. The area is bordered on the west by the Guadalupe River and on the east by Coyote Creek. The land use is predominantly industrial, with some residential and commercial.

Evergreen

The Evergreen Service Area consists of approximately 10,750 acres and extends from Highway 101 on the west to the foothills of the Mount Diablo Range on the east. The area is bounded on the north by Tully Road and on the south by the City limits. The current land use in Evergreen is predominantly residential with some commercial.

Edenvale

The Edenvale Service Area consists of about 700 acres and the area is located east of Coyote Creek and south of Hellyer Avenue. Edenvale is zoned for industrial and commercial use.

Coyote Valley

The Coyote Valley Service Area consists of approximately 7,500 acres and the area is located west of Highway 101, south of Tulare Hill, and north of Palm Avenue. The area is currently largely undeveloped (not including 51% as permanent open space lands).

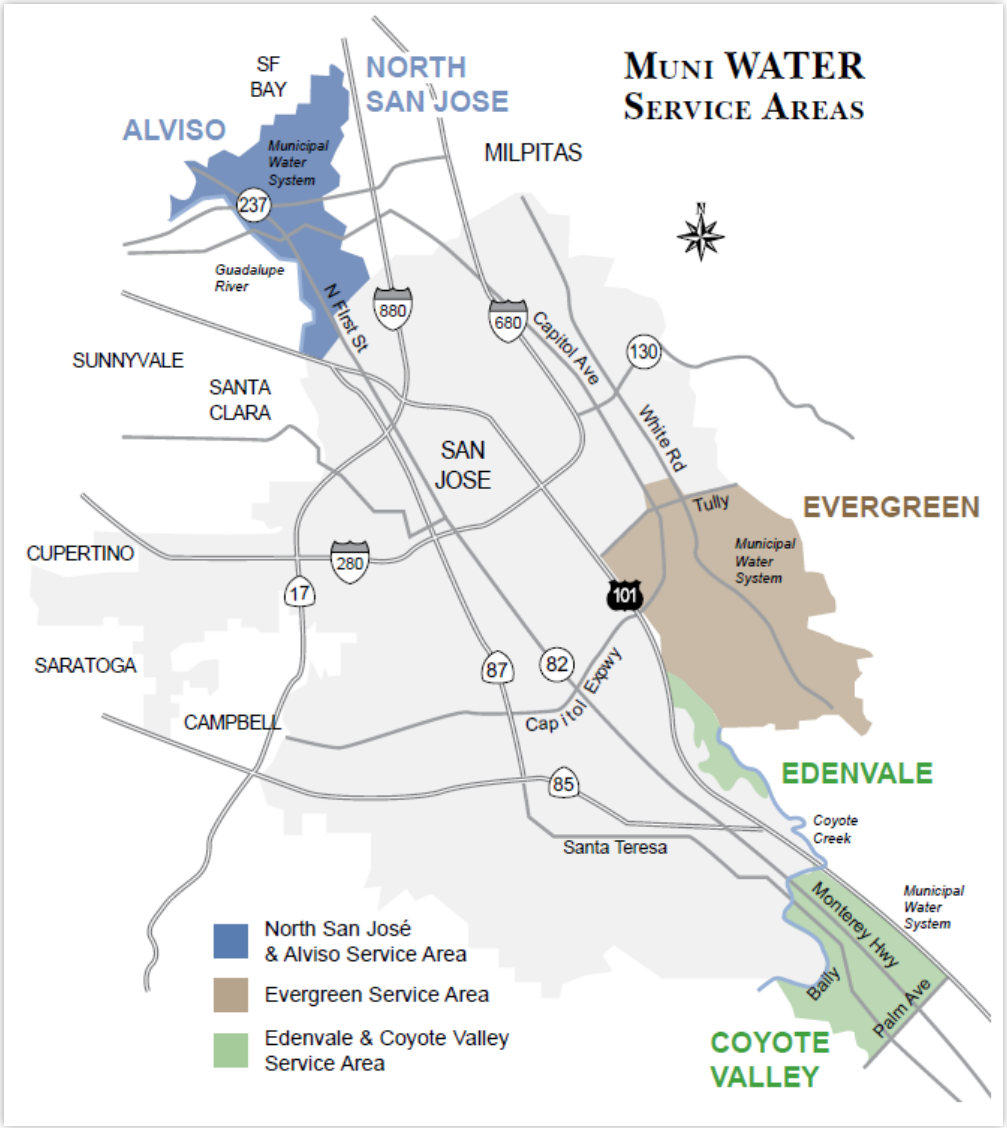

Figure 3-1 City of San José Municipal Water System Service Areas

DRAFT - Contact the Office of the City Clerk at (408) 535-1260 or CityClerk@sanjoseca.gov for final document, or access online here: https://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water

Service Area Climate

The City has a semiarid, Mediterranean climate, characterized by warm dry summers and cool winters. Irrigation water demand is often high in the dry summer months and in winter is partially fulfilled by rainfall. The City averages 300 days of sunshine annually, with temperatures varying from an average of 50 degrees Fahrenheit in January to an average of 70 degrees in July with a mean precipitation of 15.08 inches. In addition to seasonal variation, the area's climate is subject to periodic droughts that impact water supply. An extreme single-year drought occurred in 1976, when annual rainfall amounted to only 7.2 inches, or about one-half of the average rainfall. A severe, prolonged drought occurred in the late 1980s and early 1990s; over a four-year period, annual rainfall averaged only two-thirds of the annual average.

Recently, the area experienced a prolonged drought that lasted from 2012 to 2016. Water demands have been slowly rebounding since that drought. The City continues to promote efficient water use by encouraging residents and businesses to do their part to preserve the drinking water supply at all times. Water rules have remained in effect to promote efficient water use (http://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water/water-efficiency/water-use-rules-for-residents).

The Western Regional Climate Center (WRCC) web site (www.wrcc.dri.edu) maintained historical climate records for 123 years (1/1/1893 to 6/09/2016) for San José (Archived San José Station: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7821). **Table 3-1** presents the monthly average climate summary based on 123 years of historical data. The annual average minimum monthly temperature is approximately 48.9 degrees Fahrenheit while the annual average maximum monthly temperature is approximately 70.8 degrees Fahrenheit (**Figure 3-2). Figure 3-3** presents the monthly average precipitation based on 123 years of historical data (1/1/1893 to 1/09/2016). The rainy season is from November through April. Monthly precipitation during the winter months ranges from 1 to 3 inches. Annual total rainfall is about 14.6 inches. Low humidity occurs in the summer months from May through October. The moderately hot and dry weather during the summer months typically results in moderately high water demand.

Similar to the WRCC in the San José area, the California Irrigation Management Information System (CIMIS) (web site: https://cimis.water.ca.gov/Default.aspx; accessed on March 3, 2021) tracks and maintains records of evapotranspiration (ETo) for numerous weather stations located throughout the state. The monthly summary of ETo statistics used for this system are derived from the reference evapotranspiration zones map developed by DWR (https://cimis.water.ca.gov/App_Themes/images/etozonemap.jpg) ETo is a standard measurement of environmental parameters that affect the water use of plants. ETo is given in inches per day, month, or year and is an estimate of the ETo of a large field of well-watered, cool-season grass that is 4 to 7 inches tall. The monthly average ETo is presented in inches in **Table 3-1**. As the table indicates, a greater quantity of water evaporates from May through September, which may result in higher water demand than winter months.

Table 3-1. City of San José Monthly Average Climate Data				
Month	Standard Monthly Average ETo (inches)[1]	Average Total Rainfall[2] (inches)	Average Temperature (degrees Fahrenheit)[2]	
			Min	Max
January	1.24	2.88	40.9	58.1
February	1.68	2.69	43.5	61.9
March	3.41	2.31	45.2	65.4
April	4.80	1.20	46.9	69.5
May	6.20	0.44	50.5	74.2
June	6.90	0.10	53.8	79.0
July	7.44	0.02	56.1	81.8
August	6.51	0.07	56.2	81.3
September	5.10	0.19	55.2	80.4
October	3.41	0.76	51.3	74.3
November	1.80	1.50	45.3	65.2
December	0.93	2.41	41.5	58.5

Notes:
1 ETo Overview from https://cimis.water.ca.gov/App_Themes/images/etozonemap.jpg
2 Rainfall and temperature data from http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca7821 (Archived San José station)

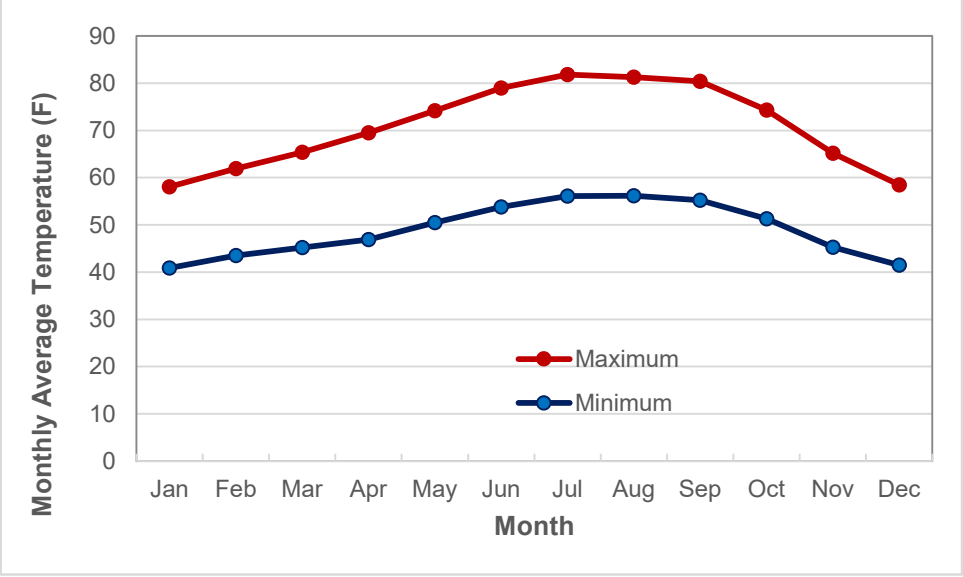

Figure 3-2. Maximum and Minimum Monthly Average Temperature in the City of San José based on Historical Data (1893-2016)

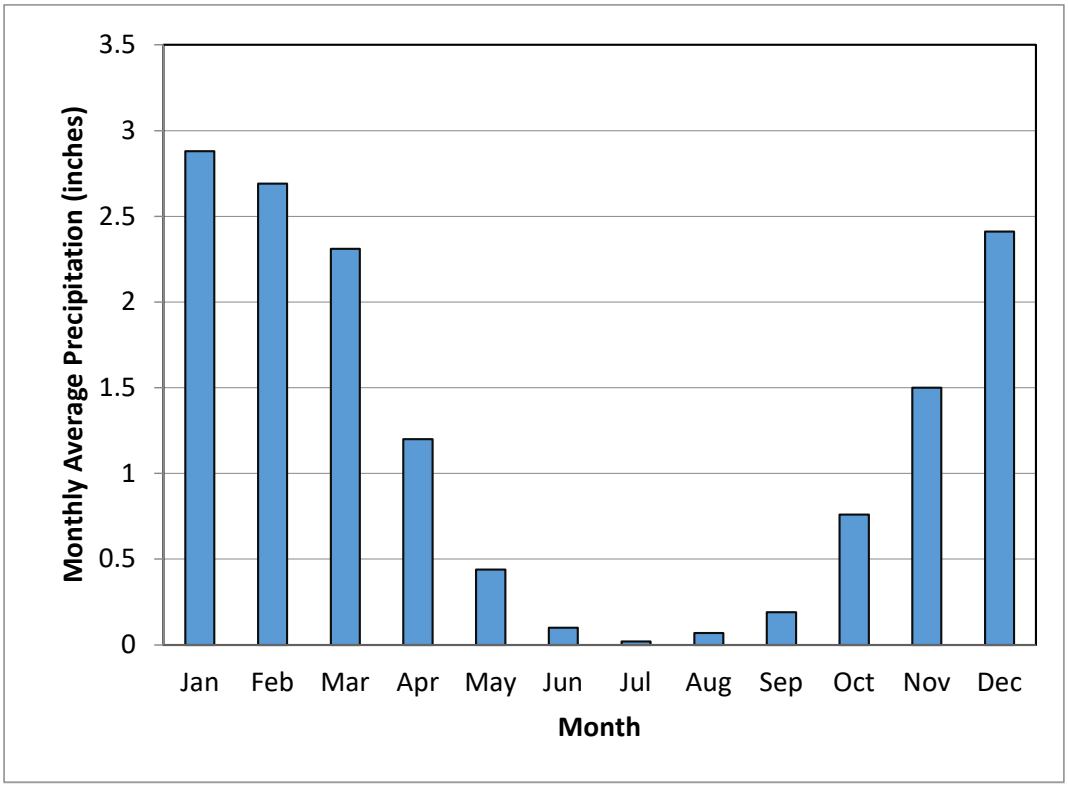

Figure 3-3. Monthly Average Precipitation in the City of San José (1893-2016)

Climate Change and Recent Drought Affecting Water Resources

In March 2016, the U.S. Drought Monitor (USDM) (https://droughtmonitor.unl.edu/Maps.aspx) classified the majority of California as being in extreme drought to exceptional drought (**Figure 3-4**). However, by March 2017, the USDM classified the majority of California as having no drought conditions (**Figure 3-5**). The trend reversed by December 2020, when the USDM classified the majority of California as being in severe drought to extreme drought **(Figure 3-6).**

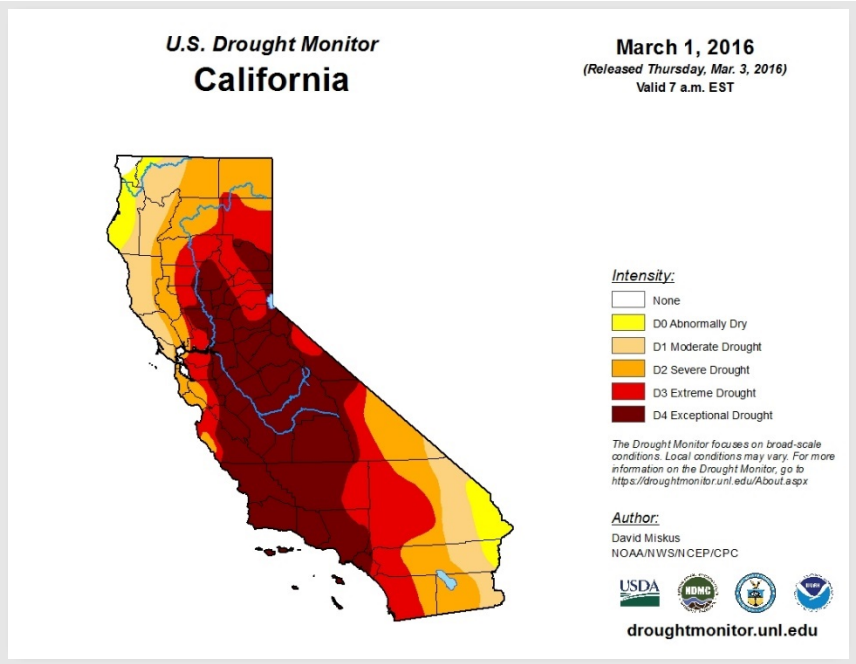

Figure 3-4. USDM drought map of California on March 1, 2016 (US Drought Monitor)

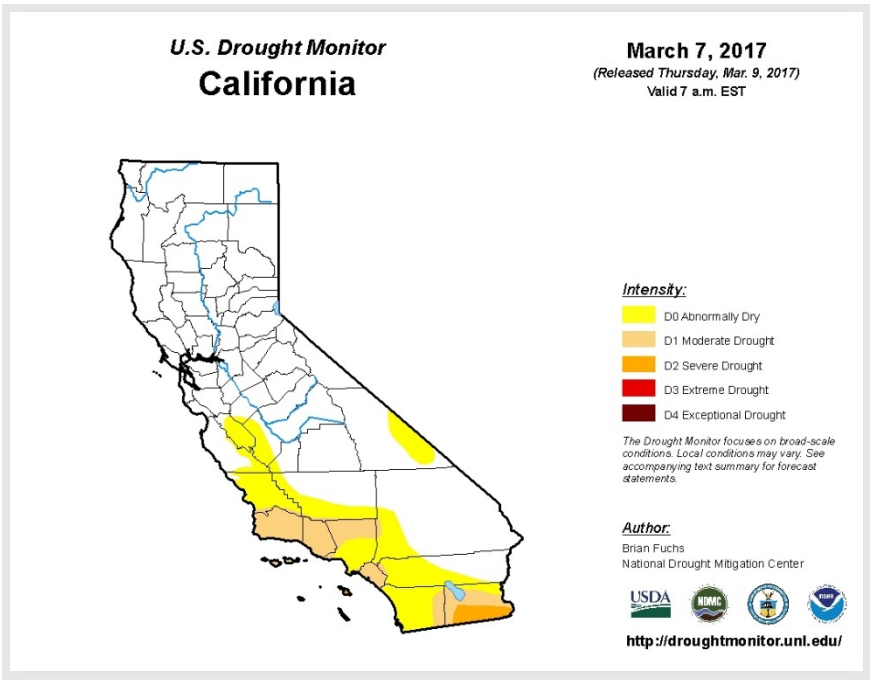

Figure 3-5 USDM drought map of California on March 7, 2017 (US Drought Monitor)

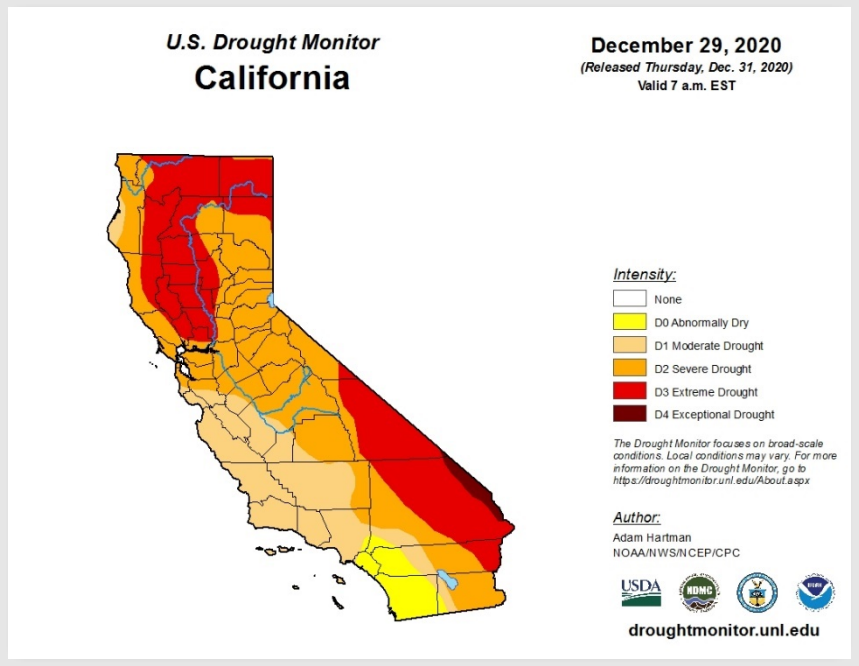

Figure 3-6 USDM drought map of California on December 29, 2020 (US Drought Monitor)

Reservoirs in California are largely fed by water from the mountains, especially the Sierra Nevada and southern Cascades which constitute more than 60% of California's water supply. As of December 31, 2020, 154 reservoirs in California held 18.0 million acre feet (MAF) of water, which was 82% of average and 47% of capacity (http://cdec.water.ca.gov/reportapp/javareports?name=STORAGEW.202012; accessed on March 15, 2021). The largest reservoir in California, Lake Shasta, was at around 2.31 MAF, which was 50% of capacity by the end of water year 2020 (https://www.usbr.gov/mp/cvo/reports.html; accessed on March 15, 2021).

The vast majority of water resources in the state are stored as snowpack and released into streams and reservoirs as spring snow melts. According to data obtained from the DWR (https://cdec.water.ca.gov/snowapp/sweq.action), the average December 31, 2020 statewide snowpack was 5.2-inch snow water equivalent or 51% of normal. On April 21, 2021, Governor Newsom declared a drought emergency in two California counties and on May 10, 2021, he expanded the emergency to 39 additional counties, for a total of 41 of the 58 counties. The emergency does not yet extend to Santa Clara County, but it is likely to do so. In anticipation of potentially worsening drought conditions, on April 27, 2021, Valley Water increased its call for voluntary water conservation to 25%.

The competing demand for water to meet agriculture, urban and environmental needs created significant challenges in managing the state's water supply, especially with respect to groundwater. In 2014, California Governor Jerry Brown signed the Sustainable Groundwater Management Act, a historical law to strengthen local management and monitoring of groundwater basins.

Service Area Population and Demographic

SJMWS currently provides water service to approximately 12% of the City or 130,000 residents, through 26,791 metered connections. Population growth in SJMWS service areas is expected to increase in the next 25 years by approximately 67%.

The City estimated the future population projections by an alternative method utilizing Transportation Analysis Zone (TAZ) boundaries instead of Census Tracts. This alternative method allows for collection of data that more closely reflects the boundaries of the water system. Current and future residential and commercial land use and development levels were identified based on aerial imagery and the City's General Plan zoning, and then percentages were identified of the proportion of each TAZ that is within the SJMWS service area. These TAZ percentages were then applied to population/job projections included within the Metropolitan Transportation Commission's Plan Bay Area 2040 report. This alternative method was approved by DWR staff through e-mail correspondence (July 2020). Population estimates can be updated in the future by applying the same percentages to future Plan Bay Area report data.

This alternative method was utilized since the City's service area boundaries do not coincide with Census tract boundaries, and there are many Census tracts that contain varying amounts of the service area. Proportioning out the Census tracts is difficult due to the overlap with different jurisdictional areas, including City land outside the City's service area, adjacent cities, and county land. Small changes in the percent of Census tract data used for estimating can lead to relatively large swings in total population estimates, particularly in one area of the City where significant development is planned.

The current and projected population for the SJMWS service area is shown in **Table 3-2**.

Table 3-2. (DWR Table 3-1): Current and Projected Population

Population[1]	2020	2025	2030	2035	2040	2045
	132,644	150,368	168,092	194,983	217,685	222,661

Notes:
1 Population is defined as the population served by SJMWS

Demographics

According to the US census website (https://www.census.gov/quickfacts/fact/table/sanjosecitycalifornia/PST045219, accessed on March 3, 2021), San José has an average household size of 3.12 people and a median household income of approximately $109,593.

Residential developments along with commercial and industrial uses represent the predominant land uses in the City of San José. Per the US census website for the period between 2015 to 2019, about 56% of residential units were occupied by owners with a median housing unit value of $864,600.

According to the US census website for the period between 2010 and 2019, the estimated total population in households in the City of San José increased by 69,267 or equivalent to 7.3%. As of the time this report was written, the 2020 Census data has not been released.

San José is the capital of Silicon Valley, where many high-tech companies are located. The area is also one of the world's leading centers for medical treatment and research. As the Capital of Silicon Valley, San José is recognized regionally, nationally, and internationally for its leadership in business innovation. The city continues to be the distribution and food-processing center for the surrounding rich agricultural region, which produces seasonal fruits and grapes. More than 50 wineries grace the valley. San José has healthy retail, transportation, and tourism industries and is the primary center for real estate and industrial development in the area.

The General Plan identifies the addition of 120,000 dwelling units and 470,000 new jobs throughout the City limits. The City utilized the same TAZ methodology described above to project jobs through 2045 for the SJMWS service area. By 2045 within the SJMWS service area, jobs will increase to 118,367 as shown in **Table 3-3**.

Table 3-3. Projected Jobs within SJMWS Service Area

Jobs	2020	2025	2030	2035	2040	2045
Jobs	90,001	94,006	95,626	100,473	111,355	118,367

4. SYSTEM WATER USE

A detailed description of the system's water use is required by Water Code Section 10631 (a) (items are from the 2020 Guidebook: Appendix F, UWMP checklist):

#12. Quantify past, current, and projected water use, identifying the uses among water use sectors. 10631(d)(1).

#13. Retail suppliers shall provide data to show the distribution loss standards were met. 10631 (d)(3)(C).

#14. In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws. 10631(d)(4)(A).

#15. Provide citations of codes, standards, ordinances, or plans used to make water use projections. 10631(d)(4)(B).

#16. Report the distribution system water loss for each of the 5 years preceding the plan update. 10631(d)(3)(A).

#17. Include projected water use needed for lower income housing projected in the service area of the supplier. 10631.1(a).

#18. Demands under climate change considerations must be included as part of the drought risk assessment. 10635(b).

As part of the UWMP, California regulation requires water suppliers to quantify past and current water use and to project the total water demand for the water system, including calculations of its baseline (base daily per capita) water use and interim and urban water use targets. Projections of future water demand allow a water supplier to analyze if future water supplies are adequate, as well as help the agency when sizing and staging future water facilities to meet water use targets. Projected water use, combined with population projections, provide the basis for estimating future water requirements.

This section provides the City's current water use and water use projections through the year 2045. In this section, the terms "water use" and "water demand" are used interchangeably. Recycled water is addressed comprehensively in Section 6, but a summary of recycled water demands is also included in this section.

Potable Water Demand

Table 4-1 provides the historical (actual) water use data for the City for various water use categories (e.g., single-family, multi-family, industrial, institutional, and others) for 2020. There is no other water use for purposes such as saline water intrusion barrier or groundwater recharge in the City's system besides those reported in **Table 4-1**. Note that the City did not use any raw water for meeting demands in 2020. Only potable water was used for all water use categories. The categorical water demands in the following tables were prepared from the City's water meter readings and a new billing database, with the exception of data associated with losses in the City's system. Water losses were calculated by subtracting actual metered use from the volume of water supplied. The 2020 actual potable water use data is shown in **Table 4-1**. The City does not sell any water to other agencies.

The actual water use in 2020 was lower than the projected water use for 2020 in the 2015 UWMP, likely attributed to slow rebound following the drought that ended in 2014. SJMWS and its wholesalers implement robust water conservation programs. Valley Water estimates that as of 2020, approximately 75,000 AF has been conserved throughout the County from programs they implement (compared to a 1992 baseline). The impact to SJMWS can be estimated based on the portion of the overall population served. Valley Water serves 1.9 million people county-wide, and SJMWS serves 132,644 people, or approximately seven percent of the county. Assuming the water savings is proportional, SJMWS's water demand is reduced by approximately 5,000 AF (7 percent of the 75,000 AF county-wide total).

Table 4-1. Demands for Potable Water - Actual

Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume[1]
Single Family		Drinking Water	7,920
Multi-Family		Drinking Water	2,694
Commercial		Drinking Water	1,040
Industrial		Drinking Water	1,837
Institutional/Governmental		Drinking Water	176
Landscape	Irrigation	Drinking Water	2,873
Losses[2]			1,006
TOTAL			17,546

Notes:
1 Demand projections include water savings estimated to result from adopted codes, standards, and ordinances.
2 For current and future water demand projections, water losses are reflected as the difference between water supplied and water consumed (based on customer billing records) to reflect the overall mass balance of supplies compared to demands. These values may differ slightly from water losses as calculated in AWWA Water Loss Audits.

Historical and Projected Water Uses by Sector

For the water demand projections through 2040, the City used the information developed and included within its 2015 UWMP. The prior analysis included an assessment of metered water usage data, consolidated by service area and user type, to identify and quantify seasonal trends in the use of potable water for the four service areas of the SJMWS. This assessment included projected growth as included within the Envision San José 2040 General Plan. To remain consistent with that General Plan, the demands associated with the year 2040 remain unchanged in this UWMP, with the exception of an update to reflect a new conservation easement over a large portion of SJMWS' service area within the Coyote Valley. The rate of demand growth between 2020 and 2045 was adjusted to correspond with the rate of growth reflected in current population and job growth projections. Demand growth between 2040 and 2045 was calculated using methodology used and described in the Environmental Impact Report for the Envision San José 2040 General Plan 4-Year (Appendix D: https://www.sanjoseca.gov/home/showpublisheddocument?id=22023, 2016).

Projected water use in the SJMWS service area is summarized by type of customer use in **Table 4-2**. SJMWS supplies water to meet the demands of the population within its service areas and does not supply the demands of any other city, local agencies, or the environment. Population and land use are primary factors that affect urban water demand. Requests for new service connections were growing at about 750 service connections per year in 2000; between 2000 and 2004 the demand for service connections grew at about 500 service connections per year; followed by a decreasing trend in new service connections. Approximately 450 service connections have been added from 2015 to 2020.

It is assumed that water demands will grow at the same rate as population and jobs (to reach buildout population/jobs in the service areas in the SJMWS), so the same percentage growth identified for each of the 5-year intervals was used to interpolate the demand growth for each of the 5-year intervals between 2020 and 2040.

The projected potable water demand for SJMWS, as shown in **Table 4-2**, indicates that SJMWS anticipates significant growth in demand from 2020 to 2045. The increase in demand is attributable to the proposed development as identified within the Envision San José 2040 General Plan. Some demand reduction as a result of conservation is included within the projected demands, particularly within the residential sectors. This projected growth in demand reflects an anticipated recovery from decreased demand between 2005 and 2010 due to the economic downturn, and between 2010 and 2015 due to the drought.

Table 4-2. Use Projections for Potable Water					
Use Type	Projected Water Use				
	2025	2030	2035	2040	2045
Single Family	9,107	10,293	10,917	12,338	12,621
Multi-Family	2,932	3,171	3,463	3,763	3,849
Commercial	1,642	1,920	2,436	3,376	3,446
Industrial	2,562	3,197	4,086	5,546	5,665
Institutional/Governmental	208	239	286	356	365
Landscape (irrigation)	3,401	3,930	4,586	5,584	5,712
Losses	1,228	1,406	1,569	1,852	1,894
TOTAL	21,080	24,156	27,343	32,815	33,552

Note: Demand projections include water savings estimated to result from adopted codes, standards, and ordinances.

SJMWS estimates the projected water loss (specifically, unaccounted-for water loss) to be approximately 5.8% of the projected water use. Water conservation practices implemented in recent years due to the drought that ended in 2014 have remained in place.

Total Water Demands

Table 4-3 presents the total water demands for the SJMWS. These water demands are calculated based on the summary of data presented in **Tables 4-1, 4-2 and 6-4**. **Table 6-4** discusses recycled water demands, which are further detailed in Section 6.

Table 4-3. Total Gross Water Use (Potable and Recycled)						
	2020	2025	2030	2035	2040	2045
Potable Water	17,546	21,080	24,156	27,343	32,815	33,552
Recycled Water	4,097	4,776	5,456	6,279	7,368	7,413
TOTAL WATER USE	21,643	25,856	29,612	33,622	40,183	40,965

Distribution System Water Losses

Water losses include “real losses” and unaccounted-for water loss. Real water losses are physical water losses from the water distribution system and storage facilities, up to the points of delivery to customers. Unaccounted-for water is defined as the difference between annual supply production and annual sales. Included in the unaccounted-for water are system losses (due to leaks, unauthorized consumption,

reservoir overflows, or inaccurate meters) and water used in system operations. Water lost during conveyance as well as unaccounted-for water must be incorporated when projecting total water demand.

As required by DWR, SJMWS used the most recent 12-months of data to calculate the unaccounted-for water losses using the American Water Works Association tool. Water audits for the past five years are shown in **Table 4-4**. Copies of the SJMWS' Water Loss Audit reports for the past five years are provided in Appendix E. Note that water losses in Appendix E are reported in million gallons per year and water losses in **Table 4-4** are reported in Acre-Feet per year. The water loss shown in **Table 4-4** differs from losses reported in **Tables 4-1** and **4-2** due to different methodologies.

Table 4-4. 12 Month Water Loss Audit Reporting

Reporting Period Start Date	Volume of Water Loss[1]
01/2016	2,244
01/2017	774
01/2018	925
01/2019	1,285
01/2020[2]	970

Notes:
1 Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.
2 Estimated water loss for the reporting period starting 01/2020, based on a draft, un-validated Water Loss Audit

The State is developing water loss performance standards which would propose that the City would need to maintain water losses to less than 23 gallons per connection per day, which is less than its 2017-2019 baseline period of 38 gallons per connection per day based on submitted water audit reports to the SWRCB. When the SWRCB adopts a final water loss performance standard, the City will track compliance progress based on the results of annual water audit data and water system management measures to ensure compliance with the City's water loss performance standard target. The State's preliminary water loss targets can be found here: https://www.waterboards.ca.gov/water_issues/programs/conservation_portal/docs/waterlosscontrol/2020/proposed_water_loss_standards_1dec2020.pdf.

To reduce water losses, the City continues to implement the following actions:

- Continue to promptly repair identified water system leaks.
- Monitor water consumption versus production so that potential water loss can be identified.
- Calibrate water meters periodically.
- Replace less accurate water meters.

Future Water Savings

The City's water savings plan includes the implementation of codes, ordinances, and land use plans, as presented in Section 8, to reduce overall water use. **Table 4-5** presents information on future water saving factors that have been included in water use projections.

Table 4-5. Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc. utilized in demand projections are found.	1
Are Lower Income Residential Demands Included in Projections?	Yes

Notes:
1 Refer to San José Municipal Code Chapter 15.10 and 15.11 (Appendix F)

Water Use for Lower Income Households

The City included water use for lower income households in projected water demands based on single-family and multi-family household estimates (**Table 4-3**). Note that a lower income household has an income below 80% of area median income, adjusted for family size. Per City's estimate, about 3% of total demands are attributable to use at low-income housing.

Climate Change

The effect of climate change on the City's water portfolio is described in Section 3 of the UWMP. Water resources in California are vulnerable to climate change impacts stemming from a modified hydrology that affects the frequency, intensity, and duration of extreme events, which, in turn, affect water quantity, quality, and infrastructure.

As climate change continues to impact the State's water resources, the City is continuously reviewing and updating new strategies and reevaluating existing policies, regulations, facilities, and funding priorities to mitigate the effects of climate change on water resources. Some of the mitigation and adaptation strategies under consideration include:

- Promoting recycled water use.
- Developing long-term plans that utilize climate change adaptation elements.
- Making use of groundwater resources.
- Promoting water use efficiency for urban, agricultural, commercial, and industrial water users.
- Increasing investments in infrastructure that promote adaptation strategies and mitigate the loss of existing supplies that are susceptible to climate change impacts.

5. SB X7-7 BASELINES, TARGETS AND 2020 COMPLIANCE

With the adoption of the Water Conservation Act of 2009, also known as SB X7-7, the State is required to set a goal of reducing urban water use by 20% by the year 2020. The Water Conservation Act requires that each retail urban water supplier must determine its baseline water use during its baseline period and water use target 2020, in order to achieve a statewide 20% reduction target. In this UWMP, water agencies must demonstrate compliance with their 2020 target.

Water Code requires that an evaluation of baseline (daily per capita) water use and 2020 urban water use target be performed for the City of San José's SJMWS. Water Code Section 10608 requires the following (items are from the 2020 Guidebook: Appendix F, UWMP checklist):

#19. 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. 10608.20(e).

#20. Retail suppliers shall meet their water use target by December 31, 2020. 10608.24(a).

#21. 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. 10608.24(d)(2).

#22. Retail suppliers' per capita daily water use reduction shall be no less than 5% of base daily per capita water use of the 5-year baseline. This does not apply if the supplier's base GPCD is at or below 100. 10608.22.

#23. Retail suppliers shall report on their progress in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form. 10608.4.

This section provides the City's calculation for the urban water use targets. The 2020 UWMP uses the 2020 urban water use target calculated in the 2015 UWMP without update. The 2015 UWMP utilized population estimates for the historic time period using the DWR population tool. Using this historic population data, the water use targets were established and are presented in this section. Projections of future water demand allow a water supplier to analyze if future water supplies are adequate, as well as help the agency plan future water facilities to meet water use targets. Projected water use, combined with population projections, provide the basis for estimating future water requirements.

Baseline and Targets

This section presents an analysis of historical water use data to establish the baseline, the 2020 water use target and compliance with the 2020 target. The City utilized the same baseline and targets established in the 2015 SJMWS UWMP. The standardized tables in the SB X7-7 Verification Form are included as Appendix G. These tables demonstrate the City's compliance with the Water Conservation Act of 2009.

Baseline Water Use

Baseline and target water use values were reported in the 2015 UWMP. As described in the 2015 UWMP, data from the 2000 Census was used for calculating SJMWS's year 2000 service area population. The City calculated the baseline population using 2000 and 2010 Census data. The City calculated its baseline water use in Gallons per Capita per Day (GPCD) and an urban water use target for 2020. The 2020 target is based on a 20% reduction from the base per capita water use. The baseline and target were developed based on past water use for the SJMWS.

In accordance with the Water Conservation Act, water suppliers must define a 10- or 15-year water use period for use as the basis for calculating the base daily per capita water use in GPCD. This value serves as the baseline for computing future water use target reductions. A 5-year base period is used to calculate the minimum water use reduction requirement.

For retailers that use recycled water, there is an option to use a base period of up to 15 years. The baseline determination is dependent on recycled water use during 2008 as a percentage of total retail water delivery. If the amount of recycled water delivered in 2008 is 10% or greater, the first baseline period is a continuous 10- to 15-year period. While the City is eligible for the 15-year period based on its 2008 recycled water use, connection data (and therefore population estimates) are not available for the earlier years. Based on the limited data, the City opted to use a 10-year base period.

Table 5-1 presents a summary of base period ranges for the SJMWS. The table also provides information on 2008 water deliveries. The 10-year baseline period used for estimating a GPCD value began on January 1, 1997 and ended on December 31, 2006. A 5-year base period starting from January 1, 2003, through December 31, 2007, was used to determine a minimum required reduction in water use by 2020.

Table 5-1. (SB X7-7 Table-1): Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	22,286	Acre Feet
	2008 total volume of delivered recycled water	4,253	Acre Feet
	2008 recycled water as a percent of total deliveries	19	Percent
	Number of years in baseline period	10	Years
	Year beginning baseline period range	1997	
	Year ending baseline period range	2006	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range	2007	

Population Estimates

In the 2015 UWMP, the City utilized DWR's population tool for calculating historical population for the non-census years using the 2000 and 2010 census data and electronic maps of the City's service areas. The tool used the number of service area connections to calculate the population for the non-census years. Total service connections data were used for calculating the persons per connection.

Utilizing the population data for the 1990, 2000, and 2010 census years and number of connections, the tool estimated the persons per connection for the non-census years. The City has data on the number of connections for the baseline years which was used by the tool to calculate the population in **Table 5-2**.

Table 5-2. (SB X7-7 Table 5): Gallons Per Capita Per Day (GPCD)

Baseline Year (From SBX7-7 Table 3)		Service Area Population (From SBX7-7 Table 3)	Annual Gross Water Use (From SBX7-7 Table 4)	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1997	85,967	18,853	196
Year 2	1998	88,290	17,176	174
Year 3	1999	94,642	19,013	179
Year 4	2000	97,840	20,153	184
Year 5	2001	100,714	20,691	183
Year 6	2002	103,442	20,927	181
Year 7	2003	105,346	21,351	181
Year 8	2004	107,516	22,429	186
Year 9	2005	109,949	21,117	171
Year 10	2006	110,896	21,686	175
10-15 Year Average Baseline GPCD				181
5 Year Baseline GPCD				
Year 1	2003	105,346	21,351	181
Year 2	2004	107,516	22,429	186
Year 3	2005	109,949	21,117	171
Year 4	2006	110,896	21,686	175
Year 5	2007	111,277	22,731	182
5 Year Average Baseline GPCD				179
2020 Compliance Year GPCD				
2020		132,644	17,546	118

Gross Water Use

The City's gross water use, which is a measure of water that entered the distribution system in a calendar year basis, is presented in **Table 5-2**. Recycled water use has been excluded from the gross water use. No adjustments for changes in distribution system storage and deliveries to other water suppliers that pass through the distribution system were needed. No water was delivered through the City's distribution system for these two purposes and therefore no adjustment for these uses were made.

Water Use Target Methodology

In the 2015 UWMP, the City of San José adopted Method 1 (20% reduction of baseline daily per capita use) to set its 2020 water use target for the SJMWS. This method uses 80% of the SJMWS baseline per capita water use to calculate the 2020 water use target.

Table 5-2 lists the historic population and per capita water use for the 10-year base period (1997 to 2006). The base per capita water use estimate (as an average over the 10 base years) is 181 GPCD. The 2020 target based on Method 1 is 0.8 x 181 GPCD = 145 GPCD.

Table 5-2 also presents historic population as well as gross and per capita water use for the 5-year period (2003 to 2007). The average base per capita water use estimated for the 5 base years is 179 GPCD. That data was used to determine whether the 2020 per capita water use target meets the legislation's minimum water reduction requirement per Section 10688.22.

Minimum Water Use Reduction Requirements

Since the 5-year baseline per capita water use is greater than 100 GPCD [per Section 10608.12 (b)(3)], the following calculations are used to determine whether the 2020 per capita water use target meets the legislation's minimum water use reduction requirement per Section 10608.22 for the SJMWS. Those calculations entail the following steps:

1. Calculated base daily per capita water use of 179 GPCD using a continuous 5-year period ending in December 31, 2007, as presented in **Table 5-2**.

2. Multiply the 179-GPCD value by 0.95. The resulting value is 170 GPCD. This is the maximum allowable GPCD target in 2020.

3. The 2020 target under Method 1 is 0.8 x 181 = 145 GPCD.

4. Because the Method 1 target of 145 GPCD is less than 170 GPCD, no further adjustment to the 2020 target is required.

5. The 2020 target is 145 GPCD.

Baseline and Target Summary

Table 5-3 summarizes the baseline water use, and the water use target.

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

Baseline Period	Start Year	End Year	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	1997	2006	181	145
5 Year	2003	2007	179	145
*Values are in Gallons per Capita per Day (GPCD)				

Actual water use for the SJMWS on a calendar year basis was calculated to determine whether SJMWS met its per capita 2020 water use target. **Table 5-4** demonstrates the SJMWS compliance with the 2020 water use target. Note that no adjustment to the compliance GPCD value was incorporated.

The City is currently using a revised population calculation method as detailed in Section 3 for calculation of the actual 2020 GPCD, which is different than the methodology that was used to calculate the baseline and target; however, the City would still be in compliance with the 2020 target if the 2020 population as calculated in the 2015 UWMP were used in the compliance calculation. Revised populations calculated with the new method are only available as far back as 2015, so the City is unable to re-calculate baseline and target.

Table 5-4. (DWR Table 5-2): 2020 Compliance

Actual 2020 GPCD*	Optional Adjustments to 2020 GPCD					2020 GPCD*	Targeted Reduction for 2020 Achieved?
	Extraordinary Events*	Economic Adjustment*	Weather Normalization*	TOTAL Adjustments*	Adjusted 2020 GPCD*		
118	0	0	0	0	118	118	Yes
*Values are in Gallons per Capita per Day (GPCD)							

6. WATER SUPPLIES

Water Code Sections 10631 (a) through (d) requires the Plan include a detailed evaluation of water supplies. The 2020 Guidebook (Appendix F, UWMP checklist) provides the following guidance:

#24. Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought. 10631(b)(1)

#25. Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, including changes in supply due to climate change. 10631(b)(1)

#26. When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies. 10631(b)(2)

#27. Describe measures taken to acquire and develop planned sources of water. 10631(b)(3)

#28. Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045. 10631(b)

#29. Indicate whether groundwater is an existing or planned source of water available to the supplier. 10631(b)

#30. 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. 10631(b)(1)

#31. Describe the groundwater basin. 10631(b)(2)

#32. 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. 10631(b)(2)

#33. 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. 10631(b)(2)

#34. 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. 10631(b)(3)

#35. Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped. 10631(b)(4)

#36. Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis. 10631(d)

#37. Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project. 10633(b)

#38. Describe the recycled water currently being used in the supplier's service area. 10633(c)

#39. Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses. 10633(d)

#40. 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. 10633(e)

#41. 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. 10633(f)

#42. Provide a plan for optimizing the use of recycled water in the supplier's service area. 10633(g)

#43. Describe desalinated water project opportunities for long-term supply. 10631(h)

#44. 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. 10633(a)

#45. 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 for a period of drought lasting 5 consecutive water years. 10631(f)

#46. The UWMP must include energy information, as stated in the code, that a supplier can readily obtain. 10631.2(a)

This section addresses water supply sources available to the SJMWS. It includes a description and quantification of each water source, including surface water, groundwater, recycled water, desalinated water, and water transfers and exchange opportunities. The section presents a complete water portfolio for the SJMWS. The following sections provide details in response to those requirements of this portion of the Water Code requirements.

Sources of Supply

SJMWS relies on four sources of supply: surface water from SFPUC, local and imported surface water from Valley Water, groundwater from the Santa Clara groundwater basin, and recycled water from the SBWR Program. As mentioned earlier, the City has four separate service areas, and each service area has its own unique water sources. **Table 6-1** provides a summary of the water source(s) for each service area.

Table 6-1. Water Source by SJMWS Service Area

Service Area	SFPUC	Valley Water	Groundwater	Recycled Water
North San José/Alviso	X		X	X
Evergreen		X	X	X
Edenvale			X	X
Coyote Valley			X	X

Supply sources received by SJMWS and discussed within this section are generally considered to be consistent sources, except during times of prolonged drought during which supplies would be decreased based on reduced availability of wholesale supplies, as discussed in this section. This section includes the amount of supply from each source that was purchased historically and is anticipated to be purchased in the future as determined by SJMWS.

North San José/Alviso

The service area is served through two service connections to SFPUC Bay Division Pipelines 3 and 4. The turnouts feed the demand of the distribution system and storage requirements of the two reservoirs. There are pump station facilities at each of the reservoirs. There is only one pressure zone in this service area. The pumping facilities are used to boost the pressure of water stored in the reservoirs from elevation head to system pressure. There are four groundwater wells with a combined pump capacity of approximately 6,500 gpm; two of the wells are currently permitted to be used under normal conditions to supply water, and the other two are available for emergency use purposes.

Evergreen

Three turnouts are connected to Valley Water's East Pipeline. There are five different pressure zones with 13 storage tanks and 13 pump stations. There are four groundwater wells with a combined pump capacity of approximately 6,000 gpm.

Edenvale

There are three groundwater wells, with a combined pump capacity of approximately 2,700 gpm, that pump groundwater to the distribution system and a storage tank.

Coyote Valley

There are three groundwater wells, with a combined pump capacity of approximately 3,500 gpm, that pump groundwater to the distribution system and a storage tank.

Purchased or Imported Water

SFPUC – Wholesaler

The NSJ/Alviso service area receives water from the City and County of San Francisco's Regional Water System (RWS), which is operated by the SFPUC. This supply is predominantly from the Sierra Nevada mountain range delivered through the Hetch Hetchy aqueducts, but also includes treated water produced by the SFPUC from its local watersheds and facilities in Alameda and San Mateo counties. The SFPUC supply is primarily unfiltered Hetch Hetchy water with a blend of filtered Sunol Valley water. There are two turnout connections from SFPUC's Bay Division Pipelines No. 3 and No. 4 to the NSJ/Alviso service area.

The amount of imported water available to SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, SFPUC is very dependent on reservoir storage to firm-up its water supplies.

SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff.

The business relationship between the SFPUC and its wholesale customers is largely defined by the "Water Supply Agreement between the City and County of San Francisco and Wholesale Customers in Alameda County, San Mateo County and Santa Clara County" (WSA) entered into in July 2009, and amended and restated in 2018. This 25-year WSA replaced the 1984 Settlement Agreement and Master Water Sales Contract and will expire on June 30, 2034, unless extended by two additional five-year option terms. The WSA addresses the rate-making methodology used by the SFPUC in setting wholesale water rates for its customers in addition to addressing water supply and water shortages for the RWS. The WSA serves as the master agreement and it provides 184 million gallons per day (MGD) Supply Assurance to all the permanent SFPUC wholesale customers on an annual average basis. Under the WSA, the City has a temporary interruptible supply. However, the SFPUC must provide 10 years notice to interrupt the supply, and seek out additional sources of water.

The WSA is supplemented by an individual Water Sales Contract between SFPUC and each individual retailer, also entered into in July 2009. The individual Water Sales Contract indicates any specific conditions between SFPUC and the retailer. The Water Sales Contract between SFPUC and San José identifies a temporary, interruptible allocation of 4.5 MGD to San José. The WSA also contains a Water Shortage Allocation Plan (WSAP) between the SFPUC and its wholesale customers, which describes the method for allocating water during supply shortages. The Tier 1 Plan allocates water from the RWS

between San Francisco retail and wholesale customers during system-wide shortages of 20% or less. The Tier One Plan was amended in the 2018 WSA to ensure that retail customers also conserve during drought conditions. The Tier 2 Plan allocates the collective wholesale customer share among the wholesale customers.

BAWSCA

SJMWS is a member of the Bay Area Water Supply and Conservation Agency (BAWSCA). BAWSCA was created on May 27, 2003 to represent the interests of the 26 agencies that include cities, water districts, a water company, and a university, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the RWS. The BAWSCA agencies are collectively referred to as the Wholesale Customers.

BAWSCA provides regional water reliability planning and conservation programming for the benefit of its member agencies. Collectively, the BAWSCA member agencies deliver water to over 1.8 million residents and nearly 40,000 commercial, industrial and institutional accounts in Alameda, San Mateo and Santa Clara Counties.

BAWSCA also represents the collective interests of these wholesale water customers on all significant technical, financial, and policy matters related to the operation and improvement of the RWS. BAWSCA has the authority to coordinate water conservation, supply, and recycling activities for its agencies; acquire water and make it available to other agencies on a wholesale basis; finance projects, including improvements to the regional water system; and build facilities jointly with other local public agencies or on its own to carry out the agency's purposes.

BAWSCA's Long-Term Reliable Water Supply Strategy (Strategy), completed in February 2015, quantified the water supply reliability needs of the BAWSCA member agencies through 2040, identified the water supply management projects and/or programs (projects) that could be developed to meet those needs, and prepared an implementation plan for the Strategy's recommendations.

When the 2015 Demand Study concluded it was determined that while there is no longer a regional normal year supply shortfall, there was a regional drought year supply shortfall of up to 43 MGD. In addition, key findings from the Strategy's project evaluation analysis included:

- Water transfers represent a high priority element of the Strategy.
- Desalination potentially provides substantial yield, but its high effective costs and intensive permitting requirements make it a less attractive drought year supply alternative.
- Other potential regional projects provide tangible, though limited, benefit in reducing dry-year shortfalls given the small average yields in drought years.

Since 2015, BAWSCA has completed a comprehensive update of demand projections and engaged in significant efforts to improve regional reliability and reduce the dry-year water supply shortfall.

Water Transfers

BAWSCA successfully facilitated two transfers of portions of Individual Supply Guarantee (ISG) between BAWSCA agencies in 2017 and 2018. Such transfers benefit all BAWSCA agencies by maximizing use of existing supplies. BAWSCA is currently working on an amendment to the Water Supply Agreement between the SFPUC and BAWSCA agencies to establish a mechanism by which member agencies that have an ISG may participate in expedited transfers of a portion of ISG and a portion of a Minimum Annual Purchase Requirement. In 2019, BAWSCA participated in a pilot water transfer that, while ultimately unsuccessful, surfaced important lessons learned and produced interagency agreements that will serve as a foundation for future transfers. BAWSCA is currently engaged in the Bay Area Regional Reliability (BARR) Partnership, a partnership among eight Bay Area water utilities (including the SFPUC, Alameda County Water District, BAWSCA, Contra Costa Water District, Santa Clara Valley Water District) to identify opportunities to move water across the region as efficiently as possible, particularly during times of drought and emergencies.

Regional Projects

Since 2015, BAWSCA has coordinated with local and State agencies on regional projects with potential dry-year water supply benefits for BAWSCA's agencies. These efforts include storage projects, indirect/direct water reuse projects, and studies to evaluate the capacity and potential for various conveyance systems to bring new supplies to the region.

BAWSCA continues to implement the Strategy recommendations in coordination with BAWSCA member agencies. Strategy implementation will be adaptively managed to account for changing conditions and to ensure that the goals of the Strategy are met in an efficient and cost-effective manner. On an annual basis, BAWSCA will reevaluate Strategy recommendations and results in conjunction with development of the BAWSCA's FY 2021-22 Work Plan. In this way, actions can be modified to accommodate changing conditions and new developments.

Valley Water – Wholesaler

SJMWS purchases treated surface water from Valley Water (previously called the Santa Clara Valley Water District) under a treated water contract. Valley Water contracts with the US Bureau of Reclamation and the State to receive imported CVP water and SWP water. Valley Water also operates its conjunctive use system of surface water from local watersheds and groundwater. Valley Water's water supply system is comprised of local reservoirs, the groundwater subbasins, groundwater recharge facilities, treatment plants, a treated water transmission system, imported supplies, and raw water conveyance facilities. Valley Water supplies water to local retail water agencies which in turn provide it to their retail customers in Santa Clara County. Valley Water has an active conjunctive use water management program to optimize the use of groundwater and surface water, and to prevent groundwater overdraft and land subsidence. Both groundwater and imported water are sold to retailers.

Valley Water's imported water is conveyed from the Sacramento-San Joaquin Delta to Santa Clara County through two main conveyance facilities: the South Bay Aqueduct, which carries water from the SWP, and

the Santa Clara Conduit and Pacheco Conduit, which bring water from the federal CVP. Local water captured in Anderson and Calero reservoirs and imported water are treated at Valley Water's Santa Teresa, Rinconada, and Penitencia Water Treatment Plants.

Local runoff is captured in local reservoirs for recharge into the groundwater subbasins or treatment at one of Valley Water's Water Treatment Plants (WTPs). The total storage capacity of these surface reservoirs is about 169,000 acre-feet (AF). The Rinconada WTP was constructed in 1967 and can sustain a maximum flow rate of 75 MGD. Upgrades are in the planning stage to increase production at Rinconada to 100 MGD. The Penitencia WTP was constructed in 1974 and can sustain a maximum flow rate of 42 MGD. The Santa Teresa WTP was constructed in 1989 and can sustain a maximum flow rate of 100 MGD.

Treated water pipelines that convey water from the treatment plants to the retail water agencies include: the West Pipeline, the Campbell Distributary, the Santa Clara Distributary, the Mountain View Distributary and the Sunnyvale Distributary from Rinconada WTP; the Snell Pipeline and Graystone Pipeline from Santa Teresa WTP; and the East Pipeline, Parallel East Pipeline, and Milpitas Pipeline, which can be fed from the Santa Teresa WTP or from Penitencia WTP.

In 1972, Valley Water entered into the first contract to supply SJMWS with treated potable water. Another contract initiated in 1981 remains in effect until 2051. Two amendments have been executed since 1981 with the most recent one adopted in 1994. The contract established a schedule of water deliveries where SJMWS submits a projected request for a five-year period to facilitate planning and Valley Water contracts annually for minimum deliveries, with restrictions based on peak demand and annual distribution.

SJMWS receives treated water from Valley Water's Santa Teresa and Penitencia WTPs through the East and Snell Pipelines. There are three turnout connections from the Valley Water's East Pipeline to the City's Evergreen service area named: Aborn, Norwood, and Silver Creek.

Groundwater

Groundwater Basin Description

Groundwater provides about half of the County's water supply for potable use, through pumping by retail water agencies or individual well owners. The groundwater basin in Santa Clara County is not adjudicated and has not been identified or projected to be in overdraft by DWR. The quality, supply, and management of the local groundwater basin is monitored and managed by Valley Water who acts as the Groundwater Sustainability Agency for Santa Clara. In 2016, Valley Water completed and submitted an Alternative plan to DWR in lieu of a Groundwater Sustainability Plan to meet the requirements of the Sustainable Groundwater Management Act of 2014. In 2017, the Alternative Plan was approved by DWR, and is available at Valley Water's website (https://www.valleywater.org/your-water/where-your-water-comes/groundwater/sustainable) or at DWR's SGMA portal (https://sgma.water.ca.gov/portal/alternative/print/18); the report's Executive Summary is included in Appendix H.

Valley Water has about 144,000 AFY of managed recharge capacity, including more than 90 miles of in-stream recharge and 102 off-stream recharge ponds. Runoff is captured in Valley Water's reservoirs and released into both in-stream and off-stream recharge ponds for percolation into the groundwater basin. In addition, imported water is delivered by the raw water conveyance system to streams and ponds for groundwater recharge.

The groundwater system in Santa Clara County performs multiple functions: treatment, transmission, and storage. Water enters the groundwater subbasins through recharge areas generally located at or near the subbasins' perimeter and is transmitted into the deeper confined aquifer of the central part of the valley. In the process, the water is filtered and becomes suitable for drinking. Eventually the groundwater reaches pumping zones, where it is extracted for municipal, industrial, and agricultural uses. The groundwater basin has vast storage capacity, enabling supplies to be carried over from wet years to dry years.

Valley Water's Groundwater Management Plan identifies two sustainability goals related to groundwater supply: reliability and protection (Valley Water, 2021):

- Groundwater supplies are managed to optimize water supply reliability and minimize land subsidence.
- Groundwater is protected from existing and potential contamination, including saltwater intrusion.

These sustainability goals describe the overall objectives of Valley Water's groundwater management program. The basin management strategies are the methods that will be used to meet the sustainability goals. Many of these strategies have overlapping benefits to groundwater resources, acting to improve water supply reliability, minimize subsidence, and protect or improve groundwater quality. The strategies are listed below.

1. Manage groundwater in conjunction with surface water through direct and in-lieu recharge programs.
2. Implement programs to protect or promote groundwater quality.
3. Maintain and develop adequate groundwater models and monitoring systems.
4. Work with regulatory and land use agencies to protect recharge areas, promote natural recharge, and prevent groundwater contamination.

Valley Water and local partners have implemented numerous programs to protect groundwater resources, and Valley Water has established comprehensive monitoring programs related to groundwater levels, land subsidence, groundwater quality, recharge water quality, and surface water flow. In addition, Valley Water has developed the following outcome measures to gauge performance in meeting the basin sustainability goals:

1. Projected end of year groundwater storage is greater than 278,000 AF in the Santa Clara Plain, 5,000 AF in Coyote Valley, and 17,000 AF in the Llagas Subbasin.
2. Groundwater levels are above subsidence thresholds at the subsidence index wells.

3. At least 95% of countywide water supply wells meet primary drinking water standards and at least 90% of South County wells meet Basin Plan agricultural objectives.
4. At least 90% of wells have stable or decreasing concentrations of nitrate, chloride, and total dissolved solids.

Valley Water will update its Groundwater Management Plan in 2021 and submit it to DWR by January 2022 to meet SGMA requirements for five-year updates. Valley Water's groundwater monitoring reports are available at: https://www.valleywater.org/your-water/where-your-water-comes-from/groundwater/groundwater-monitoring.

Groundwater Management and Overdraft Conditions

Within Santa Clara County, Valley Water manages two groundwater subbasins that transmit, filter, and store water: the Santa Clara Subbasin (DWR Subbasin 2-900.02) and the Llagas Subbasin (DWR Subbasin 3-003.01), which cover a combined surface area of approximately 385 square miles. Neither subbasin has been identified by DWR as being critically overdrafted. In its water supply planning, Valley Water frequently splits the Santa Clara Subbasin into two subareas: the Santa Clara Plain and the Coyote Valley. SJMWS draws groundwater from the Santa Clara Subbasin. Wells in the Coyote Valley service area draw from the Coyote Valley subarea while the other three service areas draw from the Santa Clara Plain subarea. The estimated operational storage capacity of the groundwater subbasins is up to 548,000 AF. Valley Water's managed recharge capacity is up to about 144,000 AFY. Although part of the same subbasin, these two subareas have different groundwater management challenges and opportunities and are in different groundwater charge zones.

Groundwater conditions throughout the county are sustainable, with managed and in-lieu recharge programs maintaining adequate storage to meet annual water supply needs and provide a buffer against drought or other shortages. Although groundwater levels declined during the recent (2012-2016) statewide drought, groundwater levels in the Santa Clara and Llagas subbasins quickly recovered after the drought due largely to Valley Water's proactive response and comprehensive water management activities. Valley Water monitors water levels and water quality at wells throughout the county. In addition, it evaluates data from local water suppliers to assess regional groundwater quality and identify potential threats so they can be appropriately addressed. Valley Water also monitors the quality of water used for groundwater recharge to ensure groundwater resources are protected.

These subbasins contain young alluvial fill formation and the older Santa Clara Formation. Both formations are similar in character and consist of gravel, sandy gravel, gravel and clay, sand, and silt and clay. The coarser materials are usually deposited along the elevated lateral edges of the subbasins, while the flat subbasin interiors are predominantly thick silt and clay sections inter-bedded with smaller beds of clean sand and gravel. A general discussion of each groundwater subarea is provided below.

Santa Clara Subbasin - Santa Clara Plain

The Santa Clara Plain is part of the Santa Clara Subbasin, located in a structural trough that is bounded by the Santa Cruz Mountains to the west and the Diablo Range to the east. The Plain, which is approximately 22 miles long, narrows from a width of 15 miles near the County's northern boundary to about half a mile wide at the Coyote Narrows, where the two ranges nearly converge. The Plain has a surface area of 225 square miles and is approximately 15 square miles smaller than the Santa Clara Subbasin, since it does not include the Coyote Valley portion of the Santa Clara Subbasin. Although hydraulically connected, Valley Water refers to the Coyote Valley separately (see description below) since it is in a different groundwater charge zone than the Santa Clara Plain and has fewer water supply options than the Santa Clara Plain. The Plain underlies the northerly portion of the Santa Clara County and includes the majority of the streams and recharge facilities operated by Valley Water.

Santa Clara Subbasin - Coyote Valley

The Coyote Valley portion of the Santa Clara Subbasin is an alluvial-filled basin hydraulically connected to the Santa Clara Plain to the north. The Coyote Valley extends from Metcalf Road south to Cochrane Road, where it joins the Llagas Subbasin at a groundwater divide. The Coyote Valley is approximately seven miles long and ranges in width from a half mile at the Coyote Narrows to three miles, with a surface area of approximately 15 square miles. Valley Water estimates the operational storage capacity of the Coyote Valley to be between 23,000 and 33,000 AF.

Llagas Subbasin

The Llagas Subbasin extends from the groundwater divide at Cochrane Road, near Morgan Hill, to the Pajaro River (the Santa Clara-San Benito County line) and is bounded by the Diablo and Coast Ranges. The Llagas Subbasin is approximately 15 miles long, three miles wide along its northern boundary, and six miles wide along the Pajaro River. DWR Bulletin 118, Update 2003 identifies this subbasin as Basin 3-3.01 and includes it as part of the Gilroy Hollister Groundwater Basin. The depth of alluvial fill and the underlying Santa Clara Formation varies from about 500 feet at the northern divide to greater than 1,000 feet at its south end. Valley Water estimates the operational storage capacity of the Llagas Subbasin to be between 150,000 and 165,000 AF.

Historical Groundwater Pumping

SJMWS draws groundwater from the Santa Clara Subbasin (**Figure 6-1**). Groundwater is a source of supplemental water supply for SJMWS's NSJ/Alviso and Evergreen service areas. SJMWS owns and operates fourteen groundwater wells. Potable water demands for the Edenvale and Coyote Valley service areas are supplied entirely by groundwater. During the past five years, SJMWS's groundwater demands have been sufficiently met. **Table 6-2** shows the historical volume pumped from the basin.

Table 6-2. (DWR Table 6-1): Groundwater Volume Pumped						
Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	Santa Clara Subbasin and Coyote Valley Subbasin	654	312	851	938	885
	TOTAL	654	312	851	938	885

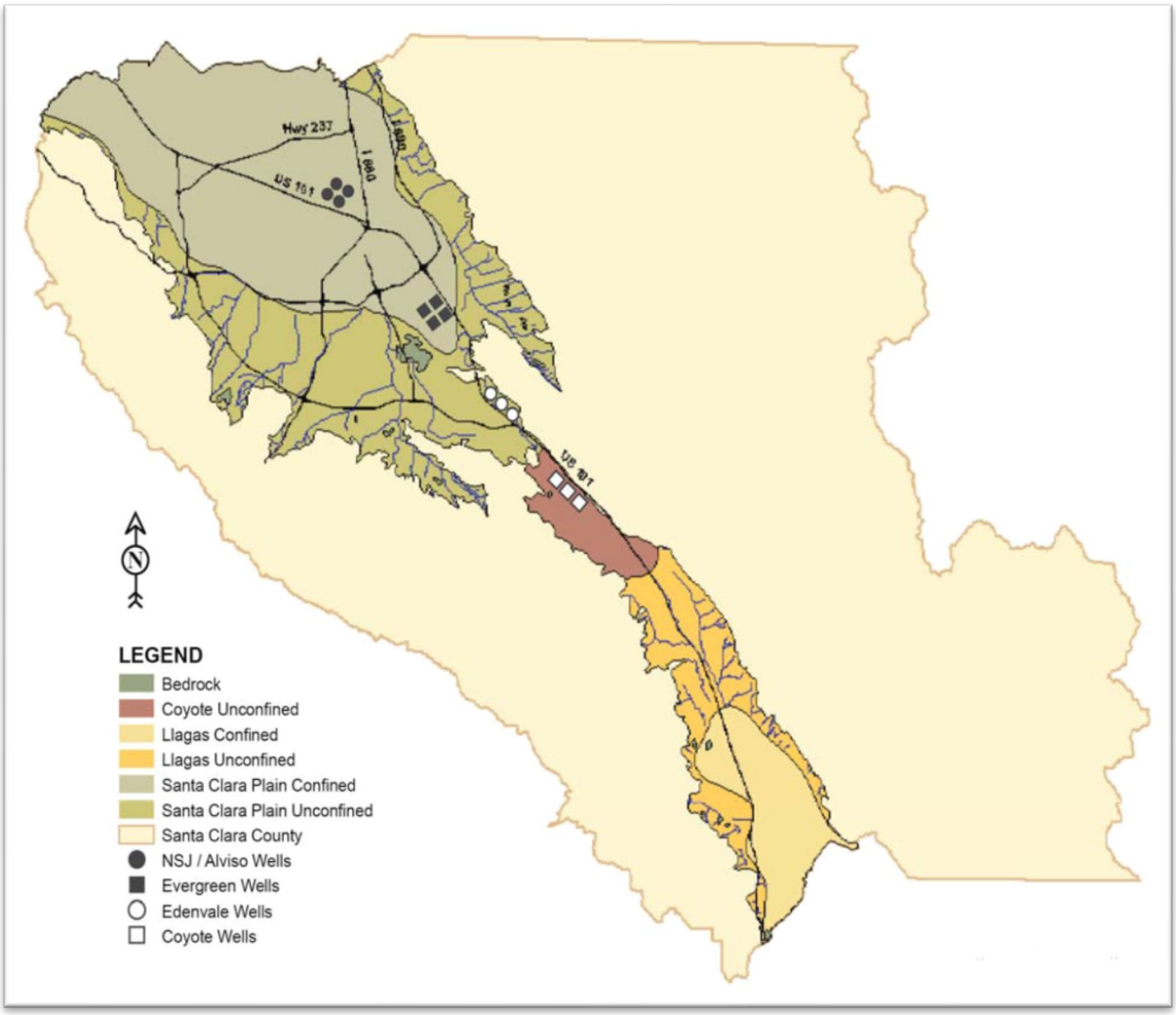

Figure 6-1. Santa Clara County Groundwater Basin and SJMWS Groundwater Wells

In April of each year, when the quantity of imported water available to Valley Water by contract and the local water yield can be more accurately approximated, Valley Water estimates the carryover storage. Based on the calculated carryover capacity and anticipated customer demand, Valley Water reviews and modifies its groundwater management strategy in order to maintain adequate water in the basin and avoid subsidence. Groundwater supply is largely constrained by hydrologic variability and the estimated 548,000 AF of operational storage capacity within the subbasins. The inflows to the groundwater subbasins are constrained by Valley Water's managed aquifer recharge program and natural recharge.

As required by the State Water Resources Control Board (SWRCB) for their Drinking Water Source Assessment and Protection Program, drinking water source assessments were conducted for all 14 groundwater wells within SJMWS service areas. The assessments were conducted by SJMWS staff, and consisted of information gathered from City records, databases, staff, the SWRCB, and visual field surveys.

In North San José, potential contamination sources include local electronic manufacturing facilities, gas stations, leaking underground storage tanks and sewer collection facilities. The Evergreen wells are vulnerable to potential contamination from automobile gas stations, underground storage tank leaks and dry-cleaning service activities. The Edenvale wells are vulnerable to potential contamination from chemical/petroleum processing storage activities. The Coyote wells are vulnerable to potential contamination caused by agricultural drainage, illegal activities/unauthorized dumping, storage tank leaks and sewer collection systems. However, the existing well locations and precautions taken during construction, in combination with the local hydrology, have provided a high level of protection against contamination of the local ground waters.

As the groundwater management agency in Santa Clara County, Valley Water has ongoing groundwater protection programs to ensure high water quality and more reliable water supplies. These programs include well permitting, well destruction, wellhead protection, land use and development review, nitrate management (targeted to areas of elevated nitrate in the southern portion of the County), saltwater intrusion programs, and providing technical assistance to regulatory agencies to ensure local groundwater resources are protected (Valley Water, 2001).

In many areas along the coast, shallow groundwater may be vulnerable to rising sea levels and saltwater intrusion. Saltwater intrusion has occurred in the shallow aquifer beneath North San José/Alviso. However, in Santa Clara County, the aquifers that provide the primary drinking water source are protected by a natural barrier made up of extensive horizontal clay layers. Valley Water does not consider saltwater intrusion to be a significant threat.

Surface Water

SJMWS does not directly provide surface water. As discussed above, the purchased/imported water from the two wholesalers contains surface water as a part of the supply mix.

Stormwater

SJMWS does not directly use storm water as a supply source. Valley Water utilizes stormwater as a natural source for groundwater recharge as Valley Water is the agency that manages the two groundwater subbasins within Santa Clara County. Stormwater is considered as a source of wholesale supply for long-term water supply planning purposes because it contributes to the available groundwater supply. Natural recharge includes all uncontrolled recharge, including the deep percolation of rainfall, septic system and/or irrigation return flows, and natural seepage through creeks (Valley Water, 2021). However, San José recently developed the Integrated Water Infrastructure Program (IWIP).

Integrated Water Infrastructure Program

The Integrated Water Infrastructure Program (IWIP) was established in 2020 by the City's Environmental Services Department to develop a comprehensive solution and to align with opportunities that may become available as part of other programs including the City's Green Stormwater Infrastructure Plan, Climate Smart San José, and expanding non-potable water usage.

The objective of the IWIP is to integrate existing water infrastructure to create a cohesive distribution system conveying stormwater, non-potable groundwater, and recycled water in a way to maximize under-utilized assets and increase the non-potable water supply. The City has begun to implement regional IWIP pilot projects.

Existing Infrastructure and Water Supply Options

Currently, there are multiple forms of non-potable water supply and conveyance opportunities throughout San José. These include:

- Non-potable groundwater wells - Each water retailer has aging groundwater wells that are no longer used for drinking water purposes but have the potential to be integrated with non-potable water supplies.
- Non-potable groundwater - The upper portion of the groundwater aquifer is not used for drinking water purposes, but is readily available and may be potentially used for non-potable uses.
- Groundwater infiltration - Development activities, existing and new businesses, and residents with below-ground infrastructure often experience groundwater infiltration. Typically, this water cannot be used for drinking water but is a viable option for non-potable supplies.
- Stormwater & Stormwater Collection Systems - There are approximately 1,100 miles of stormwater pipe and 1,510 stormwater outfalls, this existing infrastructure may be a potential source of non-potable water.

Program Focus

The IWIP is structured to combine efforts and progress of other high priority programs (e.g. the Green Stormwater Infrastructure Plan, Climate Smart San José), and re-envision access to local water supplies with cost-effective solutions. While the IWIP could be very broad in scope, to narrow focus, separate

components were considered for evaluation to address water supply challenges, support ongoing goals, and explore opportunities to develop local water supplies. These include the following:

- Stormwater Treatment
    - Explore dry-weather stormwater treatment options and new treatment systems to integrate with existing recycled water infrastructure for reuse opportunities.
    - Evaluate utilizing the stormwater system as conveyance for non-potable water during summer months.
    - Pilot technology that can be used to support onsite use for local businesses with groundwater infiltration, stormwater management, and non-potable groundwater.
- Non-Potable Groundwater Supplies
    - Groundwater wells, unable to be used for drinking water purposes without costly advanced treatment, may potentially be integrated with non-potable water supplies.
    - Utilize existing groundwater well infrastructure to augment non-potable supplies and take advantage of a local, unused resource.

The IWIP's stated goal is to integrate existing water infrastructure, including stormwater, non-potable groundwater, and recycled water to maximize assets and increase the non-potable water supply. The IWIP is in the conceptual stage of development and therefore this UWMP does not include any supply or reduction in demand resulting from the program.

Wastewater and Recycled Water

Wastewater Collection and Treatment

Wastewater from SJMWS service areas is collected and treated at the San José/Santa Clara Regional Wastewater Facility (RWF) located at the southern end of San Francisco Bay, which has a design capacity of 167 MGD. In addition to the SJMWS service areas, the RWF treats wastewater from San José, Santa Clara, Milpitas, Campbell, Cupertino, Los Gatos, Monte Sereno and Saratoga, serving an area of over 300 square miles and a population of more than 1.4 million. **Table 6-3** provides information about the RWF, wastewater collection, and recipient of wastewater. The table also provides data for total wastewater collected from service area in 2020. **Table 6-4** provides information regarding the wastewater treatment and discharge within SJMWS service area in 2020.

Table 6-3. (DWR Table 6-2): Wastewater Collected Within Service Area in 2020						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	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? (optional)
City of San José	Estimated	10,205	City of San José/Santa Clara	San José/Santa Clara Regional Wastewater Facility	Yes	No
Total Wastewater Collected from Service Area in 2020:		10,205				

Table 6-4. (DWR Table 6-3): Wastewater Treatment and Discharge Within Service Area in 2020										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 volumes			
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
San José-Santa Clara Regional Wastewater Facility	Artesian Slough	Tributary to South San Francisco Bay via Coyote Creek)	2438014001	Bay or estuary outfall	Yes	Tertiary	10,205	8,324	4,097	8,474
						Total	10,205	8,324	4,097	8,474

Recycled and Purified Water System

A growing source of water for Santa Clara County is recycled and purified water. Recycled water offsets drinking water and groundwater supplies through in-lieu recharge; provides a reliable, drought-proof, locally controlled water supply; and reduces reliance on imported water. Recycled water is currently about 6% (or about 18,000 AFY) of the county's supply and is distributed for non-potable uses such as landscape and agricultural irrigation, industrial cooling, and dual plumbed facilities. This recycled water is produced at the four wastewater plants in the county – Palo Alto, Sunnyvale, San José/Santa Clara, and South County Regional Wastewater Authority. In addition, Valley Water is in the process of developing at least 20,000 AFY and up to 45,000 AFY of potable reuse capacity (Valley Water, 2021).

The City's major water recycling program, known as the SBWR Program, operates in compliance with the RWF's National Pollutant Discharge Elimination System Permit. A benefit of the program is the development of a drought-proof supply of water, which augments local and imported water supplies.

Non-Potable Reuse – SBWR Program

The City of San José operates the SBWR system and distributes recycled water generated by the San José/Santa Clara Regional Wastewater Facility. Some of this water is being supplied to Valley Water's adjacent Silicon Valley Advanced Water Purification Center, which in turn purifies the water with advanced technologies and blends it with tertiary treated water to create high quality recycled water that can be used by a wider variety of customers. Since March 2014, the purification center has been demonstrating the effectiveness of the advanced treatment technologies (microfiltration, reverse osmosis, and advanced oxidation) and setting the stage for Valley Water to begin a potable reuse program. Potable reuse involves using purified water to augment groundwater or surface water supplies. The SBWR Strategic and Master Plan (Strategic Plan), which discusses non-potable and potable reuse opportunities, is available at https://www.valleywater.org/your-water/recycled-and-purified-water (Valley Water, 2021).

The SBWR program delivers disinfected tertiary treated wastewater from the RWF through an extensive recycled water distribution system consisting of over 150 miles of pipeline (**Figure 6-2**). The recycled water is used for non-potable purposes such as agriculture; industrial cooling and processing; and irrigation of golf courses, parks, and schools. During the peak summer season, SBWR diverts between 15 and 20 MGD of recycled water for irrigation and industrial uses to over 900 customers throughout San José, Santa Clara, and Milpitas.

In South Santa Clara County (which includes Coyote Valley), Valley Water partners with the South County Regional Wastewater Authority (SCRWA), City of Gilroy, and City of Morgan Hill on the recycled water program. SCRWA is the recycled water producer, Valley Water is the wholesaler, and Gilroy and Morgan Hill are the retailers by agreement. The 2015 South County Recycled Water Master Plan Update is available at https://www.valleywater.org/your-water/recycled-and-purified-water.

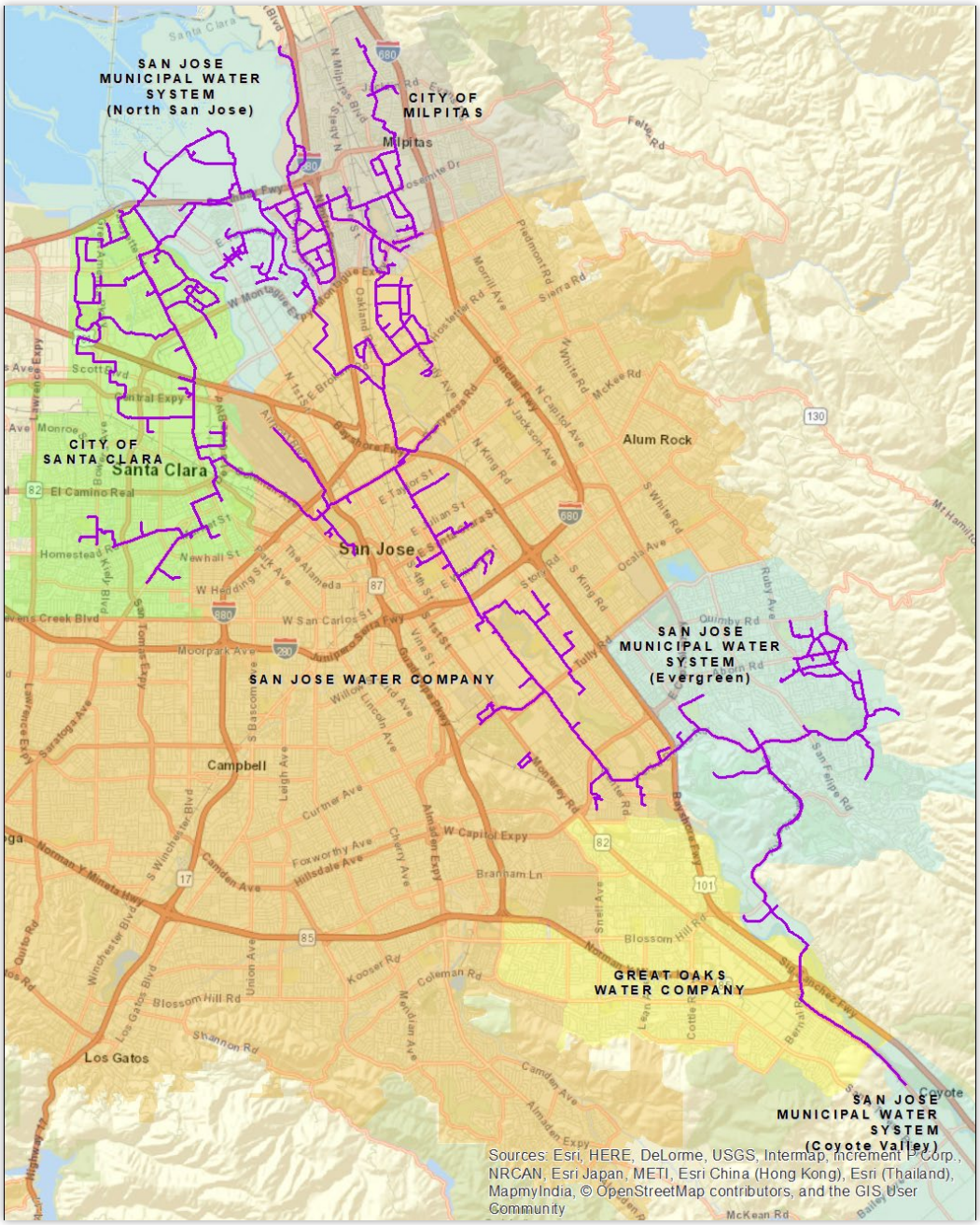

Figure 6-1. SBWR Recycled Water System

Current and Projected Recycled Water Use

Table 6-5 provides current and projected recycled water direct use projections for SJMWS.

Countywide, Valley Water's stated goal is to increase non-potable water supplies including recycled water. Based on water supply system modeling, the program will generally operate at full capacity in dry years throughout the planning horizon. Average use will increase over time as demands on the groundwater subbasins increase. Additional capacity may be developed in future phases depending on water supply needs, new regulations providing for direct potable reuse, and reverse osmosis concentrate disposal capacity.

IWIP, Recycled Water, & Recycled Water Distribution System

The existing non-potable water distribution system that provides recycled water to the SJMWS, South Bay Water Recycling (SBWR), could be used to convey both additional recycled water supplies and other types of non-potable water. IWIP will evaluate conveying non-potable water supplies, including non-potable groundwater and dry-weather run-off, through the existing recycled water system. IWIP projects will consider benefits for all participating agencies, including ownership of any infrastructure investments.

Recycled water continues to receive interest from local water retailers and wholesalers, and the development and business community. IWIP will evaluate options for cost-efficient infrastructure investments that support additional recycled water and other non-potable water supply opportunities.

Table 6-5. (DWR Table 6-4): Recycled Water Direct Beneficial Uses Within Service Area										
Name of Supplier Producing (Treating) the Recycled Water:	South Bay Water Recycling, Santa Clara Valley Water District									
Name of Supplier Operating the Recycled Water Distribution System:	South Bay Water Recycling									
Supplemental Water Added in 2020 (volume)	No									
Source of 2020 Supplemental Water	None									
Beneficial Use Type	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity)	General Description of 2020 Uses	Level of Treatment	2020	2025	2030	2035	2040	2045
Landscape irrigation (includes golf courses)	Landscape irrigation	N/A	Irrigation	Tertiary	2,025	2,444	2,887	3,432	4,155	4,180
Industrial use	Cooling towers, dual plumbing, etc.	N/A	Cooling towers, dual plumbing	Tertiary	2,072	2,332	2,569	2,847	3,213	3,233
				Total:	4,097	4,776	5,456	6,279	7,368	7,413

Notes: N/A – Not applicable/not quantifiable

Past Recycled Water Supply Projection

Valley Water's 2015 UWMP projected 2020 countywide recycled water use to be 18,680 AF and to increase to 29,180 AF in 2030. Currently, countywide recycled water use is projected to increase from about 17,000 AFY in 2020 to about 28,000 AFY in 2045 (Valley Water, 2021).

In the 2015 UWMP, the City projected to use 5,117 AF of recycled water. However, the actual recycled water use in 2020 was 4,097 AF (Table 6-6), about 20% lower than projected. The actual usage was less than the projected use, due to a variety of factors including more efficient water use and conservation as a result of the 2012-2016 drought, reduced development activity, and the COVID-19 pandemic.

Table 6-6. (DWR Table 6-5): Recycled Water Use – 2015 Projected, 2020 Actual

Use Type	2015 Projection for 2020	2020 Actual Use
Landscape irrigation (includes golf courses)	2,435	2,025
Industrial use	2,682	2,072
Total	5,117	4,097

Actions to Encourage and Optimize Future Recycled Water Use

Currently, the cities of San José, Santa Clara and Milpitas promote recycled water usage through a variety of mechanisms, including:

- Lower cost of recycled water than potable water.
- Regulatory approval for recycled water usage.
- Ordinances requiring the use of recycled water for irrigation where available.
- Prohibition against the use of potable water for uses appropriate to recycled water.
- Support for developers' expansion of system to areas where recycled water is unavailable.

Within SJMWS service area, use of recycled water will continue to expand as developers construct additional distribution facilities to supply recycled water to serve a project's water needs. SJMWS anticipates increased recycled water usage within the service area as identified in the SBWR Strategic and Master Plan. Infrastructure enhancements, including potable reuse options will be evaluated to determine the most optimal use of available wastewater. Potable reuse involves using purified water to augment groundwater or surface water supplies. The SBWR Strategic and Master Plan (Strategic Plan), which discusses non-potable and potable reuse opportunities, is available at https://www.valleywater.org/your-water/recycled-and-purified-water. Methods to expand future recycled water uses are shown in **Table 6-7**. Additional recycled water usage in the SJMWS service area will come from strategic investments in infrastructure to connect nearby existing and planned projects.

Table 6-7. (DWR Table 6-6): Methods to Expand Future Recycled Water Use			
Name of Action	**Description**	**Planned Implementation Year**	**Expected Increase in Recycled Water Use**
Regional Planning	Valley Water planning efforts underway	ongoing	N/A
Rate Discounts	Priced lower than potable water	ongoing	N/A
Public Education	Support voluntary efforts to utilize recycled water	ongoing	N/A
Required Use	San José Municipal Code requires development to expand infrastructure and use recycled water	ongoing	N/A
Integrated Water Infrastructure Program	Integrate existing water infrastructure distribution systems conveying stormwater, non-potable groundwater, and recycled water in a way to increase non-potable water supply	pending	TBD
		Total	N/A

Notes: N/A – Not applicable/not quantifiable, TBD – To be determined

Potable Reuse

Valley Water's draft Countywide Water Reuse Master Plan (CoRe Plan) includes developing 24,000 AFY of potable reuse capacity. There are multiple project portfolios across the county. Valley Water's Expedited Purified Water Program is currently evaluating an expanded and expedited potable reuse program that could include up to a total of 45,000 AFY of potable reuse capacity in the future (Valley Water, 2021).

Supplies for Potable Reuse

The SBWR retailer projections for recycled water use exceed the amount projected in the SBWR Strategic Plan. The Strategic Plan includes 15,000 AFY of retail recycled water deliveries, plus 5,600 AFY of recycled water reserved for Valley Water use. Valley Water includes all retailer projections in their supply analysis because the total supply in the SBWR system is sufficient to meet the demands. As Valley Water makes decisions regarding its potable reuse program and if they can utilize the 5,600 AFY of reserved supply from SBWR, Valley Water will update the recycled water projections as needed (Valley Water, 2021). The agreement between the City and Valley Water that reserves 5,600 AFY for Valley Water use expires in 2027.

Some of the potential constraints on development of potable reuse include brine disposal, public acceptance, permitting, hydrogeologic conditions, and costs. Once the program is implemented the largest challenge will be maximizing use of the available supply during wetter years when storage is full

and/or other lower cost supplies are competing for use. These constraints are being addressed as part of the Expedited Purified Water Program (Valley Water, 2021).

Desalinated Water Opportunities

SFPUC and Valley Water have been working together with Contra Costa Water District and the Zone 7 Water Agency in the Bay Area Regional Desalination Project (BARDP). Completion of a pilot project showed that the project is feasible; however, a subsequent multi-dry year period showed that the water rights that would be exercised to divert flows may not be fully available during droughts. Partners are evaluating the water rights to determine how much water could reliably be produced by a desalination facility and would also need to determine how to allocate the resulting supply between them.

Exchanges or Transfers

The majority of the transfer/exchange opportunities are managed by the wholesalers, SFPUC and Valley Water. SJMWS has the ability to purchase additional water from SFPUC as long as the combined amount between SJMWS and the City of Santa Clara does not exceed 9 MGD. SJMWS can also purchase excess water from other wholesale customers upon agreement. SJMWS also has emergency tie-ins with the City of Santa Clara and San José Water Company for potential short-term transfers.

Valley Water conducts short-term water transfers and exchanges as a part of its routine imported water operations. As a reference, Valley Water was able to secure over 13,400 AF of transfer supply in 2020. While Valley Water considers water exchange and transfers as one of the potential options to secure additional water during critical dry years through long-term agreements, there are considerable uncertainties with long term costs and ability to make transfers in critical dry years, during which water quality challenges and pumping restrictions may affect the ability to convey transfer supplies across the Delta. Consequently, Valley Water is not including water transfers and exchanges in its projected water supplies in their UWMP, except in the Drought Risk Analysis (Valley Water, 2021).

Additional details regarding wholesaler transfers and exchanges can be found in each individual wholesaler's UWMP.

Future Water Projects

As a water retailer, SJMWS does not plan on developing "new" water supplies. Typically, capital improvement projects address infrastructure replacement and reliability needs. Future groundwater wells are needed to support future demands (**Table 6-8**). The Santa Clara Valley groundwater basin is not adjudicated; however, SJMWS will still rely on Valley Water to actively manage the groundwater basin to prevent overdraft and potential subsidence.

Table 6-8. (DWR Table 6-7): Expected Future Water Supply Projects or Programs					
Name of Future Projects or Programs	Joint Project with other suppliers?	Description	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier
Groundwater wells	No	Additional 5-7 wells to utilize groundwater as primary or backup supply	varies	All Year Types	4000-9000

SJMWS is actively involved in the planning activities of water wholesalers, SFPUC and Valley Water. SJMWS is also involved in the planning activities for recycled water through SBWR. There is potential to use recycled water for indirect reuse which is being evaluated by Valley Water. Additional information regarding wholesalers' future projects can be found in their UWMPs.

Summary of Existing and Planned Sources of Water

SJMWS relies on four sources of supply: surface water from SFPUC, local and imported surface water from Valley Water, groundwater from the Santa Clara groundwater basin, and recycled water from the SBWR Program. Supply sources received by SJMWS and discussed within this section are generally considered consistent sources in normal years. **Table 6-9** depicts the amount of supply from each source that was purchased in 2020. **Table 6-10** provides details of water supplies anticipated to be purchased in the future as determined by the City.

Climate change poses challenges in water resources management, although the full extent and associated impacts are uncertain. Statewide and local changes in precipitation and temperature could significantly impact wholesaler-managed supplies and water usage patterns. Effects of climate change to wholesale water supplies is further discussed in detail in Section 7.

Energy Use

The City pumps groundwater from fourteen (14) water production wells and diverts water from its wholesalers from five (5) turnouts. Booster pump stations and tanks are used throughout the SJMWS service area to distribute water to the distribution system and customer taps. The total amount of energy used to extract and divert water from the groundwater aquifer, convey water from the two wholesalers and pump water to the distribution system is shown in **Table 6-11** (DWR Guidebook Appendix O, Table O-1A) below. Wastewater and recycled water energy use is not available.

Table 6-9. (DWR Table 6-8): Water Supplies – 2020 Actual			
Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume	Water Quality
Purchased or Imported Water	SFPUC	4,731	Drinking Water
Purchased or Imported Water	Valley Water	11,929	Drinking Water
Groundwater (not desalinated)		885	Drinking Water
Recycled Water		4,097	Recycled Water
Total		21,643	

Table 6-10. (DWR Table 6-9): Water Supplies – Projected						
Water Supply	Additional Detail on Water Supply	2025	2030	2035	2040	2045
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Purchased or Imported Water	Potable Water – Valley Water and SFPUC	21,080	24,156	27,343	32,815	33,552
Recycled Water	SBWR	4,776	5,456	6,279	7,368	7,413
	Total	25,856	29,612	33,622	40,183	40,965

Table 6-11. (DWR Table O-1B): Recommended Energy Reporting – Total Utility Approach		
Start Date for Reporting Period [1]	1/1/2020	Sum of All Water Management Processes
End Date	12/31/2020	
Volume of Water Entering Process (AF)		*17,546*
Energy Consumed (kWh) [2]		*4,611,755*
Energy Intensity (kWh/AF)		*262.8*
Data Quality	Metered data	
Data Quality Narrative	Billing periods as billed by energy utility do not exactly overlap identified reporting period. Best available billing data used.	
Narrative	Energy consumed includes some building energy use since it cannot be separated from system asset energy use. Utility utilizes some solar power, totals not included in this table.	

7. WATER SUPPLY RELIABILITY

Water Code Section 10635 (a) requires the UWMP to include discussion on water supply reliability. The 2020 Guidebook (Appendix F, UWMP checklist) provides this checklist:

#47. 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. 10634

#48. Describe water management tools and options to maximize resources and minimize the need to import water from other regions. 10620(f)

#49. Assess the water supply reliability during normal, dry, and a drought lasting five consecutive years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years. 10635(a)

#50. Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects. 10635(b)

#51. Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years. 10635(b)(1)

#52. Include a determination of the reliability of each source of supply under a variety of water shortage conditions. 10635(b)(2)

#53. Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period. 10635(b)(3)

#54. Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria. 10635(b)(4)

A comparison of the water supplies and demands for the SJMWS is presented in this section. This section also presents an assessment of overall reliability of future supplies regardless of drought or emergency conditions. It includes discussion of the City's planned responses in emergency situations that can affect water supplies.

The City has taken guidance from the following documents/information while preparing this section:

- Valley Water's Draft 2020 Urban Water Management Plan (Valley Water, 2021)
- Email communications from BAWSCA to member agencies (BAWSCA, 2021)

Constraints on Water Sources

Currently, the City has the available water supply (discussed in Section 6) to meet the projected demands for the SJMWS. As discussed in Section 6, the City has the following sources of potable water supply for the SJMWS:

- SFPUC
- Valley Water
- Groundwater

Because the system supplies are derived from imported supplies purchased from the wholesalers and local groundwater, statewide and local conditions can impact the reliability of supplies. The following discussion summarizes the reliability of the SJMWS's water supply sources and constraints on those water sources, based on information provided to SJMWS from SFPUC and Valley Water. SJMWS provided demand projections to both agencies for use in their analyses of supply availability during average and dry years. The SJMWS's total supply is expected to meet demands in normal years through 2045. By utilizing different supply sources, SJMWS may reduce the impact of water shortage from a particular source. Implementing the Water Shortage Contingency Plan (Section 8), including associated demand reduction measures, will be necessary during shortage years to ensure sufficiency of available supplies.

Reliability of the water supply for the SJMWS is determined based upon the reliability of wholesaler supplies and groundwater production, as discussed previously. The total water supply and demand for the SJMWS are presented in Section 6 and Section 4, respectively.

SFPUC: Reliability and Constraints

The SFPUC historically has met demand in its service area in all year types from its watersheds, which consist of:

- Tuolumne River watershed
- Alameda Creek watershed
- San Mateo County watersheds

In general, 85% of the supply comes from the Tuolumne River through Hetch Hetchy Reservoir and the remaining 15% comes from the local watersheds through the San Antonio, Calaveras, Crystal Springs, Pilarcitos and San Andreas Reservoirs. The adopted WSIP retains this mix of water supply for all year types.

The amount of imported water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies.

The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from Hetch Hetchy. In practice, the local watershed facilities are operated to capture local runoff. The following describes allocation of SFPUC water supply during drought conditions, provided by BAWSCA (BAWSCA, 2021). Additional information on SFPUC's supply reliability was obtained from their January 22, 2021 letter transmittal to BAWSCA.

SFPUC Water Shortage Allocation Plan

As stated above, the WSA between San Francisco and its Wholesale Customers includes a WSAP that describes the method for allocating water from the RWS between Retail and Wholesale Customers during system-wide shortages of 20% or less. The WSAP was amended in the 2018 Amended and Restated WSA.

The WSAP has two components:

- The Tier One Plan, which allocates water between San Francisco and the wholesale customers collectively; and
- The Tier Two Plan, which allocates the collective wholesale customer share among the wholesale customers.

Tier One Drought Allocations

The SFPUC allocates water under the Tier One Plan when it determines that the projected available water supply is up to 20% less than projected system-wide water purchases. **Table 7-1** shows the SFPUC share and the Wholesale Customers' share of the annual water supply available during shortages depending on the level of system-wide reduction in water use that is required. The Wholesale Customers' share will be apportioned among the individual Wholesale Customers based on a separate methodology adopted by the Wholesale Customers, known as the Tier Two Plan, discussed further below.

Table 7-1. Distribution of Reduced SFPUC Supplies

Level of System-Wide Reduction in Water Use Required	Share of Available Water	
	SFPUC Share	Wholesale Customers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier One Plan allows for voluntary transfers of shortage allocations between the SFPUC and any Wholesale Customer as well as between Wholesale Customers themselves. In addition, water "banked" by a Wholesale Customer, through reductions in usage greater than required, may also be transferred.

As amended in 2018, the Tier One Plan requires Retail Customers to conserve a minimum of 5% during droughts. If Retail Customer demands are lower than the Retail Customer allocation (resulting in a

"positive allocation" to Retail) then the excess percentage would be re-allocated to the Wholesale Customers' share. The additional water conserved by Retail Customers up to the minimum 5% level is deemed to remain in storage for allocation in future successive dry years.

The Tier One Plan will expire at the end of the term of the WSA in 2034, unless mutually extended by San Francisco and the Wholesale Customers.

The Tier One Plan applies only when the SFPUC determines that a system-wide water shortage exists and issues a declaration of a water shortage emergency under California Water Code Section 350. Separate from a declaration of a water shortage emergency, the SFPUC may opt to request voluntary cutbacks from its Retail and Wholesale Customers to achieve necessary water use reductions during drought periods.

Tier Two Drought Allocations

The Wholesale Customers have negotiated and adopted the Tier Two Plan, referenced above, which allocates the collective Wholesale Customer share from the Tier One Plan among each of the 26 Wholesale Customers. These Tier Two allocations are based on a formula that takes into account multiple factors for each Wholesale Customer including:

- Individual Supply Guarantee;
- Seasonal use of all available water supplies; and
- Residential per capita use.

The water made available to the Wholesale Customers collectively will be allocated among them in proportion to each Wholesale Customer's Allocation Basis, expressed in millions of gallons per day (MGD), which in turn is the weighted average of two components. The first component is the Wholesale Customer's Individual Supply Guarantee, as stated in the WSA, and is fixed. For San José, the value used here is 4.5 MGD, matching the quantity identified in the Water Sales Contract between SFPUC and San José. The second component, the Base/Seasonal Component, is variable and is calculated using the monthly water use for three consecutive years prior to the onset of the drought for each of the Wholesale Customers for all available water supplies. The second component is accorded twice the weight of the first, fixed component in calculating the Allocation Basis. Minor adjustments to the Allocation Basis are then made to supplies for temporary interruptible customers, including San José. Additional adjustments are made to ensure a minimum cutback level, a maximum cutback level, and a sufficient supply for certain Wholesale Customers.

The Allocation Basis is used in a fraction, as numerator, over the sum of all Wholesale Customers' Allocation Bases to determine each wholesale customer's Allocation Factor. The final shortage allocation for each Wholesale Customer is determined by multiplying the amount of water available to the Wholesale Customers' collectively under the Tier One Plan, by the Wholesale Customer's Allocation Factor.

The Tier Two Plan requires that the Allocation Factors be calculated by BAWSCA each year in preparation for a potential water shortage emergency. As the Wholesale Customers change their water use characteristics (e.g., increases or decreases in SFPUC purchases and use of other water sources, changes in monthly water use patterns, or changes in residential per capita water use), the Allocation Factor for each Wholesale Customer will also change. However, for long-term planning purposes, each Wholesale Customer shall use as its Allocation Factor, the value identified in the Tier Two Plan when adopted.

The Tier Two Plan, which initially expired in 2018, has been extended by the BAWSCA Board of Directors every year since for one additional calendar year. In November 2020, the BAWSCA Board voted to extend the Tier Two Plan through the end of 2021.

Individual Supply Guarantee

San Francisco has a perpetual commitment (Supply Assurance) to deliver 184 MGD to the 24 permanent Wholesale Customers collectively. San José and Santa Clara are not included in the Supply Assurance commitment and each has temporary and interruptible water supply contracts with San Francisco. The Supply Assurance is allocated among the 24 permanent Wholesale Customers through Individual Supply Guarantees (ISG), which represent each Wholesale Customer's allocation of the 184 MGD Supply Assurance.

2028 SFPUC Decisions

In the 2009 WSA, the SFPUC committed to make three decisions before 2018 that affect water supply development:

- Whether or not to make the cities of San José and Santa Clara permanent customers,
- Whether or not to supply the additional unmet supply needs of the Wholesale Customers beyond 2018, and
- Whether or not to increase the wholesale customer Supply Assurance above 184 MGD.

Events since 2009 made it difficult for the SFPUC to conduct the necessary water supply planning and CEQA analysis required to make these three decisions before 2018. Therefore, in the 2018 Amended and Restated WSA, the decisions were deferred for 10 years to 2028. San José continues to coordinate regularly with SFPUC to support and offer assistance to any endeavors and programs which will enable SFPUC to establish San José as a permanent customer. Additionally, San José has requested that SFPUC include 9 MGD for San José in their future supply planning process. Although this future supply request is not included in SFPUC's UWMP, it is included in its Alternative Water Supply Planning Quarterly Updates.

There have been recent changes to instream flow requirements and customer demand projections that have affected water supply planning beyond 2018. As a result, the SFPUC has established an Alternative Water Supply Planning program to evaluate several regional and local water supply options. Through this program, the SFPUC will conduct feasibility studies and develop an Alternative Water Supply Plan by July 2023 to support the continued development of water supplies to meet future needs.

Reliability of the Regional Water System

In 2008, the SFPUC adopted Level of Service (LOS) Goals and Objectives in conjunction with the adoption of WSIP. The SFPUC updated the LOS Goals and Objectives in February 2020.

The SFPUC's LOS Goals and Objectives related to water supply are shown in **Table 7-2**.

Table 7-2. SFPUC LOS Goals and Objectives

Program Goal	System Performance Objective
Water Supply – meet customer water needs in non-drought and drought periods	Meet all state and federal regulations to support the proper operation of the water system and related power facilities.
	Meet average annual water demand of 265 MGD from the SFPUC watersheds for retail and Wholesale Customers during non–drought years for system demands consistent with the 2009 Water Supply Agreement.
	Meet dry-year delivery needs while limiting rationing to a maximum 20% system-wide reduction in water service during extended droughts.
	Diversify water supply options during non-drought and drought periods.
	Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers.

Climate Change

The issue of climate change has become an important factor in water resources planning in the State and is frequently considered in urban water management planning processes, though the extent and precise effects of climate change remain uncertain. There is convincing evidence that increasing concentrations of greenhouse gasses have caused and will continue to cause a rise in temperatures around the world, which will result in a wide range of changes in climate patterns. Moreover, observational data show that a warming trend occurred during the latter part of the 20th century and virtually all projections indicate this will continue through the 21st century. These changes will have a direct effect on water resources in California, and numerous studies have been conducted to determine the potential impacts to water resources. Based on these studies, climate change could result in the following types of water resource impacts, including impacts on the watersheds in the Bay Area:

- Reductions in the average annual snowpack due to a rise in the snowline and a shallower snowpack in the low and medium elevation zones, such as in the Tuolumne River basin, and a shift in snowmelt runoff to earlier in the year;
- Changes in the timing, annual average, intensity and variability of precipitation, and an increased amount of precipitation falling as rain rather than snow;

- Long-term changes in watershed vegetation and increased incidence of wildfires that could affect water quality and quantity;
- Sea level rise and an increase in saltwater intrusion;
- Increased water temperatures with accompanying potential adverse effects on some fisheries and water quality;
- Increases in evaporation and concomitant increased irrigation need; and
- Changes in urban and agricultural water demand.

Both the SFPUC and BAWSCA participated in the 2020 update of the Bay Area Integrated Regional Water Management Plan (BAIRWMP), which includes an assessment of the potential climate change vulnerabilities of the region's water resources and identifies climate change adaptation strategies. In addition, the SFPUC continues to study the effect of climate change on the Regional Water System (RWS). These works are summarized below.

Bay Area Integrated Regional Water Management Plan

Climate change adaptation continues to be an overarching theme for the 2019 BAIRWMP update. As stated in the BAIRWMP, identification of watershed characteristics that could potentially be vulnerable to future climate change is the first step in assessing vulnerabilities of water resources in the Bay Area Region (Region). Vulnerability is defined as the degree to which a system is exposed to, susceptible to, and able to cope with or adjust to, the adverse effects of climate change. A vulnerability assessment was conducted in accordance with the Department of Water Resources' (DWR's) Climate Change Handbook for Regional Water Planning and using the most current science available for the Region. The vulnerability assessment, summarized in the table below, provides the main water planning categories applicable to the Region and a general overview of the qualitative assessment of each category with respect to anticipated climate change impacts.

Table 7-3. Summary of BAIRWMP Climate Change Vulnerability Assessment

Vulnerability Areas	System Performance Objective
Water Demand	**Urban and Agricultural Water Demand** – Changes to hydrology in the Region as a result of climate change could lead to changes in total water demand and use patterns. Increased irrigation (outdoor landscape or agricultural) is anticipated to occur with temperature rise, increased evaporative losses due to warmer temperature, and a longer growing season. Water treatment and distribution systems are most vulnerable to increases in maximum day demand.
Water Supply	**Imported Water** – Imported water derived from the Sierra Nevada sources and Delta diversions provide 66% of the water resources available to the Region. Potential impacts on the availability of these sources resulting from climate change directly affect the amount of imported water supply delivered to the Region.

Table 7-3. Summary of BAIRWMP Climate Change Vulnerability Assessment	
Vulnerability Areas	System Performance Objective
	Regional Surface Water – Although future projections suggest that small changes in total annual precipitation over the Region will not change much, there may be changes to when precipitation occurs with reductions in the spring and more intense rainfall in the winter.
	Regional Groundwater – Changes in local hydrology could affect natural recharge to the local groundwater aquifers and the quantity of groundwater that could be pumped sustainably over the long-term in some areas. Decreased inflow from more flashy or more intense runoff, increased evaporative losses and warmer and shorter winter seasons can alter natural recharge of groundwater. Salinity intrusion into coastal groundwater aquifers due to sea-level rise could interfere with local groundwater uses. Furthermore, additional reductions in imported water supplies would lead to less imported water available for managed recharge of local groundwater basins and potentially more groundwater pumping in lieu of imported water availability.
Water Quality	**Imported Water** – For sources derived from the Delta, sea-level rise could result in increases in chloride and bromide (a disinfection by-product (DBP) precursor that is also a component of sea water), potentially requiring changes in treatment for drinking water. Increased temperature could result in an increase in algal blooms, taste and odor events, and a general increase in DBP formation.
	Regional Surface Water – Increased temperature could result in lower dissolved oxygen in streams and prolong thermocline stratification in lakes and reservoirs forming anoxic bottom conditions and algal blooms. Decrease in annual precipitation could result in higher concentrations of contaminants in streams during droughts or in association with flushing rain events. Increased wildfire risk and flashier or more intense storms could increase turbidity loads for water treatment.
	Regional Groundwater – Sea-level rise could result in increases in chlorides and bromide for some coastal groundwater basins in the Region. Water quality changes in imported water used for recharge could also impact groundwater quality.
Sea-Level Rise	Sea-level rise is additive to tidal range, storm surges, stream flows, and wind waves, which together will increase the potential for higher total water levels, overtopping, and erosion.
	Much of the bay shoreline is comprised of low-lying diked baylands which are already vulnerable to flooding. In addition to rising mean sea level, continued subsidence due to tectonic activity will increase the rate of relative sea-level rise.

Table 7-3. Summary of BAIRWMP Climate Change Vulnerability Assessment	
Vulnerability Areas	System Performance Objective
	As sea-level rise increases, both the frequency and consequences of coastal storm events, and the cost of damage to the built and natural environment, will increase. Existing coastal armoring (including levees, breakwaters, and other structures) is likely to be insufficient to protect against projected sea-level rise. Crest elevations of structures will have to be raised or structures relocated to reduce hazards from higher total water levels and larger waves.
Flooding	Climate change projections are not sensitive enough to assess localized flooding, but the general expectation is that more intense storms would occur thereby leading to more frequent, longer, and deeper flooding.
	Changes to precipitation regimes may increase flooding.
	Elevated Bay elevations due to sea-level rise will increase backwater effects exacerbating the effect of fluvial floods and storm drain backwater flooding.
Ecosystem and Habitat	Changes in the seasonal patterns of temperature, precipitation, and fire due to climate change can dramatically alter ecosystems that provide habitats for California's native species. These impacts can result in species loss, increased invasive species ranges, loss of ecosystem functions, and changes in vegetation growing ranges.
	Reduced rain and changes in the seasonal distribution of rainfall may alter timing of low flows in streams and rivers, which in turn would have consequences for aquatic ecosystems. Changes in rainfall patterns and air temperature may affect water temperatures, potentially affecting cold-water aquatic species. Bay Area ecosystems and habitat provide important ecosystem services, such as: carbon storage, enhanced water supply and quality, flood protection, and food and fiber production. Climate change is expected to substantially change several of these services. The region provides substantial aquatic and habitat-related recreational opportunities, including fishing, wildlife viewing, and wine industry tourism (a significant asset to the region) that may be at risk due to climate change effects.
Hydropower	Currently, several agencies in the Region produce or rely on hydropower produced outside of the Region for a portion of their power needs. As the hydropower is produced in the Sierra, there may be changes in the future in the timing and amount of energy produced due to changes in the timing and amount of runoff as a result of climate change. Some hydropower is also produced within the region and could also be affected by changes in the timing and amount of runoff.

Source: 2019 Bay Area Integrated Regional Water Management Plan (BAIRWMP), Table 16-3

SFPUC Climate Change Studies

The SFPUC views assessment of the effects of climate change as an ongoing project requiring regular updating to reflect improvements in climate science, atmospheric/ocean modeling, and human response to the threat of greenhouse gas emissions. Climate change research by the SFPUC began in 2009 and continues to be refined. In its 2012 report "Sensitivity of Upper Tuolumne River Flow to Climate Change Scenarios," the SFPUC assessed the sensitivity of runoff into Hetch Hetchy Reservoir to a range of changes in temperature and precipitation due to climate change. Key conclusions from the report include the following:

- With differing increases in temperature alone, the median annual runoff at Hetch Hetchy would decrease by 0.7-2.1% from present-day conditions by 2040 and by 2.6-10.2% from present-day by 2100. Adding differing decreases in precipitation on top of temperature increases, the median annual runoff at Hetch Hetchy would decrease by 7.6-8.6% from present-day conditions by 2040 and by 24.7-29.4% from present-day conditions by 2100.
- In critically dry years, these reductions in annual runoff at Hetch Hetchy would be significantly greater, with runoff decreasing up to 46.5% from present day conditions by 2100 utilizing the same climate change scenarios.
- In addition to the total change in runoff, there will be a shift in the annual distribution of runoff. Winter and early spring runoff would increase, and late spring and summer runoff would decrease.
- Under all scenarios, snow accumulation would be reduced, and snow would melt earlier in the spring, with significant reductions in maximum peak snow water equivalent under most scenarios.

Currently, the SFPUC is conducting a comprehensive assessment of the potential effects of climate change on water supply using a wide range of plausible increases in temperature and changes in precipitation to address the wide uncertainty in climate projections over the planning horizon 2020 to 2070. There are many uncertain factors such as climate change, changing regulations, water quality, growth and economic cycles that may create vulnerabilities for the Regional Water System's ability to meet levels of service. The uncertainties associated with the degree to which these factors will occur and how much risk they present to the water system is difficult to predict, but nonetheless they need to be considered in SFPUC planning. To address this planning challenge, the project uses a vulnerability-based planning approach to explore a range of future conditions to identify vulnerabilities, assess the risks associated with these vulnerabilities that could lead to developing an adaptation plan that is flexible and robust to a wide range of future outcomes.

Factors Impacting Supply Reliability

Adoption of the 2018 Bay-Delta Plan Amendment

In December 2018, the State Water Resources Control Board (SWRCB) adopted amendments to the Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta Plan Amendment) to establish water quality objectives to maintain the health of the Bay-Delta ecosystem. The

SWRCB is required by law to regularly review this plan. The adopted Bay-Delta Plan Amendment was developed with the stated goal of increasing salmonid populations in three San Joaquin River tributaries (the Stanislaus, Merced, and Tuolumne Rivers) and the Bay-Delta. The Bay-Delta Plan Amendment requires the release of 30-50% of the "unimpaired flow"[1] on the three tributaries from February through June in every year type. In SFPUC modeling of the new flow standard, it is assumed that the required release is 40% of unimpaired flow.

If the Bay-Delta Plan Amendment is implemented, the SFPUC will be able to meet the projected water demands presented in this UWMP in normal years but would experience supply shortages in single dry years or multiple dry years. Implementation of the Bay-Delta Plan Amendment will require rationing in all single dry years and multiple dry years. The SFPUC has initiated an Alternative Water Supply Planning Program to ensure that San Francisco can meet its Retail and Wholesale Customer water needs, address projected dry years shortages, and limit rationing to a maximum 20% system-wide in accordance with adopted SFPUC policies. This program is in early planning stages and is intended to meet future water supply challenges and vulnerabilities such as environmental flow needs and other regulatory changes; earthquakes, disasters, and emergencies; increases in population and employment; and climate change. As the region faces future challenges – both known and unknown – the SFPUC is considering this suite of diverse non-traditional supplies and leveraging regional partnerships to meet Retail and Wholesale Customer needs through 2045.

The SWRCB has stated that it intends to implement the Bay-Delta Plan Amendment on the Tuolumne River by the year 2022, assuming all required approvals are obtained by that time. Implementation of the Plan Amendment is uncertain for multiple reasons. First, since adoption of the Bay-Delta Plan Amendment, over a dozen lawsuits have been filed in both state and federal courts, challenging the SWRCB's adoption of the Bay-Delta Plan Amendment, including a legal challenge filed by the federal government, at the request of the U.S. Department of Interior, Bureau of Reclamation. This litigation is in the early stages and there have been no dispositive court rulings as of this date.

Second, the Bay-Delta Plan Amendment is not self-implementing and does not automatically allocate responsibility for meeting its new flow requirements to the SFPUC or any other water rights holders. Rather, the Bay-Delta Plan Amendment merely provides a regulatory framework for flow allocation, which must be accomplished by other regulatory and/or adjudicatory proceedings, such as a comprehensive water rights adjudication or, in the case of the Tuolumne River, may be implemented through the water quality certification process set forth in section 401 of the Clean Water Act as part of the Federal Energy Regulatory Commission's licensing proceedings for the Don Pedro and La Grange hydroelectric projects. It is currently unclear when the license amendment process is expected to be completed. This process

[1] "Unimpaired flow represents the natural water production of a river basin, unaltered by upstream diversions, storage, or by export or import of water to or from other watersheds." (Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Dec. 12, 2018) p.17, fn. 14, available at https://www.waterboards.ca.gov/plans_policies/docs/2018wqcp.pdf.)

and the other regulatory and/or adjudicatory proceedings would likely face legal challenges and have lengthy timelines, and quite possibly could result in a different assignment of flow responsibility (and therefore a different water supply impact on the SFPUC).

Third, in recognition of the obstacles in implementation of the Bay-Delta Plan Amendment, the SWRCB Resolution No. 2018-0059 adopting the Bay-Delta Plan Amendment directed staff to help complete a "Delta watershed-wide agreement, including potential flow measures for the Tuolumne River" by March 1, 2019, and to incorporate such agreements as an "alternative" for a future amendment to the Bay-Delta Plan to be presented to the SWRCB "as early as possible after December 1, 2019." In accordance with the SWRCB's instruction, on March 1, 2019, SFPUC, in partnership with other key stakeholders, submitted a proposed project description for the Tuolumne River that could be the basis for a voluntary substitute agreement with the SWRCB ("March 1st Proposed Voluntary Agreement"). On March 26, 2019, the Commission adopted Resolution No. 19-0057 to support the SFPUC's participation in the Voluntary Agreement negotiation process. To date, those negotiations are ongoing under the California Natural Resources Agency and the leadership of the Newsom administration[2].

San José's UWMP analysis on supply reliability assumes implementation of the Bay-Delta Plan Amendment as adopted, which is consistent with SFPUC's analysis of supply availability. Using this analysis results in a "worst case" supply reduction scenario, with supply reductions to wholesale customers reduced between 40-50% during some multi-year drought periods. These reductions are not adjusted to reflect the Bay-Delta Plan Amendment-related considerations noted above, in addition to other considerations such as SFPUC's implementation of additional water supply projects (further discussed below) and SFPUC's contractual obligations related to supply reliability.

Alternative Water Supply Planning Program

The SFPUC is increasing and accelerating its efforts to acquire additional water supplies and explore other projects that would increase overall water supply resilience through the Alternative Water Supply Planning Program. The drivers for the program include: (1) the adoption of the Bay-Delta Plan Amendment and the resulting potential limitations to RWS supply during dry years, (2) the net supply shortfall following the implementation of WSIP, (3) San Francisco's perpetual obligation to supply 184 MGD to the Wholesale Customers, (4) adopted Level of Service Goals to limit rationing to no more than 20 percent system-wide during droughts, and (5) the potential need to identify water supplies that would be required to offer permanent status to interruptible customers. Developing additional supplies through this program would reduce water supply shortfalls and reduce rationing associated with such shortfalls. The planning priorities guiding the framework of the Alternative Water Supply Planning Program are as follows:

[2] California Natural Resources Agency, "Voluntary Agreements to Improve Habitat and Flow in the Delta and its Watersheds," available at https://files.resources.ca.gov/voluntary-agreements/.

- Offset instream flow needs and meet regulatory requirements
- Meet existing obligations to existing permanent customers
- Make interruptible customers permanent
- Meet increased demands of existing and interruptible customers

In conjunction with these planning priorities, the SFPUC considers how the program fits within the LOS Goals and Objectives related to water supply and sustainability when considering new water supply opportunities. The key LOS Goals and Objectives relevant to this effort can be summarized as:

- Meet dry-year delivery needs while limiting rationing to a maximum of 20 percent system-wide reduction in water service during extended droughts;
- Diversify water supply options during non-drought and drought periods;
- Improve use of new water sources and drought management, including groundwater, recycled water, conservation, and transfers;
- Meet, at a minimum, all current and anticipated legal requirements for protection of fish and wildlife habitat;
- Maintain operational flexibility (although this LOS Goal was not intended explicitly for the addition of new supplies, it is applicate here).

Together, the planning priorities and LOS Goals and Objectives provide a lens through which the SFPUC considers water supply options and opportunities to meet all foreseeable water supply needs.

In addition to the Daly City Recycled Water Expansion project[f], which was a potential project identified in the 2015 UWMP and had committed funding at that time, the SFPUC has taken action to fund the study of potential additional water supply projects. Capital projects under consideration to develop additional water supplies include surface water storage expansion, recycled water expansion, water transfers, desalination, and potable reuse. A more detailed list and descriptions of these efforts are provided below.

The capital projects that are under consideration would be costly and are still in the early feasibility or conceptual planning stages. Because these water supply projects would take 10 to 30 years to implement, and because required environmental permitting negotiations may reduce the amount of water that can be developed, the yield from these projects are not currently incorporated into SFPUC's supply projections. State and federal grants and other financing opportunities would be pursued for eligible projects, to the extent feasible, to offset costs borne by ratepayers.

Daly City Recycled Water Expansion (Regional, Normal- and Dry-Year Supply)

This project can produce up to 3 MGD of tertiary recycled water during the irrigation season (approximately 7 months). On an average annual basis, this is equivalent to 1.25 MGD, or 1,400 acre-feet per year. The project is envisioned to provide recycled water to 13 cemeteries and other smaller irrigation customers, offsetting existing groundwater pumping from the South Westside Groundwater Basin; this

will free up groundwater, enhancing the reliability of the Basin. The project is a regional partnership between the SFPUC and Daly City. The irrigation customers are located largely within California Water Service's (Cal Water's) service area. RWS customers will benefit from the increased reliability of the South Westside Basin for additional drinking water supply during droughts. In this way, this project supports the Groundwater Storage and Recovery (GSR) Project, which is under construction.

ACWD-USD Purified Water Partnership (Regional, Normal- and Dry-Year Supply)

This project could provide a new purified water supply utilizing Union Sanitary District's (USD) treated wastewater. Purified water produced by advanced water treatment at USD could be transmitted to the Quarry Lakes Groundwater Recharge Area to supplement recharge into the Niles Cone Groundwater Basin or put to other uses in Alameda County Water District's (ACWD) service area. With the additional water supply to ACWD, an in-lieu exchange with the SFPUC would result in more water left in the RWS. Additional water supply could also be directly transmitted to the SFPUC through a new intertie between ACWD and the SFPUC.

Crystal Springs Purified Water (Regional, Normal- and Dry-Year Supply)

The Crystal Springs Purified Water (PREP) Project is a purified water project that could provide 6-12 MGD of water supply through reservoir water augmentation at Crystal Springs Reservoir, which is a facility of the RWS. Treated wastewater from Silicon Valley Clean Water (SVCW) and/or the City of San Mateo would go through an advanced water treatment plant to produce purified water that meets state and federal drinking water quality standards. The purified water would then be transmitted 10-20 miles (depending on the alignment) to Crystal Springs Reservoir, blended with regional surface water supplies and treated again at Harry Tracy Water Treatment Plant. Project partners include the SFPUC, BAWSCA, SVCW, CalWater, Redwood City, Foster City, and the City of San Mateo. Partner agencies are contributing financial and staff resources towards the work effort.

Los Vaqueros Reservoir Expansion (Regional, Dry Year Supply)

The Los Vaqueros Reservoir Expansion (LVE) Project is a storage project that will enlarge the existing reservoir located in northeastern Contra Costa County from 160,000 acre-feet to 275,000 acre-feet. While the existing reservoir is owned and operated by the Contra Costa Water District (CCWD), the expansion will have regional benefits and will be managed by a Joint Powers Authority (JPA) that will be set up prior to construction. Meanwhile, CCWD is leading the planning, design and environmental review efforts. CCWD's Board certified the EIS/EIR and approved the LVE Project on May 13, 2020. The additional storage capacity from the LVE Project would provide a dry year water supply benefit to the SFPUC. BAWSCA is working in concert with the SFPUC to support their work effort on the LVE project.

- **Conveyance Alternatives:** The SFPUC is considering two main pathways to move water from storage in a prospective LVE Project to the SFPUC's service area, either directly to RWS facilities or indirectly via an exchange with partner agencies. The SFPUC is evaluating potential alignments for conveyance.

- **Bay Area Regional Reliability Shared Water Access Program (BARR SWAP):** As part of the BARR Partnership, a consortium of 8 Bay Area water utilities (including ACWD, BAWSCA, CCWD, EBMUD, Marin Municipal Water District (MMWD), SFPUC, Valley Water, and Zone 7 Water Agency) are exploring opportunities to move water across the region as efficiently as possible, particularly during times of drought and emergencies. The BARR agencies are proposing two separate pilot projects in 2020-2021 through the Shared Water Access Program (SWAP) to test conveyance pathways and identify potential hurdles to better prepare for sharing water during a future drought or emergency. A strategy report identifying opportunities and considerations will accompany these pilot transfers and will be completed in 2021.

Bay Area Brackish Water Desalination (Regional, Normal- and Dry-Year Supply)

The Bay Area Brackish Water Desalination (Regional Desalination) Project is a partnership between CCWD, the SFPUC, Valley Water, and Zone 7 Water Agency. East Bay Municipal Utilities District (EBMUD) and ACWD may also participate in the project. The project could provide a new drinking water supply to the region by treating brackish water from CCWD's existing Mallard Slough intake in Contra Costa County. While this project has independent utility as a water supply project, for the current planning effort the SFPUC is considering it as a source of supply for storage in LVE. While the allocations remain to be determined among partners, the SFPUC is considering a water supply benefit of between 5 and 15 MGD during drought conditions when combined with storage at LVE.

Calaveras Reservoir Expansion (Regional, Dry Year Supply)

Calaveras Reservoir would be expanded to create 289,000 AF additional capacity to store excess Regional Water System supplies or other source water in wet and normal years. In addition to reservoir enlargement, the project would involve infrastructure to pump water to the reservoir, such as pump stations and transmission facilities.

Groundwater Banking

Groundwater banking in the Modesto Irrigation District (MID) and Turlock Irrigation District (TID) service areas could be used to provide some additional water supply to meet instream releases in dry years reducing water supply impacts to the SFPUC service area. For example, additional surface water could be provided to irrigators in wet years, which would offset the use of groundwater, thereby allowing the groundwater to remain in the basin rather than be consumptively used. The groundwater that remains in the basin can then be used in a subsequent dry year for irrigation, freeing up surface water that would have otherwise been delivered to irrigators to meet instream flow requirements.

A feasibility study of this option is included in the proposed Tuolumne River Voluntary Agreement. Progress on this potential water supply option will depend on the negotiations of the Voluntary Agreement.

Inter-Basin Collaborations

Inter-Basin Collaborations could provide net water supply benefits in dry years by sharing responsibility for in-stream flows in the San Joaquin River and Delta more broadly among several tributary reservoir systems. One mechanism by which this could be accomplished would be to establish a partnership between interests on the Tuolumne River and those on the Stanislaus River, which would allow responsibility for streamflow to be assigned variably based on the annual hydrology. As is the case with Groundwater Banking, feasibility of this option is included in the proposed Tuolumne River Voluntary Agreement.

If all the projects identified through the current planning process can be implemented, there would still be a supply shortfall to meet projected needs. Furthermore, each of the supply options being considered has its own inherent challenges and uncertainties that may affect the SFPUC's ability to implement it.

Given the limited availability of water supply alternatives - unless the supply risks are significantly reduced or our needs change significantly - the SFPUC will continue to plan, develop and implement all project opportunities that can help bridge the anticipated water supply gaps during droughts. In 2019, the SFPUC completed a survey among water and wastewater agencies within the service area to identify additional opportunities for purified water. Such opportunities remain limited, but the SFPUC continues to pursue all possibilities.

Water* System *Improvement Program (WSIP)

The WSIP authorized the SFPUC to undertake a number of water supply projects to meet dry-year demands with no greater than 20% system-wide rationing in any one year. Those projects include the following:

Calaveras Dam Replacement Project

Calaveras Dam is located near a seismically active fault zone and was determined to be seismically vulnerable. To address this vulnerability, the SFPUC constructed a new dam of equal height downstream of the existing dam. Construction on the project occurred between 2011 and July 2019. The SFPUC began impounding water behind the new dam in accordance with California Division of Safety of Dams (DSOD) guidance in the winter of 2018/2019.

Alameda Creek Recapture Project

As a part of the regulatory requirements for future operations of Calaveras Reservoir, the SFPUC must implement bypass and instream flow schedules for Alameda Creek. The Alameda Creek Recapture Project will recapture a portion of the water system yield lost due to the instream flow releases at Calaveras Reservoir or bypassed around the Alameda Creek Diversion Dam and return this yield to the RWS through facilities in the Sunol Valley. Water that naturally infiltrates from Alameda Creek will be recaptured into an existing quarry pond known as SMP (Surface Mining Permit)-24 Pond F2. The project will be designed to allow the recaptured water to be pumped to the Sunol Valley Water Treatment Plant or to San Antonio Reservoir. Construction of this project will occur from spring 2021 to fall 2022.

Lower Crystal Springs Dam Improvements

The Lower Crystal Springs Dam (LCSD) Improvements were substantially completed in November 2011. The joint San Mateo County/SFPUC Bridge Replacement Project to replace the bridge across the dam was completed in January 2019. A WSIP follow up project to modify the LCSD Stilling Basin for fish habitat and upgrade the fish water release and other valves started in April 2019. While the main improvements to the dam have been completed, environmental permitting issues for reservoir operation remain significant. While the reservoir elevation was lowered due to DSOD restrictions, the habitat for the Fountain Thistle, an endangered plant, followed the lowered reservoir elevation. Raising the reservoir elevation now requires that new plant populations be restored incrementally before the reservoir elevation is raised. The result is that it may be several years before pre-project water storage volumes can be restored.

Regional Groundwater Storage and Recovery Project

The Groundwater Storage and Recovery (GSR) Project is a strategic partnership between SFPUC and three San Mateo County agencies – the California Water Service Company (serving South San Francisco and Colma), the City of Daly City, and the City of San Bruno – to conjunctively operate the south Westside Groundwater Basin. The project sustainably manages groundwater and surface water resources in a way that provides supplies during times of drought. During years of normal or heavy rainfall, the project would provide additional surface water to the partner agencies in San Mateo County in lieu of groundwater pumping. Over time, reduced pumping creates water storage through natural recharge of up to 20 billion gallons of new water supply available during dry years.

The project's Final Environmental Impact Report was certified in August 2014, and the project also received Commission approval that month. Phase 1 of this project consists of construction of thirteen well sites and is over 99% complete. Phase 2 of this project consists of completing construction of the well station at the South San Francisco Main site and some carryover work that has not been completed from Phase 1. Phase 2 design work began in December 2019.

2 MGD Dry-year Water Transfer

In 2012, the dry-year transfer was proposed between the Modesto Irrigation District and the SFPUC. Negotiations were terminated because an agreement could not be reached. Subsequently, the SFPUC had discussions with the Oakdale Irrigation District for a one-year transfer agreement with the SFPUC for 2 MGD (2,240 acre-feet). No progress towards agreement on a transfer was made in 2019, but the irrigation districts recognize SFPUC's continued interest and SFPUC will continue to pursue transfers.

In order to achieve its target of meeting at least 80% of its customer demand during droughts with a system demand of 265 MGD, the SFPUC must successfully implement the dry-year water supply projects included in the WSIP. Furthermore, the permitting obligations for the Calaveras Dam Replacement Project and the Lower Crystal Springs Dam Improvements include a combined commitment of 12.8 MGD for instream flows on average. When this is reduced for an assumed Alameda Creek Recapture Project recovery of 9.3 MGD, the net loss of water supply is 3.5 MGD.

Valley Water: Reliability and Constraints

To maintain water supply reliability and flexibility, Valley Water's water supply includes a variety of sources including local groundwater, local surface water, imported surface water from the SWP and CVP, recycled and purified water, and transfers. Current and projected water supply yields are presented in Valley Water's UWMP (Valley Water, 2021). Valley Water has an active conjunctive water management program to optimize the use of groundwater and surface water, and to prevent groundwater overdraft and land subsidence. Additionally, Valley Water has made investments to reduce Santa Clara County's reliance on the Delta and increase regional self-reliance. Additional information on Valley Water's efforts to reduce Delta reliance are included within Appendix H. Supplementary information on Valley Water's supply reliability can be found in their UWMP (Valley Water, 2021).

Several factors have the potential to negatively impact reliability, including hydrologic variability, climate change, invasive species, infrastructure failure, regulatory actions as well as institutional, political, and other uncertainties. Hydrologic uncertainties influence the projections of both local and imported water supplies and the anticipated reliability of those supplies. Supply analyses performed by Valley Water are based on the assumption of historical patterns of precipitation. The development of Valley Water projects and programs to meet future needs which take hydrologic variability and climate change into account. Valley Water is conservatively planning for investments by considering severe droughts, such as the 2012-2016 drought, will occur in the future. Projects included in the supply projections include: Transfer-Bethany pipeline (2025); Anderson dam seismic retrofit and potable reuse (2030); Guadalupe, Calero, and Almaden dam seismic retrofits and Pacheco Reservoir Expansion (2035); and an additional 35,000 AF of conservation to reach Valley Water's goal of 109,000 AF by 2040 with a 1992 baseline.

Valley Water uses the Water Evaluation and Planning (WEAP) system model to evaluate reliability under different conditions. This water supply modeling tool takes an integrated approach to water resources planning. The WEAP model is used primarily to simulate Valley Water's water supply system comprised of facilities to recharge the county's groundwater subbasins, local water supply systems including the operation of reservoirs and creeks, treatment and distribution facilities, and raw water conveyance systems. The model also accounts for non-Valley Water sources and distribution of water in the county such as supplies from the SFPUC, recycled water, and local water developed by other agencies such as San Jose Water Company. In essence, the model was formulated to simulate the management of the current and future water resources with the county. In addition, Valley Water groundwater flow models were used to estimate initial groundwater storage and natural groundwater recharge. Analyzing projected water supplies and demands requires establishing many assumptions. These modeling assumptions are summarized in Valley Water's 2020 UWMP (Valley Water, 2021).

Climate Change Impact to Water Supply and Water Quality

Valley Water's ability to provide a reliable, clean water supply is challenged by the potential of warmer temperatures, changing precipitation and runoff patterns, reduced snow pack, and rising sea levels. Valley Water's water supply vulnerabilities to climate change include a decrease in imported water supplies as a result of a potential reduction in snow pack and a shift in the timing of runoff, a decrease in local surface

water supplies as result of reduced precipitation, more frequent and severe droughts, changes in surface water quality associated with changes in flows and temperature, and changes in imported water quality due to salinity intrusion in the Delta. Additional vulnerabilities include more frequency algal blooms, invasive and/or non-native species, and wildfire threats to supply infrastructure. Imported water supplies are subject to hydrologic variability. Storage can help mitigate the impacts of hydrologic variability, as does the development of all-weather supplies.

To address constraints on water supplies and the challenges of an uncertain future and imprecise projections of future conditions and potential impacts on water supplies, Valley Water relies on its long-term planning efforts that continually develop and improve resilient and adaptable water supplies and strategies and consider changing and uncertain conditions.

Constraints on Imported Water Supplies

Much of Valley Water's current water supply comes from hundreds of miles away from natural runoff and releases from statewide reservoirs. This imported water is pumped out of the Delta and brought into the county through the complex infrastructure of the State Water Project (SWP) and Central Valley Project (CVP). Valley Water holds contracts for 100,000 AFY from the SWP and for 152,500 AFY from the CVP. The actual amount of water delivered is typically less than these contractual amounts and depends on hydrology, conveyance limitations, and environmental regulations.

Future SWP allocations are based on the State Water Project Delivery Capability Report (DCR), a biennial report that DWR issues to assist SWP contractors and local planners in assessing the near and long-term availability of supplies from the SWP. DWR issued its most recent update, the draft 2019 DWR State Water DCR, in August 2020. In this update, DWR provides SWP supply estimates for SWP contractors to use in their planning efforts, including for use in their 2020 UWMPs. The 2019 DCR includes DWR's estimates of SWP water supply availability under both existing (2020) and future conditions (2040). The long-term average allocation reported in the 2019 DCR for the existing conditions study provide appropriate estimate of the SWP water supply availability under current conditions, which Valley Water used as estimated imported supply for 2025.

To evaluate SWP supply availability under future conditions, the 2019 DCR included a model study representing hydrologic and sea level rise conditions in 2040. The future condition study used all of the same model assumptions as the study under existing conditions, but reflected changes expected to occur as a result of climate change. This future scenario did not include any projected changes to regulations and therefore, may overestimate future SWP and CVP deliveries. However, for the long-term planning purposes of this UWMP, the long-term average allocations reported in the future condition study from the 2019 DCR is the only dataset currently available to estimate future SWP water supply availability. This future condition scenario was used to estimate future SWP and CVP supply availability to Valley Water from 2030 to 2045.Valley Water's SWP and CVP water supplies are also subject to a number of additional constraints including operations and regulatory requirements to manage flows and protect fisheries and water quality in the Delta, seismic threats to the levee system, and water quality variations (including algal blooms). Water quality variations are addressed at Valley Water's drinking water treatment plants, by

blending sources, and/or switching sources. Algae and disinfection byproduct precursors can be especially challenging during drought conditions. In addition to developing local supplies, securing, and optimizing Valley Water's existing local water system, and expanding water conservation, Valley Water is evaluating the costs and benefits of participating in the California WaterFix as a means of improving imported water reliability.

Constraints on Local Surface Water Supplies

Local surface water supplies are vulnerable to hydrologic variability, with most reservoirs sized for annual operations. In wetter years, Valley Water is challenged to capture available supply due to capacity constraints and flood protection needs. In drier years, Valley Water is challenged to maintain its groundwater recharge program due to regulations and permit conditions that require Valley Water to maintain bypass flows.

Several factors can impact Valley Water's reservoir operations and its use of surface water rights, including meeting reservoir operating rules designed to reduce flood risk, maintaining storage levels for environmental or recreation purposes, dam safety requirements, and managing total Valley Water supplies for reliability. Valley Water regularly exercises its water rights to ensure the availability of this resource into the future. Future average use of local surface water supply is projected to increase over the planning horizon as Valley Water's dams are seismically retrofitted, allowing operating capacity restrictions to be lifted. To increase the seismic stability of Anderson Dam, Valley Water drained Anderson reservoir to Deadpool (3% of capacity) in October 2020, the lowest level that can be reached through the existing outlet tunnel, to prepare for the reconstruction of the existing earthen Anderson Dam. The reconstruction is expected to last about 10 years and will allow Anderson Reservoir to return to its full operating capacity once completed.

Constraints on Groundwater Supplies

Groundwater supply is largely constrained by hydrologic variability and the estimated 548,000 AF of operational storage capacity within the subbasins. The inflows to the groundwater subbasins are constrained by Valley Water's managed aquifer recharge program and natural recharge. Valley Water has about 144,000 AFY of managed recharge capacity, including more than 90 miles of in-stream recharge and 102 off-stream recharge ponds. Maintaining Valley Water's managed recharge program requires ongoing operational planning for the distribution of local and imported water to recharge facilities; maintenance and operation of reservoirs, diversion facilities, distribution systems, and recharge ponds; and the maintenance of water supply contracts, water rights, and relevant environmental clearance. Valley Water's managed recharge program is critical to maintaining groundwater supply, because natural recharge is insufficient to meet groundwater demands. Valley Water is the designated Groundwater Sustainability Agency (GSA) for the Santa Clara and Llagas groundwater subbasins under California's 2014 Sustainable Groundwater Management Act (SGMA) and has a DWR-approved Alternative to a Groundwater Sustainability Plan (GSP) in place for sustainably managing these subbasins.

Constraints on Water Transfers

As discussed in Section 6, Valley Water's Water Master Plan includes dry year options/transfers in critical dry years. The biggest constraints on transfers are transfer capacity in the Delta, water quality, and costs.

Constraints on Recycled Water Supplies

The SBWR Strategic Plan includes 15,000 AFY of retail recycled water deliveries, plus 5,600 AFY of recycled water reserved for Valley Water use until 2027. Valley Water currently has no intention of utilizing this water prior to 2027. Although the SBWR retailer projections for recycled water use exceed the amount projected in the SBWR Strategic Plan, total system capacity exists to meet projections.

Valley Water is pursuing a purified water (potable reuse) project. If implemented, the project may constrain expanded recycled water deliveries. Several technical and legal considerations may impede project development, including potable reuse include brine disposal, public acceptance, permitting, hydrogeologic conditions, and costs. Once the program is implemented the largest challenge will be maximizing use of the available supply during wetter years when storage is full and/or other lower cost supplies are competing for use. These constraints are being addressed as part of the Expedited Purified Water Program.

Basis of Reliability Analysis

Reliability of the SJMWS is determined based upon the reliability of imported water and groundwater production. SJMWS relies upon the information relating to water supply availability and allocations provided by wholesalers and assumes the accuracy of the data for this UWMP. The normal year supply represents the expected supply under average hydrologic conditions, the dry year supply represents the expected supply under the single driest hydrologic year, and the multiple-dry year supply represents the expected supply during a period of five consecutive dry years. The supply projected to be available to SJMWS during different hydrologic conditions is based upon analyses done by each wholesaler; the basis for each wholesaler's analysis follows on subsequent pages (this data is not compatible with DWR Table 7-1).

Table 7-4. (DWR Table 7-1): Basis of Water Year Data (Reliability Assessment)			
X[1]	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location: Beginning on Page 7-21		
	Quantification of available supplies is provided in this table as either volume only, percent only, or both.		
Year Type	Base Year	Volume Available	% of Average Supply
Average Year			
Single-Dry Year			
Consecutive Dry Years 1st Year			
Consecutive Dry Years 2nd Year			
Consecutive Dry Years 3rd Year			
Consecutive Dry Years 4th Year			
Consecutive Dry Years 5th Year			

Note:
1 Valley Water imported and groundwater sources, as well as recycled water, have been identified to be 100% reliable during dry years; reductions shown in subsequent tables reflect SFPUC reductions under BDP implementation.

SFPUC

The SFPUC's planning model combines a historical record of hydrology from 1920 through 2017 with a current representation of SFPUC RWS infrastructure and operations. Historically, droughts that occurred during 1977 and 1987-1992 resulted in supply shortfalls in which rationing of water supplies was necessary. For their analysis, SFPUC used a hypothetical drought that is more severe than what their RWS has historically experienced, which consists of the 1987-1992 drought followed by an additional 2.5 years of dry conditions from the hydrologic record that include the 1976-1977 drought. SFPUC analyzed these conditions incorporating different wholesale customer demand scenarios, including demands equal to full contractual obligations, and demands equal to the sum of the projected wholesale customer demands.

The adoption of the Bay-Delta Plan Amendment (BDP) may significantly impact the supply available from the RWS. SFPUC recognizes that the BDP has been adopted and that, given that it is now state law, they must plan for a future in which it is fully implemented. Although the State has stated it intends to implement the Bay-Delta Plan Amendment on the Tuolumne River by the year 2022, given the current level of uncertainty, it is assumed for the purposes of the SFPUC's UWMP that the BDP will be fully implemented starting in 2023. SFPUC also acknowledges that the plan is not self-implementing and therefore does not automatically go into effect. SFPUC is currently pursuing a voluntary agreement as well as a lawsuit which would limit implementation of the BDP. With both of these processes occurring on an unknown timeline, SFPUC does not know at this time when the BDP is likely to go into effect. Therefore, a situation in which the BDP is not implemented as adopted also represents a potential supply reliability scenario.

Because of the uncertainty surrounding implementation of the BDP, the SFPUC conducted a water service reliability assessment that includes: (1) a scenario in which the BDP is fully implemented in 2023, and (2)

a scenario that considers the SFPUC system's current situation without the BDP. The two scenarios provide a bookend for the possible future scenarios regarding RWS supplies.

Supply modeling results presented in the text of the SFPUC's UWMP reflect an input of projected demands on the RWS consisting of (1) projected retail demands on the RWS (total San Francisco retail demands minus local groundwater and recycled water supplies), and (2) projected Wholesale Customer purchases. The SFPUC has a Level of Service objective of meeting average annual water demand of 265 MGD from the SFPUC watersheds for retail and Wholesale Customers during non-drought years, as well as a contractual obligation to supply 184 MGD to the Wholesale Customers. Therefore, the SFPUC has also conducted modeling based on a demand of 265 MGD in order to facilitate planning that supports meeting this Level of Service goal and their contractual obligations.

To simplify SJMWS' analysis, this UWMP presents SFPUC supply availability reflecting its analysis of the scenario containing (1) full BDP implementation, and (2) projected Wholesale Customer purchases. As a comparison, the modeling of projected Wholesale Customer purchases without BDP conditions results in no RWS supply reductions until the level of demand projected for 2045; at that level of demand, 10% shortages of RWS supply would occur in years 4 and 5 of the five-consecutive dry year sequence. For its UWMP SJMWS relies solely upon the SFPUC's UWMP supply availability analysis, and has not independently verified the results. SFPUC's UWMP contains further details of the results of their various modeling scenarios, both within their standardized UWMP data tables as well as within the UWMP's appendices.

During development of the 2020 UWMP, SFPUC provided information identifying the total quantity of supply projected to be available to wholesale customers in single and multi-dry years. BAWSCA analyzed SFPUC's information and provided further information identifying the proportion of that supply that would be available to each wholesale customer. The information in SJMWS' analysis includes the proportion of supply identified to be available to San José, as calculated by BAWSCA.

Valley Water

Valley Water's water supply planning model simulates the water supply and demand over 94 years, using the historic hydrologic sequence of 1922 through 2015. The model tracks water resources throughout the county and delivery of water to meet demands according to availability and priority. The single driest year in the 94 model years occurred in 1977, in which 80% of average supplies were available. The five dry-year period used in their analysis corresponds to the extended drought that occurred from 1988-1992, during which 77-83% of average supplies were available in a given year. Valley Water's analysis indicates that their diverse water supply portfolio can meet the County's future demands in normal, single dry, and five consecutive dry years, based on the projected demands and existing and planned supplies. The future supplies reflect the planned and phased implementation of their Water Supply Master Plan (WSMP) projects over time. More information on Valley Water's WSMP is available on their website (https://www.valleywater.org/your-water/water-supply-planning/water-supply-master-plan). The goal of Valley Water is to develop supplies to meet 100% of annual water demand during non-drought years and at least 80% of annual water demand in drought years.

Valley Water's WSMP's "Ensure Sustainability" strategy includes securing existing supplies and infrastructure, optimizing the use of existing supplies and infrastructure, and expanding water recycling and long-term water conservation savings. As part of this strategy, their WSMP estimates that water conservation and recycling, combined, will increase from about 15% of the county's water supply mix to about 26%. Developing these local sources and managing demands reduces reliance on imported water supplies.

Valley Water's analysis of dry-year supplies does not account for the reductions of SFPUC supplies under the BDP as discussed in the prior section. It is assumed in this UWMP that Valley Water's supply availability figures apply to its projected imported and groundwater sources, and that the use of those sources is not increased during dry years to offset any reduction from the SFPUC supply. However, during actual management of reduced supplies during a dry year, SJMWS would coordinate with Valley Water regarding potential availability of additional groundwater in order to mitigate the supply shortage associated with reduced SFPUC supplies.

Recycled Water

Non-potable (recycled) water supplies are projected to be 100% available to meet demands in all water year types; therefore, recycled water is excluded from subsequent reliability tables.

Average Year Supplies and Demands

Table 7-5 (DWR Table 7-2) summarizes the service reliability assessment for a normal water year based on water supply and water demand projections. Projected supplies meet projected demands through 2045, as the supplies of the wholesalers, Valley Water and SFPUC, are available to meet the projected demands for all retailers. The demands presented in **Table 7-5** include projected potable water use within the SJMWS.

Table 7-5. (DWR Table 7-2): Normal Year Supply and Demand Comparison (Potable)

	2025	2030	2035	2040	2045
Supply totals	21,080	24,156	27,343	32,815	33,552
Demand totals	21,080	24,156	27,343	32,815	33,552
Difference	0	0	0	0	0

Note: Table excludes recycled water which is 100% available in all years

Single Dry Year Supplies and Demands

As noted in Valley Water's draft 2020 UWMP, imported and groundwater supplies appear to be sufficient to meet demands during a single dry year through 2045. This assumes that reserves are at healthy levels at the beginning of the year and that the projects and programs identified in their Water Supply and Infrastructure Master Plan are implemented. If reserves are low at the beginning of a single dry year, Valley Water might need to call for water use reductions in combination with using reserves.

Imported supplies from SFPUC during a single dry year are projected to be reduced based on their supply reliability analysis as discussed in this Section. The projected SFPUC supply available to San José in a single-dry year ranges from 54-64% through 2045. Accounting for total water supply management, this represents a total SJMWS potable supply shortage of under 10% in any given year, which will be managed utilizing conservation measures as identified in SJMWS' Water Shortage Contingency Plan.

Table 7-6 (DWR Table 7-3) illustrates the reliability of water supplies to meet projected annual water demands for the SJMWS in a single-dry year.

Table 7-6. (DWR Table 7-3): Single Dry Year Supply and Demand Comparison (Potable)

	2025	2030	2035	2040	2045
Supply totals	19,265	22,330	25,505	30,977	31,257
Demand totals	21,080	24,156	27,342	32,814	33,553
Difference	(1,815)	(1,826)	(1,837)	(1,837)	(2,296)

Note: Table excludes recycled water which is 100% available in all years

Multiple Dry Years Supply and Demand

The greatest challenge to water supply reliability is multiple dry years, such as those that occurred in 1987 through 1992 and in 2012 through 2015. Multiple dry year periods have the potential to deplete supply reserves in, including local groundwater storage.

With existing and planned projects under their Water Supply Master Plan, and under current regulations, Valley Water has identified that their diverse water supplies are sufficient throughout the full five-year drought in all demand years (Valley Water, 2021). Projected supplies available to San José from SFPUC during multi-dry years range from 46%-64% each year through 2045. Based on cumulative available water supplies, this represents a total SJMWS potable supply shortage between approximately 5-10% during a given multi-dry year, which will be managed utilizing conservation measures as identified in SJMWS' Water Shortage Contingency Plan. **Table 7-7** (DWR Table 7-4) presents the projected multiple-dry year water supply and demand assessment for the SJMWS.

In summary, as mentioned earlier, to help bridge the gap between supplies and demands during a multi-year drought, Valley Water would likely implement a combination of calls for countywide short-term water use reductions, use of reserves, and obtaining additional supplement supplies through transfers and/or exchanges. The actual mix of these options would be determined through Valley Water's annual operations planning process. In the first year of drought, Valley Water would most likely rely on available reserves. In subsequent years, as reserves are depleted, Valley Water would need to rely more on short-term water use reductions and supplemental supplies. As possible and necessary, SJMWS would coordinate regularly with Valley Water during any dry period to utilize supplies which are most readily available, while preserving and/or limiting use of other supplies.

Table 7-7. (DWR Table 7-4): Multiple Dry Years Supply and Demand Comparison (Potable)					
		2025	2030	2035	2040
First Year	Supply Totals	19,265	22,330	25,505	30,977
	Demand Totals	21,080	24,156	27,342	32,814
	Difference	(1,815)	(1,826)	(1,837)	(1,837)
Second Year	Supply Totals	19,421	22,508	26,140	30,666
	Demand Totals	21,695	24,793	28,437	32,962
	Difference	(2,274)	(2,285)	(2,296)	(2,296)
Third Year	Supply Totals	20,036	23,145	27,235	30,813
	Demand Totals	22,310	25,431	29,531	33,110
	Difference	(2,274)	(2,285)	(2,296)	(2,296)
Fourth Year	Supply Totals	20,652	23,783	28,329	30,636
	Demand totals	22,926	26,068	30,626	33,258
	Difference	(2,274)	(2,285)	(2,296)	(2,621)
Fifth Year	Supply Totals	21,267	24,420	29,200	30,784
	Demand Totals	23,541	26,705	31,720	33,405
	Difference	(2,274)	(2,285)	(2,521)	(2,621)

Notes:
1 Supply Totals includes projected supplies available from SFPUC and Valley Water (which includes groundwater) during five-year shortages ranging from 2025-2030 through 2040-2045.
2 Table excludes recycled water which is 100% available in all years

Drought Risk Assessment

The City uses a combination of groundwater and imported water from its two wholesalers, Valley Water and SFPUC, along with recycled water, to meet customer water demands. Historically, the City has successfully implemented its Water Shortage Contingency Plan during periods of drought and/or extended dry periods including the recent drought in 2012 through 2015, such that supply availability was successfully managed. **Table 7-8** (DWR Table 7-5) below shows a comparison of the total available water supplies available to the City versus the gross water use for a drought beginning in 2021 and lasting for five consecutive years. Consistent with the multiple dry year scenario described above, the analysis shows that it is necessary to implement the Water Shortage Contingency Plan (WSCP) response actions to reduce water demands to offset a water supply shortfall starting in 2023, coinciding with assumed implementation of the Bay-Delta Plan Amendment affecting SFPUC's supply availability. Recycled water supplies are excluded from **Table 7-8**, such that **Table 7-8** represents potable water use reductions as identified within the WSCP.

Table 7-8. (DWR Table 7-5): Five-Year Drought Risk Assessment Tables (Potable)

2021	Total
Gross Water Use	18,253
Total Supplies	18,253
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0

2022	Total
Gross Water Use [Use Worksheet]	18,960
Total Supplies [Supply Worksheet]	18,960
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0

2023	Total
Gross Water Use [Use Worksheet]	19,666
Total Supplies [Supply Worksheet]	17,361
Surplus/Shortfall w/o WSCP Action	(2,306)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	2,306
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	12%

2024	Total
Gross Water Use [Use Worksheet]	20,373
Total Supplies [Supply Worksheet]	18,038
Surplus/Shortfall w/o WSCP Action	(2,335)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	2,335
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	11%

2025	Total
Gross Water Use [Use Worksheet]	21,080
Total Supplies [Supply Worksheet]	18,716
Surplus/Shortfall w/o WSCP Action	(2,364)
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	2,364
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	11%

Note: Recycled water supplies are projected to be 100% available in all years. Recycled water is excluded from this table, such that this table would represent the required water use reductions associated with potable water use.

Past and Current Water Conservation Programs and Strategies

As population and economic growth increases, water conservation is a key strategy towards the vision of San José as a thriving, environmentally sustainable city. San José has updated its Water Shortage Contingency Plan, which will provide the direction to manage this finite resource in a way that maintains the quality of life and economic viability in San José. There are multiple drivers for the City to implement water conservation efforts, including for water supply reliability and sustainability. Provided below is a description of City's water conservation efforts.

Past Conservation Programs

Prior to the mid-1990s, the City conducted indoor and outdoor water conservation programs, primarily in response to the drought of 1987 – 1992 and flow reduction requirements in the wastewater discharge permit for the RWF. Conservation measures included rebates for Ultra Low Flush Toilets and front-loading washing machines.

Since the mid-1990s, the City's water conservation efforts focused on conservation strategies such as toilet retrofits, washing machine rebates, water use audits, and other residential and commercial conservation programs to reduce indoor water use.

Current Programs and Strategies

Since 1998 the City and Valley Water have signed a cost sharing agreement in which the two agencies financially support each other's water conservation programs. In recent years, the cost sharing agreement has reduced the required number of City full-time employees (FTEs) devoted to conservation and allowed the City to capitalize on large-scale program efficiencies at the County and state levels. The City cost-shares in programs administered by Valley Water and receives funding from Valley Water for programs the City administers.

Another conservation strategy has been the implementation of Best Management Practice (BMPs) measures for water conservation as defined by the California Urban Water Conservation Council, of which the City is a signatory member. These BMPs are listed in Section 8 of the UWMP. Implementation of these BMPs is now a requirement for agencies applying for grant funds from the DWR.

City staff also reviews development plans that come through the City's Planning Department for water conservation opportunities. However, some identified conservation opportunities, such as design modifications beyond current standards, are not mandatory.

The City has also enacted ordinances for periods of water shortages. Chapter 15 of the City's Municipal Code includes short-term measures to be implemented (for water use reductions of 10% to 40%) if a water shortage is declared by the City Council.

Measures include, but are not limited to, landscape irrigation restrictions, public noticing and outreach, and restrictions on filling of pools, spas, and fountains. These measures supplement ongoing water conservation programs and water waste prevention ordinances.

The SFPUC has also used Drought Public Education and Outreach measures to launch drought campaign and conservation measures. Provided below is a description of that effort.

In response to prolonged drought conditions, on January 31, 2014 the SFPUC asked its retail and wholesale customers to voluntarily reduce system-wide water consumption by 10 percent. That summer, BAWSCA, in partnership with the SFPUC, launched a regional drought education campaign to heighten awareness and encourage water conservation. The regional campaign drew upon the SFPUC's "Water Conservation is Smart and Sexy" citywide campaign. The regional campaign appeared in the form of billboards, BART station ads, movie theater ads, and online video advertisements.

Following Governor Brown's Drought Executive Order on April 1, 2015 and conservation regulations mandating a statewide 25% reduction in potable urban water use, the SFPUC continued its call for a system-wide 10% reduction in water use. The SFPUC and BAWSCA partnered again to launch a new drought campaign for the summer of 2015 to remind customers to keep up their water conservation efforts, focusing in particular on outdoor water savings. Regional messaging was included in the form of billboards, BART station ads, television ads, newspaper ads, and a video campaign.

Together with wholesaler activities and coordination, the City uses water management tools and options that are being implemented, or are planned for implementation, that maximize the use of local water resources and minimize the need to import water from other regions. The City utilizes actions such as increased implementation of demand management measures, increased use of recycled water, enhanced groundwater management, and improvements in regional water management and coordination with BAWSCA and Valley Water to ensure water supplies for the SJMWS.

8. WATER SHORTAGE CONTINGENCY PLAN

Water Code Section 10632(a) requires that the UWMP address a water shortage through a Water Shortage Contingency Plan (WSCP). The City's WSCP is included as **Appendix I**. The 2020 Guidebook (Appendix F, UWMP checklist) requires the following:

#55. Provide a water shortage contingency plan (WSCP) with specified elements below. 10632(a).

#56. Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP. 10632(a)(1).

#57. Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented. 10632(a)(10).

#58. Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability. 10632(a)(2)(A).

#59. Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code. 10632(a)(2)(B).

#60. Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply. 10632(a)(3)(A).

#61. Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories. 10632(a)(3)(B).

#62. Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions. 10632(a)(4)(A).

#63. Specify locally appropriate demand reduction actions to adequately respond to shortages. 10632(a)(4)(B).

#64. Specify locally appropriate operational changes. 10632(a)(4)(C).

#65. Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions. 10632(a)(4)(D).

#66. Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action. 10632(a)(4)(E).

#67. The plan shall include a seismic risk assessment and mitigation plan. 10632.5.

#68. Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages. 10632(a)(5)(A).

#69. Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications. 10632(a)(5)(B) and 10632(a)(5)(C).

#70. Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP. 10632(a)(6).

#71. Describe the legal authority that empowers the supplier to enforce shortage response actions. 10632(a)(7)(A).

#72. Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3. 10632(a)(7)(B).

#73. Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency. 10632(a)(7)(C).

#74. Describe the potential revenue reductions and expense increases associated with activated shortage response actions. 10632(a)(8)(A).

#75. Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions. 10632(a)(8)(B).

#76. Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought. 10632(a)(8)(C).

#77. Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance. 10632(a)(9).

#78. Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas. 10632(b).

#79. 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 30 days after the submission of the plan to DWR. 10635(c).

#80. Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan. 10632(c).

9. DEMAND MANAGEMENT MEASURES

The evaluation of Demand Management Measures (DMMs) occupies a significant portion of the Act. Section 10631 requires the following (items are from the 2020 Guidebook: Appendix F, UWMP checklist):

#81. 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. 10631(e)(1)

The goal of this section is to provide a comprehensive description of the water conservation programs that SJMWS is currently implementing, and plans to implement, in order to meet its urban water use targets. The Water Code section addressing DMMs was significantly modified in 2014. Retail agencies are required to report six general DMMs (water waste prevention ordinances, metering, conservation pricing, public education and outreach, programs to manage distribution system real loss, water conservation program coordination staff) and an "other" category of DMMs, instead of 14 specific measures previously included in the Water Code. This Section presents a comprehensive description of the City's past, current, and future water conservation activities for the SJMWS in compliance with the above listed section of the Water Code.

Each DMM is discussed below including the following details:

- Nature – Description of the DMM program
- Extent – Quantification of the implementation of the DMM (e.g., the number of customers who have used the toilet rebate program, the number of large landscape accounts that have been assigned a water budget, or the number of school presentations). In addition, extent includes a description of the methods used to estimate the expected water savings from DMMs, or the agency's implementation plan for a particular DMM.

Demand Management Measures by Valley Water

Valley Water is the wholesaler to SJMWS, and the two agencies have a strong partnership to plan the future water supply and encourage water conservation in the SJMWS's service area and the rest of the county. With regard to demand management, Valley Water provides resources for public outreach and landscape programs that are targeted to improve irrigation efficiency. These county-wide efforts benefit the SJMWS and their demand management goals.

Public Outreach

Valley Water operates several programs targeting public outreach and education in Santa Clara County. The wholesaler engages the community through a variety of print and digital advertisement campaigns, community partnerships, award-winning volunteer programs, and education programs. Valley Water's public outreach includes the annual landscape summit, nursery program, watershed approach to

landscaping guide, demonstration gardens, various workshops, Bay Area Qualified Water Efficient Landscaper Training, Going Native Garden Tours, and other community events.

Valley Water also provides public outreach to students within the SJMWS service area through classroom presentations, large school assemblies, which includes water career education. Additional students attend field trips to one of their water treatment plants, as well as the San José/Santa Clara Regional Wastewater Facility.

Landscape Programs

Valley Water has made significant investments to reduce countywide water demands through landscape programs. A summary of Valley Water's landscape programs between FY2015-16 through FY 2019-20 is given in **Table 9-1** (Valley Water, 2021. Table 9-4). Water savings from conservation and stormwater capture were about 75,000 AF in 2020. From July 2015 to June 2020, over $14.3 million dollars was rebated for approximately 8.3 million square feet of landscape conversion. Countywide through June 2020, Valley Water has rebated for over 12.7 million square feet of landscape conversion. Valley Water plans to continue to offer this rebate in the future to help reach the region's long-term water conservation goals. In January of 2019, Valley Water added Rainwater Capture Rebates to the Landscape Rebate Program. Customers can now receive rebates for the installation of rain barrels, cisterns, and rain gardens. Since the start of the Rainwater Capture Rebates, rainwater has been diverted from nearly 20,000 square feet of roof area into qualifying rain gardens, 165 rain barrels have been installed, and cisterns with a total combined capacity of over 33,000 gallons have received a rebate. FY2018-19 and FY2019-20 combined indicate that over 48,000 irrigation equipment pieces have been upgraded compared to the pre-drought FY2011-12 and FY2012-13 combined numbers of 8,236 – an increase of more than a 500%.

Additionally, nearly 4,000 Weather-Based Irrigation Controllers (WBICs) have been installed during FY15-FY20. Sometimes referred to as "smart controllers," WBICs utilize the principles of evapotranspiration or "ETo" to automatically calculate a site-specific irrigation schedule based on several factors, including plants and soil type. The controller then adjusts the irrigation schedule as local weather changes, saving up to 20% of irrigation water use when used properly. Valley Water plans to continue to offer rebates for WBICs in the future in order to reach the region's long-term water conservation goals.

Demand Management Measures by SJMWS

SJMWS is committed to water conservation and reducing demand on water supplies. SJMWS and Valley Water have a cost-share agreement for rebates and the WaterSmart Home Water Report program. The following programs and actions have been implemented by SJMWS to promote the efficient use of water, some in partnership with Valley Water through the cost-share agreement.

Water Waste Prevention Ordinance

In addition to the water shortage conditions specified by various levels of water supply scenarios, the City has implemented a list of conservation actions in the San José Municipal Code Chapter 15.10 that are in

effect at all times to prohibit water waste. The code specifically prohibits certain water wasting uses, limits others, creates guidelines for plumbing fixtures in certain industries, and encourages water conservation.

Table 9-1. Valley Water Landscape Programs

Landscape Programs	Last 5 Years	To Date
Large Landscape Surveys	162	1,816
Large Landscape Program[1]	2,213	3,000
Turf Conversion (square feet) [2]	8,629,926	12,975,063
Irrigation Equipment[3]	313,010	362,160
Weather Based Irrigation Controllers (WBIC)[4]	3,960	6,726
In-Line Drip Conversion (square feet)	166,461	166,461
Rain Barrels (number of units)	110	110
Cisterns (gallons)	32,745	32,745
Rain Gardens (square footage of roof area diverted)	12,389	12,389
Landscape Maintenance Program	715	715
Total Participation[5]	**320,170**	**374,527**

Notes:
1 Represents total active sites in program: "Last 5 Years" shows number of sites added over indicated period, and "To Date" shows total active sites.
2 Includes pilot programs and partnership with Our City Forest; square footage estimated up to 2011
3 Excludes WBICs
4 Includes pilot programs and participation from residential, commercial, industrial, and institutional sites
5 Total excludes square footage from turf conversion, in-line drip conversion, rain gardens, and total gallons from cisterns

The San José Municipal Code Chapter 15.10 includes the following requirements:

- No irrigating landscapes between 10 am and 8 pm, unless using a bucket, hand-carried container, or a hose with a shut-off nozzle (15.10.290A)
- Sprinklers cannot run more than 15 minutes per station per day (15.10.290B)
- No excessive water runoff is allowed (15.10.220A & B)
- Leaking or broken water pipes, irrigation systems, and faucets must have repairs initiated within five working days and repaired as soon as practical (15.10.210 A & B)
- No cleaning of structures or paved surfaces with a hose without a positive shut-off nozzle (15.10.240)
- No cleaning of vehicles with a hose without a positive shut-off nozzle (15.10.250)
- Commercial car washes must use water recycling equipment, a bucket and hand-washing, or a hose with positive shut-off nozzle (15.10.255A,B,C)
- No serving water in food service establishments unless requested by the customer (15.10.230A)
- Restaurants that use pre-rinse spray valves must use ones that are low-flow (15.10.230B)
- Hotels/motels must provide guests the option to decline daily linen washing (15.10.235)

- Potable water cannot be used for building or construction purposes, such as dust control, without written exception by City (15.10.260)
- Water cannot be used from a hydrant without prior City approval (15.10.270)
- Potable water cannot be used for irrigation purposes where a recycled water service is currently plumbed to the site (15.10.295)

These actions are enforced and violations are handled by the City's Code Enforcement Division. There have been no violations recorded in the past five years due to robust public outreach with customers and coordination with Code Enforcement and Valley Water. To minimize violations SJMWS continues to provide outreach to customers to ensure they are aware of these regulations. There have been 421 water waste complaints logged by SJMWS staff from 2016-2020.

Metering

On a bi-monthly basis, SJMWS reads meters and bills all of its potable water and recycled water customers by volume of use. All water use is metered with the exception of fire services. The San José Municipal Code requires the installation of dedicated irrigation meters to certain customers. SJMWS offers a sub-meter rebate, in partnership with Valley Water.

SJMWS uses Automatic Meter Reading (AMR) for all customer meters. AMR meters are able to detect potential leaks and have allowed SJMWS to contact over 3,000 customers in the past five years to alert them of potential leaks. SJMWS is currently piloting various Advanced Metering Infrastructure (AMI) technologies. This AMI Pilot program will assist in determining the appropriate technology for SJMWS customers. Complete AMI implementation will increase SJMWS' ability to address leak detection and customer conservation efforts.

SJMWS has an ongoing meter replacement program. Aging meters are replaced to ensure accurate and precise readings. Between 2015-2017, SJMWS replaced over 12,000 meters as part of a focused Meter Replacement Project.

Conservation Pricing

SJMWS does not currently have a conservation pricing structure. All customers pay a flat rate per unit of water based on the location of the residence or business.

Public Education and Outreach

SJMWS engages in outreach to customers in the form of social media posts, digital advertisements, radio advertisements, print newspaper advertisements, bill inserts, bill messages, video advertisements at the local Department of Motor Vehicles office, and public notifications. In addition, SJMWS partners with Valley Water for consistent messaging throughout Santa Clara County, including promoting workshops, webinars, infrastructure tours, and their school education program. SJMWS provides outreach materials for department-wide information booths at fairs and public events.

SJMWS provides customers with online tools: all single-family residential customers are eligible to receive Home Water Reports and commercial customers may be eligible for Waterfluence.com, an online tool to assist commercial sites with specific irrigation efficiency recommendations.

Advertisements

Public outreach is crucial to SJMWS for water conservation efforts. In 2016, during the peak of the drought, the City increased the annual outreach budget by $50,000. One of the main tools utilized is advertisements and includes:

- More than 50 social media posts since 2016 on the SJMWS Twitter and Facebook pages with topics including watering hours, fix leaks, water audits by Valley Water, energy conservation, food choices, tree watering tips, and xeriscaping. Each post had approximately 32,000 views on Facebook and 59,000 on Twitter. An example social media post is included in **Appendix K**.
- More than 10 digital San José Mercury News advertisements were done in the past five years with information about the water campaigns: “Great Job,” “20 Percent,” and “Way of Life,” and San José water use rules. These ads were distributed all over San José zip codes and received 183,360 views. An example is included in **Appendix K**. The same messages were digitally advertised via Google AdWords and had approximately 23,900 impressions.
- In 2016, the City of San José and Environmental Services Department’s website homepages contained banners conveying that the water conservation goal was 20 percent.
- Since 2016, more than 10 radio advertisements were aired on a Spanish radio station, KZSF-La Kaliente, and a Vietnamese radio station, VT News, to and provide information about the water campaigns: “Great Job,” “20 Percent,” and “Way of Life,” and San José water use rules. VT News reaches approximately 200,000 people in the Bay Area. An example script is included in **Appendix K**.
- In the past five years, more than 10 print newspaper advertisements have been posted in the Evergreen Times with information about the water campaigns: “Great Job,” “20 Percent,” and “Way of Life,” and San José water use rules. This newspaper is distributed in the SJMWS service area. An example advertisement is included in **Appendix K**.
- Bill inserts contained messages about the Landscape Conversion Rebate Program. The bill inserts were distributed within the SJMWS service area and reached approximately 26,500 consumers. An example bill insert is included in **Appendix K**.
- During the drought, messages about watering hours, fixing leaks, and water audits by Valley Water were printed on water bills distributed to SJMWS customers.
- Over 5 video advertisements were on display at local the Department of Motor Vehicles office(s) between 2016 and 2020.
- Public notifications via press releases were distributed citywide through the local news media outlets.

- Approximately 600,000 WaterSmart Home Water Reports were sent out over the past five years. Each residential customer receives 6 reports per year as part of the Residential Bill Comparison Program.

Events

SJMWS provides water conservation outreach materials for department-wide information booths at fairs and public events, such as Christmas in the Park and Environmental Services Department events. Approximately 600,000 people were reached through these events.

WaterSmart

In 2015, the City began offering single-family residential customers Home Water Reports via WaterSmart. From 2015 through 2020, the WaterSmart treatment group saved over 442 million gallons when compared to the control group. SJMWS also tracks and sends targeted alerts to customers with high usage via WaterSmart.

Programs to Assess and Manage Distribution System Real Loss

Water loss occurs due to infrastructure breaks and leaks, flushing fire hydrants, metering accuracy, and other small unmetered releases due to maintenance procedures. SJMWS' operations and maintenance program includes hydrant maintenance, leak investigations, scheduled replacement of aging infrastructure, and AWWA Water Audit water losses tracking. Hydrant maintenance occurs monthly and about 1,100 hydrants are maintained each year. Leak investigation are conducted automatically by the AMR meters and notify customers of potential leaks. Over 3,000 customers have received potential leak notifications in the past 5 years. Aging infrastructure maintenance and replacements are completed on pipelines, pump stations, and reservoirs, as included in SJMWS' Capital Improvement Program. The AWWA Water Audit allows SJMWS to quantify losses and make more targeted maintenance decisions.

Water Conservation Program Coordination and Staffing Support

SJMWS established the position of Water Conservation Coordinator as early as 1995. The current Water Conservation Coordinator is:

Name: Pedro Hernandez
Title: Supervising Environmental Services Specialist
Address: 3025 Tuers Rd., San José, CA 95121
Phone: (408) 277-3671
Email: pedro.hernandez@sanjoseca.gov

There are two full-time staff members in the Water Conservation Program, with additional support provided by other staff as needed. The duties of these staff members focus primarily on ongoing programs to encourage water wise actions within the community. The FY2020-21 water conservation budget is approximately $800,000, and is funded from water rates and cost-share agreements.

Other Demand Management Measures

Rebates and Retrofits

SJMWS offers giveaways (aerators, showerheads, brochures, etc.) and the City offers tankless water heater rebates. Additional rebates are available to customers through a partnership with Valley Water. Through this partnership, SJMWS offers rebates for commercial high-efficiency toilets and commercial high-efficiency single load clothes washing machines, landscape conversions, greywater systems, rain barrels, and irrigation equipment upgrades. Through the Valley Water Rebate Program, 1,381 Commercial High-Efficiency Toilets were replaced in the SJMWS service area since 2016. Projected total annual water savings from toilet retrofits at full implementation are 20 gpcd each or 30 AFY for rebates issued (2016 through 2020), both in water demand and wastewater generation. In addition, over 116,000 square feet of turf was removed and over 30 irrigation hardware rebates were issued to SJMWS customers between 2016-2020.

Landscape

In the last five years, approximately 200 landscape surveys or water audits have been conducted by Valley Water within the SJMWS service area. WaterSmart Home Water Reports illustrate a residential customer's water usage and includes outdoor water conservation tips. The Waterfluence online platform is offered to commercial customers with a dedicated irrigation meter and creates a site-specific water usage estimate, allowing customers to track usage.

Residential Surveys

SJMWS customers are offered free residential surveys through a partnership with Valley Water. The survey involves assisting customers with leak detection and tips for conserving water, and may include water efficiency suggestions and/or inspection, and provision of showerheads and faucet aerators that meet current Water Sense specifications. The primary focus is older neighborhoods with pre-1980 plumbing and the second priority is other pre-1992 housing. Houses constructed after 1992 were required by state building codes to utilize water conserving plumbing fixtures. The program is marketed through advertising in bill inserts, bill messages, and newsletters. During the water survey, water conservation staff performs the following:

- Check for leaks, including toilets, faucets, and meter check
- Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, as necessary
- Check toilet flow rates and direct customer to ultra-low flush toilet (ULFT) replacement programs, as necessary, and replace leaking toilet flappers and floats if applicable
- Check irrigation system and timers
- Review or develop customer irrigation schedule
- Evaluate water softener operations and test water hardness to ensure proper settings
- Promote the retrofit program and provide other information on local water resource topics

Surveys require between 30 and 90 minutes. For each dwelling unit, a Water Conservation Assistant completes a customer data form (including number of people per household, number of bathrooms, age of clothes washer and water softener, and approximate landscaped area square footage). These data are used to analyze the customer's water use for both pre- and post-audit conditions, and to refine the program. The results of the residential water survey are provided to the customer with water saving recommendations and specific local information packets prepared as part of the public information program. The individual contacts made during the survey are used to actively promote the other programs and services offered by the Water Conservation Program, including retrofit and rebate programs offered under other BMPs. Both English and Spanish speaking persons conduct the surveys, and both English and Spanish language materials are available. The form used in the survey is included in **Appendix J**.

In the last five years, over 50 single family residential homes and over 10 multi-family residential houses have been conducted either by Valley Water in-person surveys or Valley Water DIY home audit kits.

Implementation over the Past Five Years

Table 9-2 summarizes the extent of SJMWS's various programs over the past five years.

Implementation to Achieve Water Use Targets

Water conservation efforts over the past five years have resulted in numerous landscaping and irrigation changes that will have a long-term reduction in water use. The water demand has continued to remain low and has not rebounded to pre-drought water use. This is in large part due to the public outreach and permanent changes enacted during the drought. For example, turf removals have remained intact, landscape plans continue to keep irrigation efficient, and high-efficiency toilets remain installed. These efforts will be continued and will continue to help decrease water demand; however, future potential gains may be limited.

SJMWS is currently conducting a multivendor AMI Pilot project that reduces water waste and aids with customer conservation efforts. The budget is not yet secured, but funding may be budgeted in the future.

The City and SJMWS continue to assess the need for further demand management. With new regulations forthcoming, there is potential to update the Municipal Code which might include additional water waste provisions. Overall, SJWMS plans to continue its focus on public outreach and education about water conservation efforts, continue its partnership with Valley Water for rebate programs, and add additional policy in order to achieve its water use goals.

Table 9-2. SJMWS Demand Management Measure Implementation			
Program	Unit	TOTAL 2016-2020	Notes
Water Waste Ordinances	In Effect		San José Municipal Code Chapter 15.10
Water Conservation Coordinator	Employees	2	
Social Media Posts	Post	50+	@sjenvironment
Digital Advertisements	Ad	10+	
Radio Advertisements	Ad	10+	
Print Advertisements	Ad	10+	
Video Advertisements (DMV)	Ad	5+	
Flyers/ Bill Inserts	No. Reached	100,000+	
Website	No. Reached	100,000+	www.sanjoseca.gov/waterconservation
Booths at Festivals	No. Attendees	600,000+	ESD booths, Christmas in the Park
Email	Emails	20	Over 10,000 email recipients
Surveys- Residential Single Family[1]	No. Surveys	50+	Valley Water
Surveys- Residential Multi Family[1]	No. Surveys	10+	Valley Water
Residential Bill Comparison	Total HH Reached	600,000	WaterSmart Home Water Report - sent to each residential customer, 6 times per year, for 5 years
High Bill Contact Programs	Total HH Reached	3,000+	Leak Alert outreach (WaterSmart, Customer Service)
Notification of Leaks	Total HH Reached	3,000+	Leak Alert outreach (WaterSmart, Customer Service)
Commercial High-Efficiency Toilets[1]	No. Replaced	1,381	Valley Water Rebates
Landscape Irrigation Hardware Rebate Program[1]	No. Rebates	30+	Valley Water
Turf Removal Program[1]	Sq. Ft. Removed	116,262	Valley Water Rebates - landscape converted
Landscape Water Surveys/Audits[1]	No. Surveys	200	Valley Water in-person surveys + Valley Water DIY home audit kits
Custom Sprinkler Schedule	No. Reached	26,000	San José Municipal Code Chapter 15.10

Notes:
1 This activity is implemented by wholesaler (Valley Water) on behalf of SJMWS

10. PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

This section provides guidance for addressing the Water Code requirements for a public hearing; Plan adoption, submittal, and implementation; and the process for amending the adopted Plan. Section 10 of the 2020 Guidebook (Appendix F, UWMP checklist) requires the following:

#82. Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets. 10608.26(a)

#83. 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. Reported in Table 10-1. 10621(b)

#84. Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021. 10621(d)

#85. Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan. 10642

#86. The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water. 10642

#87. Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified. 10642

#88. Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library. 10644(a)

#89. 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. 10644(a)(1)

#90. The plan, or amendments to the plan, submitted to the department shall be submitted electronically. 10644(a)(2)

#91. 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. 10645(a)

#92. Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours. 10645(b)

This section includes specific information on how the UWMP for the City of San José for their SJMWS was prepared and adopted. To satisfy the requirement, this 2020 UWMP includes the water use and planning data for the entire year of 2020 and the data in this UWMP are included on a calendar year basis.

Notice of Public Hearing

The City held a public hearing on June 15, 2021 prior to adopting this UWMP and the WSCP. The public hearing notice and draft UWMP were posted on the City website during the same timeframe as published in the local newspaper, San José Mercury News. The two audiences noticed for the public hearing were cities and the county as shown in **Table 10-1** and the public. The public hearing provided an opportunity for the public to provide input to the UWMP before it was adopted.

Table 10-1. Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
San José	X	X
County Name	**60 Day Notice**	**Notice of Public Hearing**
Santa Clara	X	X

Notice to Cities and Counties

The following subsections provide description of the two required notices that the City of San José provided to cities and counties. **Table 2-5** lists additional agencies contacted during the preparation of this UWMP.

Notification Requirement – 60 days prior to Review/Adoption Hearing

The City has encouraged agency and community participation in its UWMP development efforts since the first plan was developed in 1985. Pursuant to the requirement in Section 10642 of the Water Code, the City notified the appropriate agencies that the 2020 UWMP was being reviewed and changes were being considered. During February and March, 2021, the City emailed notice to the two wholesale water agencies, SFPUC and Valley Water; water management agencies within and outside its service area including other retail water suppliers that contract with the wholesalers; the regional coordinator, Bay Area Water Supply and Conservation Agency (BAWSCA); and the County of Santa Clara. **Table 2-5** lists the agencies contacted during the preparation of this UWMP. The notifications informed these agencies of the City's intent and that the planning efforts were underway and welcomed any comments or other participation. Follow up with staff from some agencies was conducted to further coordinate and obtain information necessary for the Plan. The goal of coordination was to encourage input and participation during planning.

Notice to the Public

The public hearing notices that were used to advertise in the local newspaper and posted on the City website as part of the City Council meeting agenda, and included the time and place of hearing as well as the location where the UWMP and WSCP are available for public inspection. A sample copy of the notice is included in **Appendix D**.

Public Hearing and Adoption

A public hearing of the 2020 UWMP and the WSCP must take place prior to or on the day of adoption by City Council. In conformance with the requirements, the public hearing took place at the same Council meeting as the adoption hearing. The City Council meeting agenda is included in **Appendix D**.

As required by the Water Conservation Bill of 2009, a formal public hearing was held on June 15, 2021, to receive public input on the 2020 UWMP and WSCP. Any written and oral comments were considered at the public hearing. The City Council formally adopted the 2020 UWMP and WSCP on June 15, 2021 prior to its submittal to DWR. Implementation will take place as identified in the plan. The draft adoption resolution is included in **Appendix L**.

Plan Submittal

Submittal to DWR

The 2020 UWMP was submitted to DWR within 30 days of adoption and by July 1, 2021. Following submittal, DWR will review the UWMP utilizing the provided checklist (in Appendix F of the 2020 Guidebook) and make a determination as to whether or not the UWMP addresses the requirements of the Water Code. Upon completion of the UWMP review, DWR will issue a letter to the City with the results of the review.

As stated in the 2020 Guidebook, DWR has developed an online submittal tool, WUE data, which was used to submit the 2020 UWMP. The tool accepts completed UWMPs as well as tabular data from all the DWR data tables. The WUE data online submittal tool is located online. The public can view WUEdata portal at https://wuedata.water.ca.gov/.

Submittal to the California State Library, Cities, and County

To satisfy the Water Code Section 10635(b), the City submitted a copy of the adopted 2020 UWMP to the California State Library within 30 days from the date of adoption. The City also submitted a copy of the adopted 2020 UWMP to the cities and Santa Clara County.

Public Availability

The UWMP and WSCP were made available to the public within 30 days of submission to the DWR. The UWMP and WSC are on the City's website at https://www.sanjoseca.gov/your-government/environment/water-utilities/drinking-water.

11. REFERENCES

2020 Guidebook. Department of Water Resources. March 2021.

BAWSCA, 2021. April 9, 2021. List of Documents provided from BAWSCA to member agencies.

City of San José, 2016. *San José Municipal Water System 2015 Urban Water Management Plan*.

City of San José, 2020. *Envision San José 2040 General Plan.*

Department of Water Resources, 2016. California Department of Water Resources. *California Drought Contingency Plan (2010).*

Department of Water Resources, 2008. *DWR Urban Drought Guidebook* (2008 Edition) – This publication provides extensive guidance on water shortage contingency planning for urban water suppliers. http://www.water.ca.gov/pubs/planning/urban_drought_guidebook/urban_drought_guidebook_2008.pdf

State Water Resources Control Board, Proposed Water Loss Performance Standards.

Valley Water, 2021. Valley Water Draft 2020 Urban Water Management Plan.

U.S. Census Bureau, 2010. *American FactFinder Population Finder.* http://factfinder.census.gov.

Appendices