



2020 EASTERN MUNICIPAL WATER DISTRICT URBAN WATER MANAGEMENT PLAN





EASTERN MUNICIPAL WATER DISTRICT

Urban Water Management Plan

JULY 1, 2021

Prepared by Water Systems Consulting, Inc.



TABLE OF CONTENTS

- List of Figures vi
- List of Tables vii
- Acronyms & Abbreviations ix
- Lay Description 1
 - Water Supplies..... 2
 - Water Demands 2
 - Drought Risk..... 2
 - Contingency Planning..... 2
 - Preparation and Outreach 2
- 1. Introduction..... 1-1
 - 1.1 The California Water Code 1-2
 - 1.2 UWMP Organization..... 1-4
 - 1.3 UWMPs in Relation to Other Efforts 1-5
 - 1.4 UWMPs and Grant or Loan Eligibility 1-6
 - 1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions..... 1-6
- 2. Plan Preparation..... 2-1
 - 2.1 Plan Preparation..... 2-2
 - 2.2 Basis for Preparing a Plan..... 2-2
 - 2.3 Coordination and Outreach..... 2-3
 - 2.3.1 Wholesale and Retail Coordination..... 2-3
 - 2.3.2 Coordination with Other Agencies and the Community..... 2-3
 - 2.3.3 Notice to Cities and Counties..... 2-4
- 3. System Description 3-1
 - 3.1 General Description 3-2
 - 3.2 Service Area Boundary Maps 3-3
 - 3.3 Service Area Climate 3-6
 - 3.3.1 Climate Change 3-7
 - 3.4 Service Area Population and Demographics..... 3-8
 - 3.4.1 Service Area Population..... 3-8
 - 3.4.2 Other Social, Economic, and Demographic Factors..... 3-9
 - 3.5 Land Uses within Service Area 3-10

3.6 Proposed Reorganization of Fallbrook Public Utility District and Rainbow Municipal Water District	3-10
4. Water Use Characterization	4-1
4.1 Past, Current, and Projected Water Use by Sector	4-2
4.1.1 Codes and Other Considerations Used in Projections.....	4-3
4.2 Distribution System Water Losses	4-7
4.3 Water Use for Lower Income Households.....	4-8
4.4 Climate Change Considerations.....	4-9
5. SB X7-7 Baseline, Targets and 2020 Compliance	5-1
5.1 SB X7-7 Forms and Tables.....	5-2
5.1.1 Baselines and Target Summary.....	5-2
5.2 Methods for Calculating Population and Gross Water Use.....	5-3
5.2.1 Service Area Population.....	5-3
5.2.2 Gross Water Use	5-3
5.3 2020 Compliance Daily Per-Capita Water Use (GPCD).....	5-3
5.3.1 Adjustments Due to Factors Outside of a Supplier’s Control	5-4
5.4 Regional Alliance	5-4
6. Water Supply Characterization	6-1
6.1 Water Supply Analysis Overview	6-2
6.2 UWMP Water Supply Characterization.....	6-4
6.2.1 Purchased or Imported Water	6-4
6.2.2 Groundwater	6-5
6.2.3 Surface Water	6-11
6.2.4 Stormwater.....	6-11
6.2.5 Wastewater and Recycled Water.....	6-12
6.2.6 Desalinated Water Opportunities.....	6-20
6.2.7 Water Exchanges and Transfers	6-20
6.2.8 Future Water Projects.....	6-21
6.2.9 Summary of Existing and Planned Sources of Water.....	6-23
6.2.10 Climate Change Effects.....	6-26
6.3 Energy Intensity	6-26
7. Water Service Reliability and Drought Risk Assessment	7-1
7.1 Water Service Reliability Assessment.....	7-2
7.1.1 Imported Water Reliability	7-2
7.1.2 Groundwater and Desalinated Groundwater Supply Reliability	7-3
7.1.3 Recycled Water Supply Reliability.....	7-3

7.1.4	Water Quality Constraints on Water Sources	7-3
7.1.5	Year Type Characterization	7-6
7.1.6	Water Service Reliability.....	7-7
7.2	Drought Risk Assessment	7-12
8.	Water Shortage Contingency Plan	8-1
8.1	WSCP Overview.....	8-2
9.	Demand Management Measures	9-1
9.1	Demand Management Measures for Wholesale Suppliers.....	9-2
9.1.1	Metering	9-2
9.1.2	Public Education and Outreach.....	9-3
9.1.3	Water Conservation Program Coordination and Staffing	9-4
9.1.4	Other Demand Management Measures	9-4
9.1.5	Asset Management.....	9-4
9.1.6	Wholesale Supplier Assistance Programs.....	9-3
9.2	Existing Demand Management Measures for Retail.....	9-4
9.2.1	Water Waste Prevention Ordinances	9-4
9.2.2	Metering	9-4
9.2.3	Conservation Pricing.....	9-5
9.2.4	Public Education and Outreach.....	9-7
9.2.5	Programs to Assess and Manage Distribution System Real.....	9-9
9.2.6	Water Conservation Program Coordination and Staffing Support.....	9-10
9.2.7	Other Demand Management Measures	9-10
9.3	Reporting Implementation	9-13
9.3.1	Implementation Over the Past Five Years.....	9-13
9.3.2	Implementation Achieve Water Use Targets.....	9-15
9.4	Water Use Objectives (Future Requirements)	9-15
10.	Plan Adoption, Submittal, and Implementation.....	10-1
10.1	Inclusion of All 2020 Data.....	10-2
10.2	Notice of Public Hearing.....	10-2
10.2.1	Notice to Cities and Counties.....	10-2
10.2.2	Notice to the Public.....	10-3
10.3	Public Hearing and Adoption	10-3
10.3.1	Public Hearing.....	10-4
10.3.2	Adoption	10-4
10.4	Plan Submittal.....	10-4
10.4.1	Submittal of the UWMP and Water Shortage Contingency Plan to DWR.....	10-4

10.4.2 Electronic Data Submittal.....	10-4
10.4.3 Submittal of the UWMP to the California State Library	10-4
10.4.4 Submittal of the UWMP to Cities and Counties.....	10-4
10.5 Public Availability	10-4
10.6 Notification to Public Utilities Commission.....	10-5
10.7 Amending an Adopted UWMP or Water Shortage Contingency Plan.....	10-5
10.7.1 Amending a UWMP.....	10-5
10.7.2 Amending a Water Shortage Contingency Plan.....	10-5

APPENDICES

Appendix A	DWR UWMP Checklist
Appendix B	DWR Standard UWMP Tables
Appendix C	DWR Standard SB X7-7 Tables
Appendix D	AWWA Water Loss Audits
Appendix E	West San Jacinto Groundwater Basin Management Plan
Appendix F	Hemet/San Jacinto Groundwater Management Area Water Management Plan
Appendix G	Stipulated Judgment
Appendix H	Soboba Settlement Agreement
Appendix I	Water Shortage Contingency Plan
Appendix J	Notice of Public Hearing
Appendix K	Resolution for Adoption of the 2020 UWMP
Appendix L	Reduced Delta Reliance

LIST OF FIGURES

Figure 3-1. Water Agencies in and around EMWD Boundary	3-4
Figure 3-2. Cities in EMWD Boundary	3-5
Figure 3-3. Historical Climate Data at CIMIS Station 179	3-7
Figure 6-1. Agencies and Facilities	6-3
Figure 6-2. Groundwater Management Zones	6-8
Figure 6-3. EMWD Recycled Water System	6-15

LIST OF TABLES

Table 1-1. Related Planning Efforts	1-5
Table 2-1. DWR 2-1R Public Water Systems	2-2
Table 2-2. DWR 2-2 Plan Identification	2-2
Table 2-3. DWR 2-3 Agency Identification	2-2
Table 2-4. DWR 2-4 Water Supplier Information Exchange	2-3
Table 2-5. DWR 2-4W Water Supplier Information Exchange	2-3
Table 2-6. Outreach to Other Agencies and Entities	2-4
Table 3-1. EMWD Climate	3-6
Table 3-2. Historical Population within EMWD's Boundary - 1990 to 2010	3-8
Table 3-3. Projections of Population, Households, and Employment	3-8
Table 3-4. DWR 3-1R Current and Projected Population	3-9
Table 3-5. DWR 3-1W Current and Projected Population	3-9
Table 4-1. DWR 4-1R Actual Demands for Water	4-2
Table 4-2. DWR 4-1W Actual Demands for Water	4-3
Table 4-3. DWR 4-2R Projected Demands for Water	4-5
Table 4-4. DWR 4-2W Projected Demands for Water	4-5
Table 4-5. DWR 4-3R Total Gross Water Use	4-6
Table 4-6. DWR 4-3W Total Gross Water Use	4-6
Table 4-7. DWR 4-4R 12 Month Water Loss Audit Reporting	4-7
Table 4-8. Low Income Housing Unit Projection	4-8
Table 4-9. DWR 4-5R Inclusion in Water Use Projections	4-8
Table 5-1. DWR 5-1R Baselines and Targets Summary	5-2
Table 5-2. DWR 5-2R 2020 Compliance	5-3
Table 6-1. Groundwater Management Zones	6-7
Table 6-2. DWR 6-1R Groundwater Volume Pumped	6-11
Table 6-3. RWRP Treatment Capacity	6-12
Table 6-4. DWR 6-2R Wastewater Collected within Service Area in 2020	6-13
Table 6-5. DWR 6-3R Wastewater Treatment and Discharge within Service Area in 2020	6-13
Table 6-6. Recycled Water Coordination Agencies	6-14
Table 6-7. DWR 6-4R Recycled Water within Service Area in 2020	6-17
Table 6-8. DWR 6-4W Recycled Water Within Service Area in 2020	6-17
Table 6-9. DWR 6-5R 2015 Recycled Water Use Projection Compared to 2020 Actual	6-18
Table 6-10. DWR 6-5W 2015 Recycled Water Use Projection Compared to 2020 Actual	6-18
Table 6-11. DWR 6-6R Methods to Expand Future Recycled Water Use	6-19
Table 6-12. DWR 6-7R Expected Future Water Supply Projects or Programs	6-22

Table 6-13. DWR 6-8R Actual Water Supplies	6-24
Table 6-14. DWR 6-8W Actual Water Supplies	6-24
Table 6-15. DWR 6-9R Projected Water Supplies	6-25
Table 6-16. DWR 6-9R Projected Water Supplies	6-25
Table 6-17. DWR Table O-1-1B Energy Intensity of Water Operations	6-27
Table 6-18. DWR Table O-2 Energy Intensity of Wastewater and Recycled Water Operations	6-28
Table 7-1. DWR 7-1R Basis for Water Year Data (Reliability Assessment)	7-6
Table 7-2. DWR 7-1W Basis for Water Year Data (Reliability Assessment)	7-7
Table 7-3. DWR 7-2R Normal Year Supply and Demand Comparison	7-8
Table 7-4. DWR 7-2W Normal Year Supply and Demand Comparison	7-8
Table 7-5. DWR 7-3R Single Dry Year Supply and Demand Comparison	7-8
Table 7-6. DWR 7-3W Single Dry Year Supply and Demand Comparison	7-9
Table 7-7. DWR 7-4R Multiple Dry Years Supply and Demand Comparison	7-10
Table 7-8. DWR 7-4W Multiple Dry Years Supply and Demand Comparison	7-11
Table 7-9. DWR 7-5 Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)	7-13
Table 9-1. Meter Testing and Replacement Frequency	9-5
Table 9-2. DMM Implementation	9-14
Table 10-1. DWR 10-1R Notification to Cities and Counties	10-3
Table 10-2. DWR 10-1W Notification to Cities and Counties	10-3

ACRONYMS & ABBREVIATIONS

°C	Degrees Celsius
°F	Degrees Fahrenheit
AB	Assembly Bill
AF	Acre Foot
AFY	Acre Feet per Year
AHHG	Area of Historic High Groundwater
AMR	Automatic Meter Reader
APA	Administrative Procedures Act
AWWA	American Water Works Association
BMP	Best Management Practice
CALWARN	California Water/Wastewater Agency Response Network
CAT	Climate Action Team
CCF	Hundred Cubic Feet
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CII	Commercial, Industrial, and Institutional
CIMIS	California Irrigation Management Irrigation System
CUWCC	California Urban Water Conservation Council
DCR	DWR SWP Delivery Capacity Report
DDW	SWRCB Division of Drinking Water
DFW	California Department of Fish and Wildlife
DIP	Ductile Iron Pipe
DMM	Demand Management Measure
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EMWD	Eastern Municipal Water District
EPA	United States Environmental Protection Agency
ERNIE	Emergency Response Network of the Inland Empire
ESA	Endangered Species Act
ET	Evapotranspiration

ET _o	Reference Evapotranspiration
GAC	Granulated Activated Carbon
GIS	Geographic Information System
GPCD	Gallons per Capita per Day
GPM	Gallons per Minute
HECW	High Efficiency Clothes Washer
HET	High Efficiency Toilet
IX	Ion Exchange
KAF	Thousand Acre Feet
KAFY	Thousand Acre Feet per Year
LAFCO	Local Agency Formation Commission
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
Metropolitan	Metropolitan Water District of Southern California
MF	Multi-family
MG	Million Gallons
MGD	Million Gallons per Day
MOU	Memorandum of Understanding
MSL	Mean Sea Level
MTBE	Methyl Tertiary Butyl Ether
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCE	Perchloroethylene
PPCP	Pharmaceuticals and Personal Care Products
PVC	Polyvinyl Chloride
QWEZ	Qualified Water Efficient Landscaper
RIX	Rapid Infiltration and Extraction
RPA	Reasonable and Prudent Alternative
RUWMP	Regional Urban Water Management Plan
RWQCB	Regional Water Quality Control Board
SBX7-7	Senate Bill 7 of Special Extended Session 7
SF	Single Family
SOC	Synthetic Organic Chemicals
SOI	Sphere of Influence
SWRCB	State Water Resources Control Board

TDS	Total Dissolved Solids
TCE	Trichloroethylene
ULFT	Ultra-Low Flush Toilet
UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VOC	Volatile Organic Compound
WBIC	Weather Based Irrigation Controller
WSCP	Water Shortage Contingency Plan
WFF	Water Filtration Facility
WSS	Water Sense Specification
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant



This Urban Water Management Plan (UWMP) presents a discussion of how Eastern Municipal Water District (EMWD) manages its water supplies to meet customer demands.

EMWD is required to prepare an UWMP and submit it to the California Department of Water Resources (DWR) every five years. DWR prepares guidance materials for water suppliers to help them prepare UWMPs that meet requirements of the California Water Code (CWC). EMWD has used these guidance materials to prepare its 2020 UWMP.

IN THIS SECTION

- Summary of fundamental determinations of the UWMP

Water Supplies

EMWD provides potable water, recycled water, and wastewater services to an area of approximately 555 square miles in western Riverside County. The service area includes seven incorporated cities in addition to unincorporated areas of Riverside County. EMWD has a diverse portfolio of local and imported supplies. Local supplies include recycled water, potable groundwater, and desalinated groundwater. EMWD is a leader in recycled water and generally uses 100 percent of its recycled water to irrigate landscape and agricultural fields and provide water for industrial customers. EMWD has groundwater wells in two groundwater management areas and works with other stakeholders to protect the quality and integrity of the groundwater basins. EMWD receives imported water from the Metropolitan Water District of Southern California (Metropolitan). About half of the water used in EMWD's service area is imported by Metropolitan. Through the implementation of local supply projects and increased water use efficiency, EMWD has been able to maintain a balance of local and imported water even as new connections have been added.

Water Demands

EMWD is both a retail supplier, selling to residential and commercial customers, and a wholesale supplier, selling to other water agencies. EMWD has a comprehensive conservation program to encourage customers to use water wisely and efficiently. Through the successful implementation of these programs, EMWD's average water use per person has dropped significantly since 2010. Looking forward, EMWD expects demands to increase as new residential and commercial development continues in the service area.

Drought Risk

EMWD's supply portfolio has a high degree of reliability. The local groundwater basins are managed to protect them from overdraft, and EMWD participates in programs to bank water in the groundwater basins in wet years so that it can be used in dry years. EMWD's imported water is provided by Metropolitan, which has made extensive investments in programs to increase the reliability of its supply. In its 2020 UWMP, Metropolitan has shown the ability to continue to meet demands through 2045, even during an extended drought. EMWD would benefit from Metropolitan's storage and supply programs and also expects that it can meet demands through 2045 during normal and dry conditions.

Contingency Planning

Even with highly reliable supplies, events such as statewide water use restrictions or a catastrophic natural disaster (such as an earthquake) that disrupts imported water supplies may require EMWD to temporarily reduce water demands. EMWD's Water Shortage Contingency Plan (WSCP) defines the actions that EMWD could take to conserve water during a shortage. The WSCP describes how EMWD would communicate these requirements to customers, and it describes how the restrictions on use (for example, limiting watering to certain days of the week) would be enforced.

Preparation and Outreach

EMWD coordinated with Metropolitan and EMWD's wholesale customers on the preparation of the 2020 UWMPs to present a clear and consistent picture of water supply management in the region. EMWD held a public hearing to receive feedback on the UWMP and the WSCP and used that feedback to help develop the plans. If a shortage occurs, EMWD will continue to monitor how the WSCP works and considering making changes where needed.



The Urban Water Management Planning Act (Act), adopted in 1983, requires water suppliers in California to conduct long-term water resources planning. Prior to adoption of the Act, water agencies were more vulnerable to supply disruptions during periods of drought or supply shortages.

The Act sought to reduce susceptibility to supply shortages by requiring a minimum level of long-term resource assessment and planning by water suppliers. The planning requirements established by the Act and subsequent legislation encourage regional coordination and focus on water use efficiency as described in the sections below.

This 2020 Urban Water Management Plan (UWMP) addresses the water supply sources, projected demands, and supply reliability for Eastern Municipal Water District (EMWD).

IN THIS SECTION

- California Water Code
- UWMP Organization
- Related Efforts

1.1 The California Water Code

California Water Code (CWC) Section 10620 (a) of the Urban Water Management Act, states, “Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640)”. These plans are to be updated every five years and submitted to the California Department of Water Resources (DWR). Requirements for the UWMP include:

- Assessment of current and projected water supplies
- Evaluation of demand and customer types
- Evaluation of the reliability of water supplies
- Description of conservation measures implemented by the urban water supplier
- Response plan, in the event of a water shortage
- Comparison of demand and supply projections

In November of 2009, the California Legislature passed Senate Bill (SB) 7 as part of the Seventh Extraordinary Session, referred to as SBX7-7 or the Water Conservation Act of 2009. SBX7-7 set the goal of achieving a 20 percent reduction in urban per capita water use statewide by 2020. Retail water agencies were required to set targets and track progress toward decreasing daily per capita urban water use in their service areas, in order to assist the State in meeting its 20 percent reduction goal by 2020. This law required that every UWMP include:

- Baseline per capita water use
- Urban water use target for 2020
- Compliance daily per capita water use

This 2020 UWMP has been prepared to comply with the Urban Water Management Planning Act and SBX7-7. In addition to meeting the requirements of the Act, this report will be used to support water supply assessments and written verifications of water supply required by SB 610 and SB 221 of 2001. These bills require that water supply information be provided to counties and cities for projects of a certain size, prior to discretionary project approval. Both bills allow a UWMP to be used as a source document to fulfill these legislative requirements.

Since EMWD’s 2015 UWMP was completed and submitted to DWR, the Legislature has passed additional requirements that need to be incorporated in 2020 UWMPs. Major new requirements include:

- Water Reliability Assessment for five consecutive dry years, more than the three consecutive dry years previously required.
- Drought Risk Assessment to assess water supply reliability over a five-year period from 2021 to 2025 under a reasonable prediction for five consecutive dry years.
- Seismic risk assessment and mitigation plan for a supplier’s infrastructure.
- Water Shortage Contingency Plan with prescribed elements.
- Coordination on groundwater supply planning with plans being completed to address the Sustainable Groundwater Management Act (SGMA).
- Lay Description to describe the fundamental determinations of the UWMP in lay-person’s language.

This 2020 UWMP was developed to incorporate these new requirements, under the guidance of DWR's 2020 UWMPs Guidebook for Urban Water Suppliers. A checklist to document compliance of this UWMP with the Act and the CWC is provided in **Appendix A**.

This UWMP includes the required DWR standardized tables within relevant chapters, and they are compiled in **Appendix B**. Within the UWMP chapters, tables are numbered sequentially, and the standard DWR table number is also provided where applicable.

This UWMP also includes all required SB X7-7 tables in **Appendix C** to verify compliance with the SB X7-7 targets.

1.2 UWMP Organization

This report is structured with the layout recommended by the DWR Guidebook. The chapters include:

Chapter 1 – Introduction and Lay Description

- General legal requirements for UWMPs
- Lay description of fundamental determinations

Chapter 2 – Plan Preparation

- Plan preparation and agency identification
- Agency coordination and outreach

Chapter 3 – System Description

- General description of EMWD’s retail and wholesale service areas
- Climate characteristics of EMWD’s service area
- Current and projected population and demographic factors

Chapter 4 – Customer Water Use

- Overview of past, current, and projected water use
- System water losses
- Climate change impacts on water use

Chapter 5 – Baselines and Targets

- Information on the Water Conservation Act of 2009
- Water use targets for 2020 and confirmation of compliance

Chapter 6 – System Supplies

- Information about current and projected supplies
- Background on imported water supply, including the Metropolitan Water District of Southern California (Metropolitan)
- Description of groundwater basin management and supplies
- Description of EMWD’s recycled water system and the beneficial uses of recycled water
- Description of planned water projects
- Climate change impacts to supplies

Chapter 7 – Water Supply Reliability Assessment

- Overview of the reliability of each of EMWD’s supplies
- Water quality of supplies
- Projections for water supply and water demands under normal, single dry, and multiple dry year hydrologic conditions
- Regional supply reliability

Five-Year Drought Risk Assessment (DRA)

Chapter 8 – Water Shortage Contingency Planning

- EMWD’s annual procedure for performing an assessment of supplies and demands to determine the potential need for implementing the WSCP in the coming year.
- Overview of EMWD’s water shortage stages and associated response actions for each stage
- Potential fiscal impacts of implementing demand reduction actions
- The contents of this chapter were placed into a stand-alone Water Shortage Contingency Plan (WSCP) that can be adopted and amended separately from the UWMP.

Chapter 9 – Demand Management Measures

- Summary of EMWD’s retail and wholesale demand management measures

Chapter 10 – Plan Adoption, Submittal, and Implementation

- Overview of the UWMP adoption process
- Implementation of the Plan

1.3 UWMPs in Relation to Other Efforts

UWMPs allow for integration of information from other planning documents, as well as regional planning efforts. EMWD has recently completed a number of planning documents that were used to inform estimates of water supplies and water use projections for the 2020 UWMP update. Additionally, regional planning efforts conducted by Metropolitan were used to assess the EMWD imported water supply reliability. A summary of related planning efforts is presented in **Table 1-1**.

Table 1-1. Related Planning Efforts

DOCUMENT	DESCRIPTION
Water Master Plan, EMWD 2016	This document analyzes EMWD's facilities needs to meet current and future customer demands.
Recycled Water Strategic and Master Plan, EMWD 2016	The document analyzes EMWD's recycled water opportunities and contains recycled water projections through the year 2045, including descriptions of planned recycled water projects and facilities.
Wastewater Collection Master Plan, EMWD 2016	This document analyzes EMWD's facilities needs to collect existing and future wastewater.
Regional Water Reclamation Facilities Master Plan	This document analyzes EMWD's reclamation facility needs for treating existing and future wastewater.
Metropolitan Water District Integrated Resources Plan	The document analyzes multiple supply and demand scenarios and describes Metropolitan's plan for providing adequate and reliable supplies to member agencies under the different scenarios. The detailed analyses of further local and imported water supplies; economic growth, demographics, and water demands; and changing hydrology are incorporated into Metropolitan's UWMP.
Metropolitan Water District Urban Water Management Plan	The document describes Metropolitan's demand and supply reliability and is used as the basis of EMWD's imported water supply reliability.

1.4 UWMPs and Grant or Loan Eligibility

Water suppliers are required to have a current UWMP on file with DWR in order to be eligible for any water grant or loan administered by DWR. DWR must also determine that the supplier's UWMP has addressed the requirements of the Water Code.

EMWD's 2015 UWMP was determined by DWR to address the requirements of the Water Code. This 2020 UWMP will be submitted to DWR for review and a similar determination.

1.5 Demonstration of Consistency with the Delta Plan for Participants in Covered Actions

EMWD receives imported water supplies from the State Water Project (SWP) through Metropolitan. Agencies that receive water from the SWP are required to demonstrate consistency with the Delta Plan's policy to reduce reliance on the Sacramento-San Joaquin Delta (Delta).

EMWD has worked with Metropolitan to demonstrate this consistency. The documentation is included in **Appendix L**.



The Urban Water Management Planning Act (UWMP Act) requires every urban water supplier that provides water for municipal purposes to more than 3,000 connections or supplies more than 3,000 acre-feet of water annually to adopt and submit an Urban Water Management Plan (UWMP) to the California Department of Water Resources (DWR) every five years.

The main purposes of developing and updating a UWMP are to forecast water demands and supplies under normal, single-dry, and multiple-dry year conditions; assess supply reliability; and describe methods of reducing demands under potential water shortages.

IN THIS SECTION

- Coordination and Outreach
- Cities and Counties Served by EMWD
- Basis for Plan

2.1 Plan Preparation

This UWMP satisfies the requirements of the UWMP Act and its amendments and provides an overview of Eastern Municipal Water District's (EMWD)'s long-term supplies and demands. The 2020 UWMP also demonstrates EMWD's compliance with the water use efficiency targets set by the Water Conservation Act of 2009 (SB X7-7).

EMWD operates a Public Water System that qualifies as an "Urban Water Supplier" under the CWC Section 10617, serving more than 3,000 customers and more than 3,000 acre-feet per year (AFY). The qualifying information about EMWD is shown in **Table 2-1**. The number of connections and volume of water supplied in **Table 2-1** reflect EMWD's potable water system only and do not include recycled water users or water supplied on a wholesale basis.

Table 2-1. DWR 2-1R Public Water Systems

PUBLIC WATER SYSTEM NUMBER	PUBLIC WATER SYSTEM NAME	NUMBER OF MUNICIPAL CONNECTIONS 2020	VOLUME OF WATER SUPPLIED 2020
CA3310009	Eastern Municipal Water District	155,561	84,673

2.2 Basis for Preparing a Plan

This plan is an individual plan to meet EMWD's reporting requirements as a wholesale supplier and a retail supplier. Although EMWD has coordinated with appropriate retail agencies and constituents, EMWD is not participating in a Regional UWMP or a Regional Alliance. The plan identification details are provided in **Table 2-2**.

Table 2-2. DWR 2-2 Plan Identification

TYPE OF PLAN	MEMBER OF RUWMP	MEMBER OF REGIONAL ALLIANCE
Individual UWMP	No	No

EMWD is both a retail and wholesale Urban Water Supplier and has selected to report UWMP data in calendar years and in units of acre-feet (AF). The agency identification details are provided in **Table 2-3**.

Table 2-3. DWR 2-3 Agency Identification

TYPE OF SUPPLIER	YEAR TYPE	UNIT TYPE
Wholesale and Retail	Calendar Years	Acre Feet (AF)

2.3 Coordination and Outreach

EMWD has coordinated with other agencies to prepare consistent evaluations of projected water demands and supplies. These coordination efforts are described in the following sections.

2.3.1 Wholesale and Retail Coordination

EMWD is both a retail and wholesale agency. As a retail agency, EMWD is required to provide its wholesaler, Metropolitan, with projected water demand in five-year increments for 20 years. As a wholesale agency, EMWD is required to provide information to its customer urban water suppliers identifying and quantifying water supplies available to those agencies in five-year increments.

The agencies affected are shown in **Table 2-4** and **Table 2-5**.

Table 2-4. DWR 2-4 Water Supplier Information Exchange

WHOLESALE WATER SUPPLIER NAME
Metropolitan Water District of Southern California

Table 2-5. DWR 2-4W Water Supplier Information Exchange

WHOLESALE WATER SUPPLIER NAME
City of Hemet
City of Perris
City of San Jacinto
Lake Hemet Municipal Water District
Nuevo Water Company
Rancho California Water District
Western Municipal Water District

2.3.2 Coordination with Other Agencies and the Community

Article 3, Section 10642 of the UWMP Act requires each urban water supplier to encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area. EMWD has encouraged the participation of sub agencies, cities, the County of Riverside, and other public groups. Public participation and coordination efforts included outreach to the entities shown in **Table 2-6**.

Table 2-6. Outreach to Other Agencies and Entities

ENTITY	ROLE
Metropolitan Water District of Southern California	Wholesaler supplier to EMWD
City of Beaumont	EMWD's retail service area overlaps portion of City
City of Canyon Lake	EMWD's retail service area overlaps portion of City
City of Hemet	EMWD is wholesale supplier to agency
City of Meniffee	EMWD's retail service area overlaps portion of City
City of Moreno Valley	EMWD's retail service area overlaps portion of City
City of Murrieta	EMWD's retail service area overlaps portion of City
City of Perris	EMWD is wholesale supplier to agency
City of Riverside	EMWD's retail service area overlaps portion of City
City of San Jacinto	EMWD is wholesale supplier to agency
City of Temecula	EMWD's retail service area overlaps portion of City
Elsinore Valley Municipal Water District	EMWD sells recycled water to agency
Lake Hemet Municipal Water District	EMWD is wholesale supplier to agency
Nuevo Water Company	EMWD is wholesale supplier to agency
Rancho California Water District	EMWD is wholesale supplier to agency
Western Municipal Water District	EMWD is wholesale supplier to agency
Fallbrook Public Utility District	Agency is a potential future wholesale customer of EMWD (pending the outcome of the reorganization proposal filed by Fallbrook PUD which is being processed by San Diego County Local Agency Formation Commission)
Rainbow Municipal Water District	Agency is a potential future wholesale customer of EMWD (pending the outcome of the reorganization proposal filed by Rainbow MWD which is being processed by San Diego County Local Agency Formation Commission)
County of Riverside	
Hemet – San Jacinto Watermaster	Oversee administration of Stipulated Judgement in the Management Area (Canyon Subbasin, the San Jacinto Upper Pressure Subbasin downstream to Bridge Street and the Hemet Subbasin)
Santa Ana Watershed Protection Authority	Integrated Regional Water Management Plan
Pechanga Band of Luiseño Indians	EMWD sells recycled water to Tribal Government
Soboba Band of Luiseño Indians	Party to Soboba Settlement Agreement
California Department of Water Resources	Administers Urban Water Management Planning Act
General Public	

2.3.3 Notice to Cities and Counties

EMWD provided notice to the cities and counties within its service area that the UWMP was being updated. These notices are included in Appendix J and were provided more than 60 days prior to the public hearing held to consider the draft plan.



3 System Description

EMWD is a public water agency formed in 1950 by popular vote. In 1951, it was annexed into Metropolitan and gained access to a supply of imported water from the Colorado River Aqueduct (CRA). Today, EMWD remains one of Metropolitan's 26 member agencies and receives water from Northern California through the State Water Project (SWP) in addition to deliveries through the CRA.

EMWD's initial mission was to deliver imported water to supplement local groundwater for a small, mostly agricultural, community. Over time, EMWD's list of services has evolved to include groundwater production, desalination, water filtration, wastewater collection and treatment, and regional water recycling.

IN THIS SECTION

- Service Area
- Land Uses

3.1 General Description

EMWD provides both retail and wholesale water service covering a total population of over 800,000. EMWD's mission is, "To deliver value to our diverse customers and the communities we serve by providing safe, reliable, economical and environmentally sustainable water, wastewater and recycled water services." A five-member Board of Directors governs EMWD. Each Director serves an area of equivalent population size within EMWD's boundaries and is elected to office every four years. As a member agency of Metropolitan, EMWD also has a member appointed to the Metropolitan Board.

EMWD provides potable water, recycled water, and wastewater services to an area of approximately 555 square miles in western Riverside County. EMWD is both a retail and wholesale agency. Approximately half of EMWD's retail demands are supplied using local sources, while the balance is served by imported water purchased from Metropolitan. EMWD also purchases imported water from Metropolitan to supplement the local supplies of its wholesale customers. Imported water is delivered to EMWD either as potable water treated by Metropolitan, or as raw water that EMWD can either treat at one of its two local filtration plants or deliver as raw water for non-potable uses.

EMWD's local supplies include groundwater, desalinated groundwater, and recycled water. Groundwater is pumped from the Hemet/San Jacinto and West San Jacinto areas of the San Jacinto Groundwater Basin. Groundwater in portions of the West San Jacinto Basin is high in salinity and requires desalination for potable use. EMWD owns and operates two desalination plants that convert brackish groundwater from the West San Jacinto Basin into potable water. EMWD also owns, operates, and maintains its own recycled water system that consists of four Regional Water Reclamation Facilities and several storage ponds spread throughout EMWD's service area that are all connected through the recycled water system. EMWD's goal is to beneficially use 100 percent of the recycled water it produces.

EMWD is located in western Riverside County, approximately 75 miles east of Los Angeles. The 555-square mile service area includes seven incorporated cities in addition to unincorporated areas in the County of Riverside. The cities and unincorporated areas within EMWD's boundary include:

- City of Beaumont
- City of Canyon Lake
- City of Hemet
- City of Menifee
- City of Moreno Valley
- City of Murrieta
- City of Perris
- City of Riverside
- City of San Jacinto
- City of Temecula
- Homeland
- Lakeview
- Nuevo
- Quail Valley
- Romoland
- Valle Vista
- Winchester

In most of the listed areas, EMWD provides both water and wastewater service. However, in some places EMWD provides only water or wastewater service or provides wholesale water to a purveyor agency. EMWD is a wholesale potable provider to the following agencies:

- City of Hemet Water Department
- City of Perris Water System
- City of San Jacinto Water Department
- Lake Hemet Municipal Water District (LHMWD)
- Murrieta Division of WMWD
- Nuevo Water Company
- Rancho California Water District (RCWD)

Additionally, EMWD sells recycled water to RCWD and Elsinore Valley Municipal Water District (EVMWD) and has an emergency connection with the City of Perris' North Perris Water System.

Several of these agencies are preparing their own UWMP. EMWD has discussed and reviewed the supplemental water demands required by each agency with representatives of those agencies. The demand and water supply requirements are incorporated in this UWMP.

EMWD has four sources of water supply: imported water from Metropolitan, local groundwater, desalinated groundwater, and recycled water. Delivery points for each source of water are located throughout the EMWD service area.

Potable imported water is treated and delivered to EMWD directly from Metropolitan's two large filtration plants. The Henry J. Mills (Mills) Water Treatment Plant treats water from Northern California and provides it to EMWD through two connection points located in the northeast portion of EMWD's service area. The Robert F. Skinner (Skinner) Water Treatment Plant treats a blend of Colorado River water and water from Northern California and provides it to EMWD through a connection point in the southwest portion of EMWD's service area.

EMWD owns and operates two microfiltration plants that filter raw imported water delivered through Metropolitan, removing particulate contaminants to achieve potable water standards. The two treatment plants, the Perris Water Filtration Plant and the Hemet Water Filtration Plant, are located in Perris and Hemet, respectively. Raw water from Metropolitan is also used for groundwater replenishment in the eastern part of EMWD. EMWD and others can extract this water at a later date for beneficial uses. Untreated water from Metropolitan used for agricultural purposes is delivered in the northeast for use by EMWD retail and wholesale accounts and in the south for RCWD agricultural accounts.

EMWD produces potable and brackish groundwater from the San Jacinto Groundwater Basin that underlies the EMWD service area. EMWD's groundwater wells pump primarily from the eastern portion of EMWD, with the largest amount of production taking place around the cities of Hemet and San Jacinto. EMWD owns and operates two desalination plants in Sun City, the Menifee Desalter and the Perris I Desalter, which treat brackish groundwater through reverse osmosis to achieve potable water standards.

In addition to the potable water system, EMWD maintains a regional recycled water system that provides tertiary-treated recycled water to customers for agricultural, landscape irrigation, environmental, and industrial use. EMWD's recycled water system consists of four regional water reclamation facilities (RWRFs) that treat municipal sewage and produce water for recycling. The four RWRFs, the San Jacinto Valley RWRF, the Moreno Valley RWRF, the Temecula Valley RWRF, and the Perris Valley RWRF, are spread throughout EMWD's service area. A network of pipelines connects the four RWRFs, as well as several distribution storage ponds, to manage the delivery of recycled water.

EMWD's water supplies and facilities are described in more detail in **Chapter 6**.

3.2 Service Area Boundary Maps

EMWD's service area boundary and the intersecting and adjacent water agencies within that boundary are shown in **Figure 3-1**. The cities in EMWD's service area are shown in **Figure 3-2**.

Figure 3-1. Water Agencies in and around EMWD Boundary

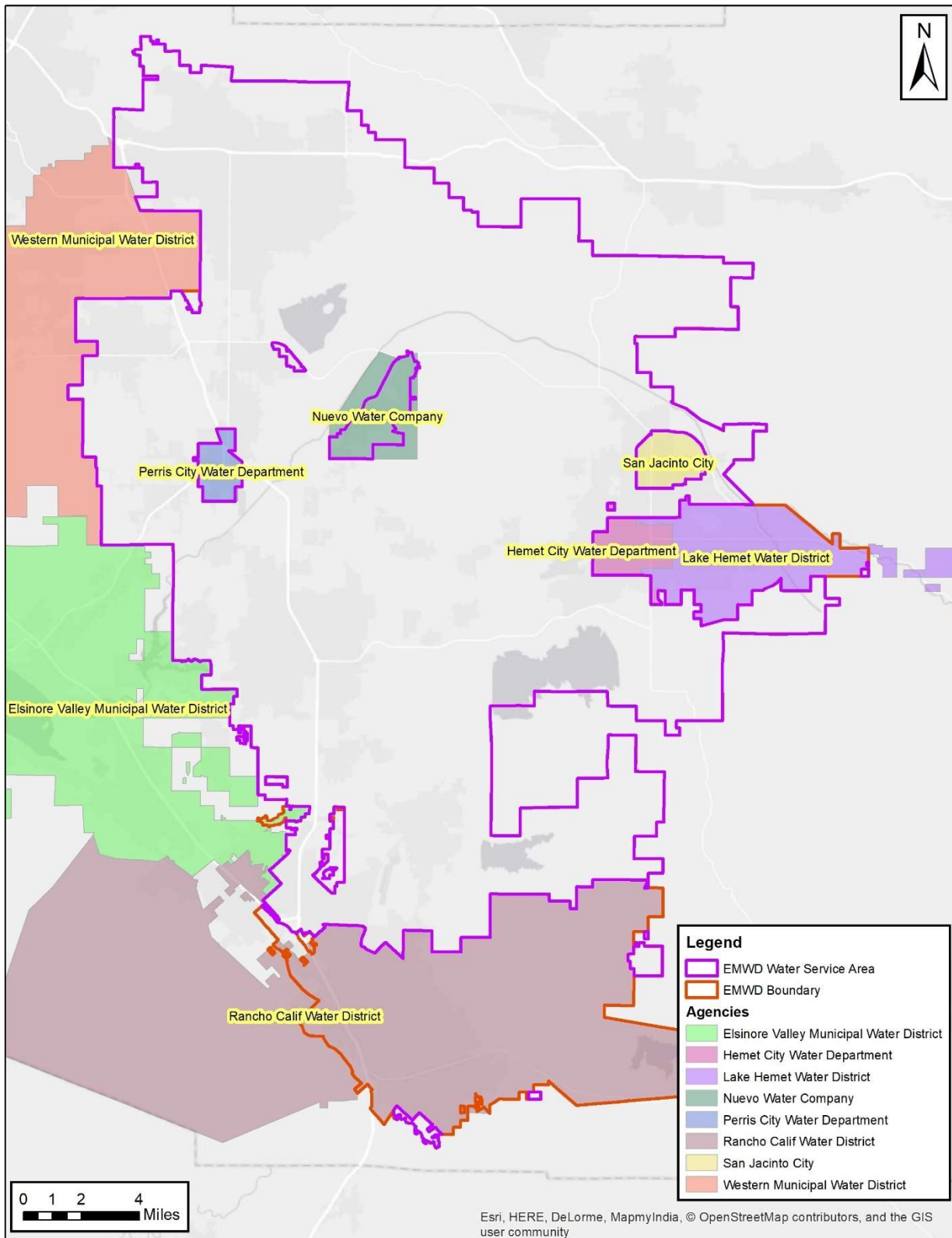
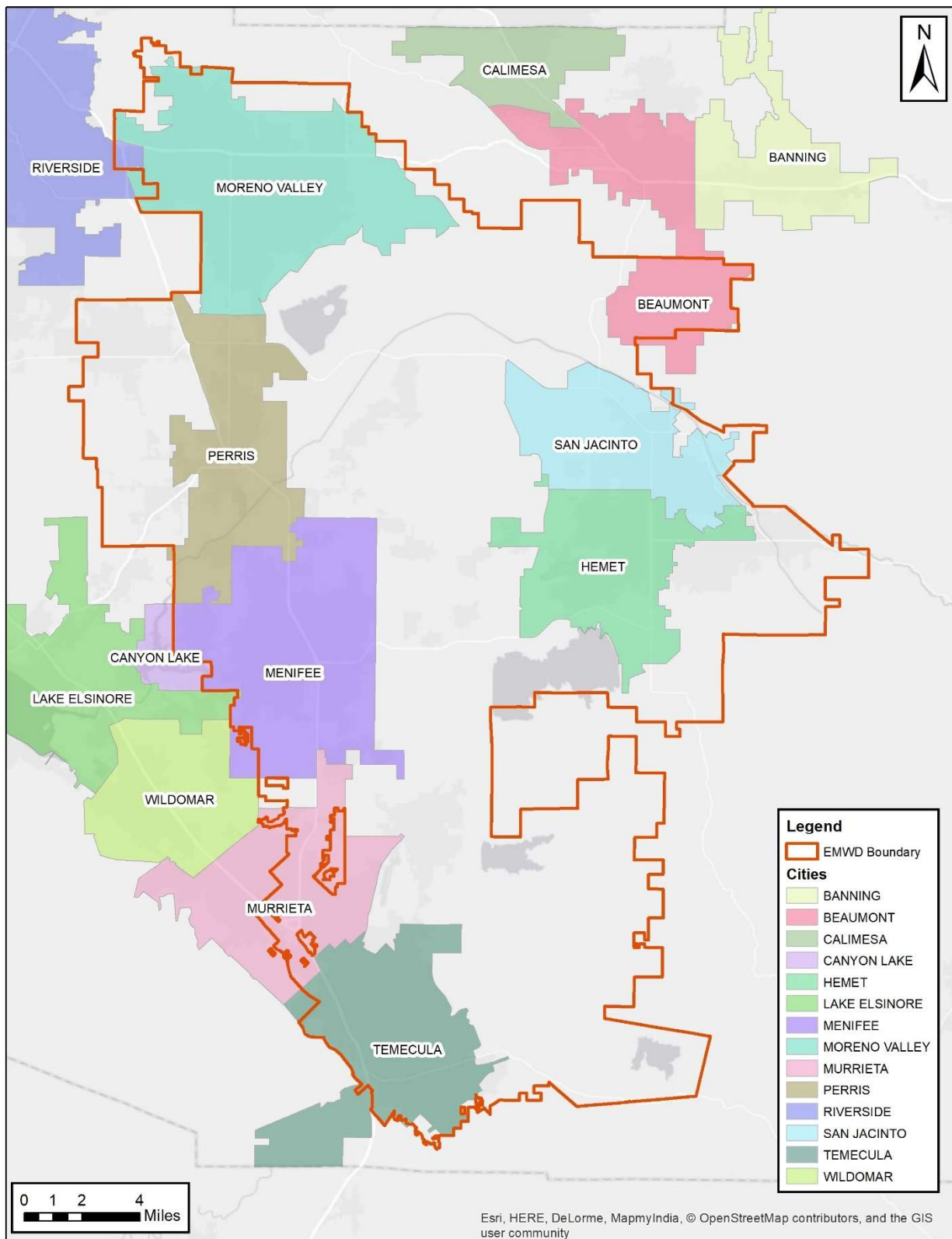


Figure 3-2. Cities in EMWD Boundary



3.3 Service Area Climate

EMWD has a semi-arid climate characterized by hot, dry summers and cooler winters. The region experiences a wide variation in rainfall and periodic drought. The average total rainfall in the service area is approximately 7.6 inches, occurring mostly December through March. A summary of historical average climatological data is presented in **Table 3-5**, and the values are plotted in **Figure 3-3**.

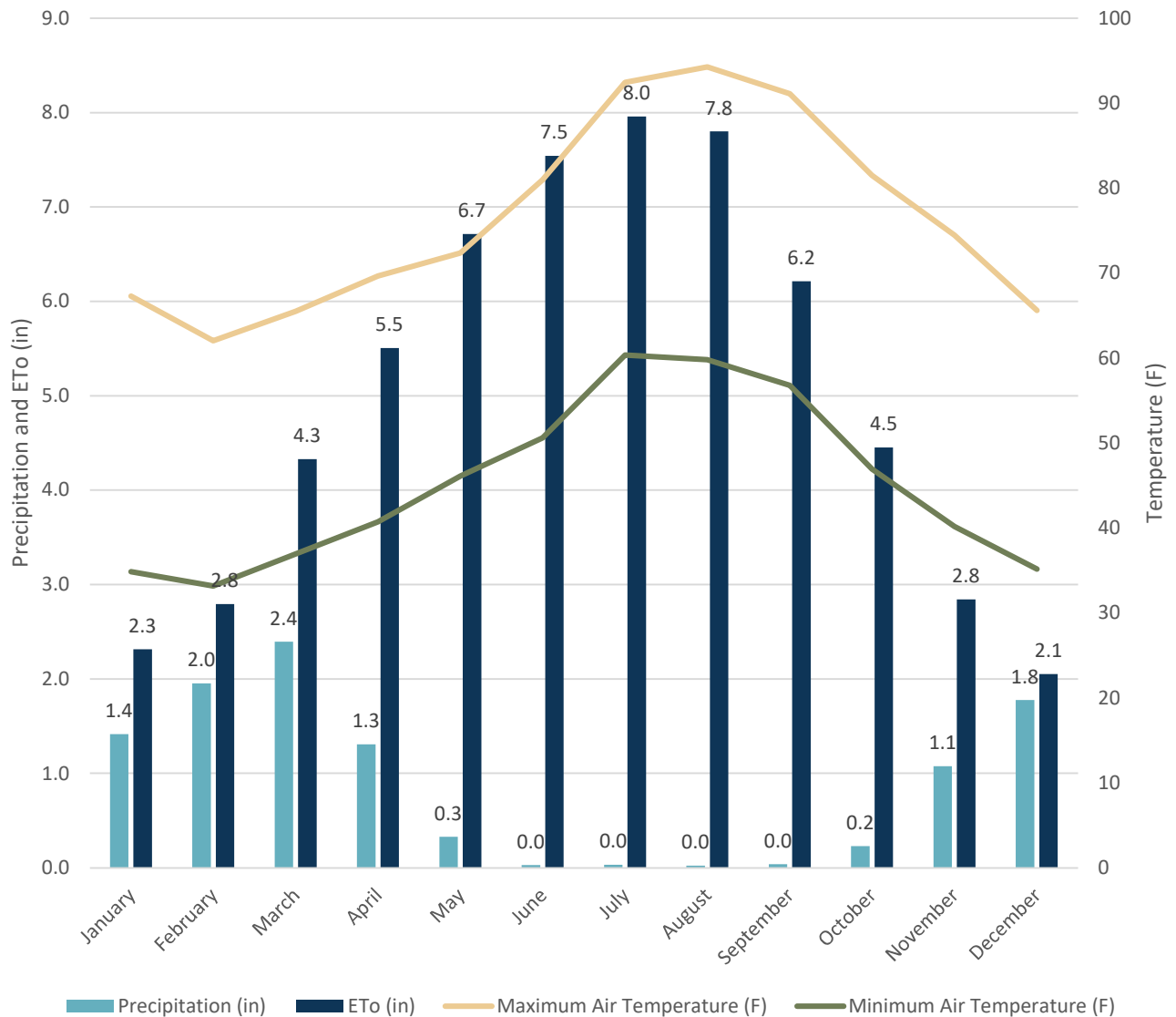
Table 3-1. EMWD Climate

	STANDARD MONTHLY AVERAGE ETO (INCHES)	AVERAGE RAINFALL (INCHES)	AVERAGE MAXIMUM TEMPERATURE (FAHRENHEIT)	AVERAGE MINIMUM TEMPERATURE (FAHRENHEIT)
JANUARY	2.3	1.4	67	35
FEBRUARY	2.8	2.0	62	33
MARCH	4.3	2.4	65	37
APRIL	5.5	1.3	70	41
MAY	6.7	0.3	72	46
JUNE	7.5	0.0	81	51
JULY	8.0	0.0	92	60
AUGUST	7.8	0.0	94	60
SEPTEMBER	6.2	0.0	91	57
OCTOBER	4.5	0.2	82	47
NOVEMBER	2.8	1.1	74	40
DECEMBER	2.1	1.8	66	35
TOTAL / AVERAGE	60.5	10.6	76	45

Data from California Irrigation Management Information System (CIMIS) Station Winchester 179

Data from 2002 through 2020

Figure 3-3. Historical Climate Data at CIMIS Station 179



3.3.1 Climate Change

EMWD has considered the potential impacts of climate change on its demands (described in **Chapter 4**) and its supplies (described in **Chapter 6**).

3.4 Service Area Population and Demographics

EMWD's service area has experienced population growth driven by cycles of economic expansion and conversion of agricultural land to urban development.

3.4.1 Service Area Population

EMWD used the DWR Population Tool to estimate the population in its service area for the census years of 1990, 2000, and 2010. The historic growth in population is shown in **Table 3-2**.

Table 3-2. Historical Population within EMWD's Boundary - 1990 to 2010

WATER SERVICE AREA	1990	2000	2010	2015
EMWD Retail Service Area	240,293	297,111	519,880	546,146
EMWD Wholesale Service Area	102,362	167,104	200,789	215,075
TOTAL	342,655	464,215	720,669	761,221

Service area population was estimated using Census data and DWR's Population Tool.

The DWR Population Tool was used to estimate the 2020 population based on the census data for 2010 and the change in the number of connections from 2010 to 2020.

For future population projections, EMWD evaluated projections prepared by the Southern California Association of Governments (SCAG). SCAG recently completed an updated regional growth forecast known as 2020 Connect SoCal. SCAG generated estimates of population, households, and employment in each Traffic Analysis Zone (TAZ). The results are summarized in **Table 3-3**.

Table 3-3. Projections of Population, Households, and Employment

		2025	2030	2035	2040	2045
POPULATION	EMWD Boundary	921,200	983,300	1,045,300	1,088,300	1,131,300
	EMWD Water Service Area	649,700	695,500	741,300	774,300	807,200
	EMWD Wholesale Service Area	271,500	287,800	304,000	314,000	324,100
HOUSEHOLDS	EMWD Boundary	290,800	317,000	343,200	360,800	378,400
	EMWD Water Service Area	199,600	218,700	237,700	251,000	264,200
	EMWD Wholesale Service Area	91,200	98,300	105,500	109,800	114,200
EMPLOYMENT	EMWD Boundary	231,400	250,100	268,800	282,500	296,300
	EMWD Water Service Area	123,600	132,300	141,000	149,000	157,000
	EMWD Wholesale Service Area	107,800	117,800	127,800	133,500	139,300

Estimates from SCAG forecast in 2020 Connect SoCal

The current and projected future population in the retail service area is shown in **Table 3-4**, and the estimates for the wholesale service area are shown in **Table 3-5**.

Table 3-4. DWR 3-1R Current and Projected Population

POPULATION SERVED	2020	2025	2030	2035	2040	2045
Retail	603,950	649,700	695,500	741,300	774,300	807,200

1) Retail population for 2020 was estimated using the DWR Population Tool and persons per connection.

2) Retail population projections for 2025-2045 were estimated using population projections prepared by the Southern California Association of Governments for 2020 Connect SoCal.

Table 3-5. DWR 3-1W Current and Projected Population

POPULATION SERVED	2020	2025	2030	2035	2040	2045
Wholesale	255,210	271,500	287,800	304,000	314,000	324,100

1) Wholesale population for 2020 was estimated using the data from the Southern California Association of Governments.

2) Wholesale population projections for 2025-2045 were estimated using population projections prepared by the Southern California Association of Governments for 2020 Connect SoCal.

3.4.2 Other Social, Economic, and Demographic Factors

As the population within EMWD’s service area continues to grow, the characteristics of the service area are continually changing. Tract homes, commercial centers and new industrial warehouses are replacing areas of agriculture and vacant land.

EMWD has a history of development cycles with wide variations in the rate of growth. From the mid-1980’s to 1990’s, population growth in EMWD routinely exceeded 10 percent per year. In the early 1990’s, growth slowed during an economic recession. During the late 1990’s, growth began to steadily increase, and the first five years of the 2000’s again brought accelerated population growth to the area. Growth within EMWD’s service area reached its peak rate in 2005, but then there was a major decline in housing development and growth slowed again. Starting in 2006 EMWD saw a sharp decline in the number of new connections added, reaching a low point in 2010. Since 2010, new connections have slowly been increasing; but they remain well below the peak levels of new development seen in the early 2000’s.

The cycle of booming growth followed by slower growth makes new development in EMWD’s service area difficult to predict. On average, 6,700 new equivalent dwelling units (EDUs) per year were added to EMWD’s service area from 2000 through 2015; but over that 15-year time period there were two years with more than 15,000 EDUs added and three years with less than 2,000 EDUs added. Because of the variability in demand cycles, EMWD has developed a comprehensive database of planned projects that tracks proposed new development and land use changes. This database is used in facility and supply planning to project future demands.

Ultimate demand estimates indicate that before EMWD reaches build out, the population will more than double compared to the current size. Land will continue to be developed in western Riverside County as more and more people move into the area. Just as it has in the past, EMWD will continue to meet the challenges of new development with innovation, efficiency, and responsibility.

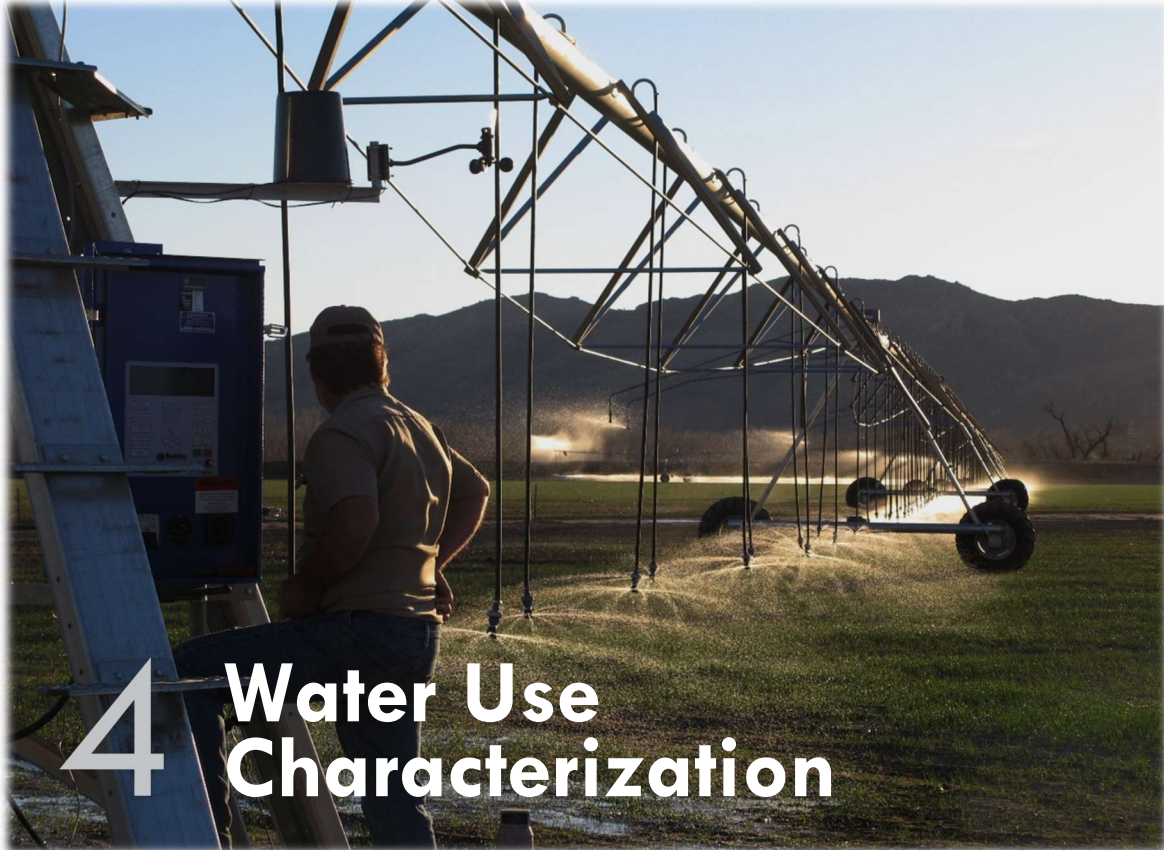
3.5 Land Uses within Service Area

EMWD's service area includes a number of cities and unincorporated communities within Riverside County. The regional growth projections prepared by SCAG included consultation with these agencies to reflect the current and planned land uses within their jurisdictions. As part of its planning process, EMWD has also reviewed general and specific plans available from Riverside County and the cities within the service area.

3.6 Proposed Reorganization of Fallbrook Public Utility District and Rainbow Municipal Water District

The San Diego Local Agency Formation Commission (LAFCO) is currently processing two related proposals separately filed by the Rainbow Municipal Water District (MWD) and Fallbrook Public Utility District (PUD). These proposals request LAFCO approval for each agency to separately and concurrently detach from the San Diego County Water Authority (SDCWA) and annex to EMWD for purposes of changing wholesale water suppliers. Fallbrook PUD and Rainbow MWD are currently being supplied with imported water from Metropolitan's Robert A. Skinner (Skinner) Water Treatment Plant via the Metropolitan/San Diego Aqueduct, and if the proposal is approved, would continue to be supplied with the same water by EMWD.

As part of the LAFCO process, EMWD evaluated current and projected supplies and demands with and without the annexation of Fallbrook PUD and Rainbow MWD under various hydrologic conditions. Through the analysis, EMWD determined that EMWD's current retail and wholesale customers would continue to recognize the same water supply reliability regardless of whether or not Fallbrook PUD and Rainbow MWD become wholesale customers of EMWD.



4 Water Use Characterization

When EMWD was formed in 1950 it was a small agency, primarily serving agricultural customers. Since then, potable water use in EMWD's service area has shifted from primarily agricultural to urban use. The reduction in agricultural demand has two major causes: rural farmland has been transformed to urban housing, and most remaining agricultural demands have been shifted to the recycled water system.

The development of new homes and the accompanying increase in population has led to the increasing demand for domestic water. EMWD has experienced increases in demand as the region has experienced dry weather patterns and a growing economy. Even with the warmer, drier weather, and improvements in the economy, demand has remained well below the peak seen in 2007. EMWD's proactive conservation program, including an allocation-based tiered rate billing structure, has reduced demand even as the agency has added new dwelling units.

IN THIS SECTION

- Water Use by Sector
- Projections of Future Demand

4.1 Past, Current, and Projected Water Use by Sector

In addition to retail potable water demand, EMWD delivers water to seven wholesale customer agencies and meets a significant portion of demand with recycled water. The sections below summarize the past and projected retail and wholesale water use within EMWD’s service area.

EMWD’s primary retail customers can be divided into residential, commercial, industrial, institutional, landscape and agricultural irrigation sectors. Although the residential sector is by far EMWD’s largest customer segment, each market segment plays a role in the growth and development of EMWD’s service area.

EMWD wholesales water to seven different agencies. The demand from each agency differs based on its need each year. These demands can be unstable at times as these agencies use water from EMWD to supplement their system when their local facilities are inadequate or fail. EMWD will also provide backup for the North Perris Water System if an emergency should occur.

Under the Hemet/San Jacinto Groundwater Management Area Water Management Plan (HSJ Management Plan), EMWD is responsible for providing water to recharge the groundwater basin. A portion of the water supplied will be SWP water imported through Metropolitan to meet the requirements of the Soboba Band of Luiseño Indians Water Settlement Agreement and to improve the reliability of groundwater in the area. Individual agencies, including EMWD, will be able to extract their allotted amount of the recharged water from the basin.

A portion of the water EMWD wholesales to Lake Hemet Municipal Water District (LHMWD) is raw water for agricultural uses. This water is needed especially when surface water is not available to LHMWD in dry years.

Water use for 2020 is shown in **Table 4-1** and **Table 4-2**.

Table 4-1. DWR 4-1R Actual Demands for Potable and Raw Water

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME
Single Family		Drinking Water	52,162
Multi-Family		Drinking Water	6,535
Commercial		Drinking Water	4,267
Industrial		Drinking Water	571
Institutional/Governmental		Drinking Water	1,629
Landscape		Drinking Water	8,155
Agricultural irrigation		Drinking Water	1,114
Agricultural irrigation		Raw Water	446
Other		Drinking Water	1,287
Non-Revenue	System losses & unbilled, authorized consumption	Drinking Water	8,507
TOTAL:			84,673

- 1) Passive water savings due to the restrictions outlined in the Administrative Code are included in the demand projections for EMWD’s retail service area.
- 2) Landscape demands remain constant/decrease over time as landscape accounts are offset by conversion to the recycled water system.
- 3) Projections for losses in the table include system losses (real and apparent) and unbilled, authorized consumption. EMWD’s water loss audits are completed on a fiscal year basis (rather than calendar year) and report estimated system losses.

Table 4-2. DWR 4-1W Actual Demands for Potable and Raw Water

USE TYPE	ADDITIONAL DESCRIPTION	LEVEL OF TREATMENT WHEN DELIVERED	2020 VOLUME
Groundwater Recharge	Imported water recharge to the Hemet/San Jacinto Basin	Raw Water	6,467
Sales/Transfers/Exchanges to Other Agencies	City of Perris Water System	Drinking Water	1,685
Sales/Transfers/Exchanges to Other Agencies	Western Municipal Water District Murrieta Division	Drinking Water	1,809
Sales/Transfers/Exchanges to Other Agencies	Nuevo Water Company	Drinking Water	409
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	Drinking Water	11,105
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District	Raw Water	13,923
Sales/Transfers/Exchanges to Other Agencies	City of Hemet	Drinking Water	0
Sales/Transfers/Exchanges to Other Agencies	City of San Jacinto	Drinking Water	0
Sales/Transfers/Exchanges to Other Agencies	Lake Hemet Municipal Water District	Raw Water	986
TOTAL:			36,384

Projected demands for EMWD were developed using information about planned development and land use. To track new developments, EMWD updates a Geographic Information System (GIS) database that tracks proposed development quarterly. Currently, EMWD is tracking the status of over 800 proposed projects and over 125,000 equivalent dwelling units. Growth rates were based on a forecast of future population prepared by the Southern California Association of Governments (SCAG). EMWD’s growth forecasts include both the retail and wholesale service areas.

EMWD’s retail demand projections include the water savings needed to meet the Water Conservation Act of 2009, SB X7-7 requirements. Demand forecasts for wholesale customers are developed from growth projections and through collaboration with sub agencies.

Wholesale demand projections are based on communications with sub agencies and respective growth projections for those agencies.

4.1.1 Codes and Other Considerations Used in Projections

EMWD demand projections include water savings that result from a progressive conservation rate structure. EMWD uses an allocation-based tiered rate structure to encourage conservation by sending a strong price signal for water use over a budget allocation. Indoor budgets are based on an allocation of 55 gallons per capita per day. Outdoor budgets are based on the irrigated area and a percent of evapotranspiration. The percent of evapotranspiration is tied to the date the home was connected to EMWD’s system. The rate structure is used to enforce codes and standards in place to promote efficiency.

As codes and standards increase efficiency over time, EMWD has the ability to adjust the allocations. The most recent update to EMWD’s allocations occurred in May of 2015, when a fifty percent

evapotranspiration standard was adopted for all new non-functional landscape installed after June 1, 2015. The details on EMWD's rate structure can be found in Section 5, Article 6 of EMWD's Administrative Code.

Senate Bill (SB) 606 and Assembly Bill (AB) 1668 became law in 2018. These laws establish guidelines for efficient water use and a framework for the implementation and oversight of new water use standards. The State will establish water use objectives and long-term standards for efficient water use applying to indoor use, outdoor use, and other use types including losses. Rulemaking is currently underway to implement this legislation and develop the standards for efficient water use. When the final standards are adopted, EMWD will evaluate the need to modify its water use budgets for customers.

Residential consumption is the dominant demand for EMWD, and this will continue in the future according to current general plans for the County of Riverside and local cities. Residential accounts are required to keep their demands below a budgeted allocation or pay a high rate for water use. Accounts dedicated to irrigating landscaped areas have the second highest consumption rate. Just as with residential accounts, landscape accounts are subject to a budgeted allocation or pay a higher rate for over budget use. New development in both of these account classes are provided with lower budget allocations to account for water use efficiency requirements for new development.

Section 5, Article 6 of EMWD's Administrative Code details EMWD's rate structure. Passive water savings due to the provisions outlined in the Administrative Code are included in the demand projections for EMWD's retail service area.

In 2019, EMWD began implementing water budgets and tiered rates for additional commercial, industrial, and institutional (CII) customers. Commercial developments will also continue to increase and will be focused along the major transportation corridors through EMWD's boundary (Interstate Highway 15, Interstate Highway 215, Highway 79, and Highway 74). Land use-based projections indicate that the ratio of commercial demand to retail demand will increase slightly over time.

EMWD has a very small industrial use sector, accounting for less than one percent of retail demand. Industrial developments are proposed around Interstate Highway 215 and other main transportation corridors. Much of the proposed growth consists of large warehouse projects with minimal water demand. As much as feasible, EMWD will meet the needs of high-water demand industrial customers with recycled water.

Currently, the demand from institutional accounts account for about two percent of retail demand for potable water. EMWD works closely with institutional and government accounts to help reduce their demand and promote the efficient use of water. Whenever possible, recycled water is used for landscape irrigation for schools and other government facilities. EMWD has also developed conservation programs designed to assist public sector accounts like schools to reduce demand through the retrofit of inefficient devices. These programs are discussed further in Chapter 9.

EMWD's service area has gone through a major transformation from a farming community to a residential community. Currently, agricultural demand accounts for less than four percent of EMWD's potable and raw water market, with a substantial portion of the agricultural community being served by the recycled water system. Agricultural demand for potable and raw water is expected to remain relatively stable for the next twenty years with some fluctuations from year to year due to changes in weather or crop rotations. It is also possible that a general decline over time may be observed both as a result of continued urbanization and increased recycled water usage.

Project demands for the retail and wholesale customers are shown in **Table 4-3** and **Table 4-4**.

Table 4-3. DWR 4-2R Projected Demands for Potable and Raw Water

USE TYPE	ADDITIONAL DESCRIPTION	PROJECTED WATER USE				
		2025	2030	2035	2040	2045
Single Family		66,900	71,700	76,700	80,500	84,000
Multi-Family		8,500	9,100	9,700	10,200	10,600
Commercial		6,100	6,500	7,000	7,300	7,600
Industrial		600	600	700	700	700
Institutional/Governmental		2,700	2,900	3,100	3,200	3,400
Landscape		8,400	7,600	6,800	6,200	5,500
Agricultural irrigation	Potable Water	1,500	1,500	1,500	1,500	1,500
Agricultural irrigation	Raw Water	500	500	500	500	500
Other		0	0	0	0	0
Non-Revenue	System losses & unbilled, authorized consumption	7,400	7,900	8,400	8,800	9,200
TOTAL:		102,600	108,300	114,400	118,900	123,000

- 1) Passive water savings due to the provisions outlined in the Administrative Code are included in the demand projections for EMWD’s retail service area.
- 2) Landscape demands remain constant/decrease over time as landscape accounts are offset by conversion to the recycled water system.
- 3) Projections for losses in the table include system losses (real and apparent) and unbilled, authorized consumption.

Table 4-4. DWR 4-2W Projected Demands for Potable and Raw Water

USE TYPE	ADDITIONAL DESCRIPTION	PROJECTED WATER USE				
		2025	2030	2035	2040	2045
Groundwater Recharge	Imported water recharge to the Hemet/San Jacinto Basin	7,500	7,500	7,500	7,500	7,500
Sales/Transfers/Exchanges to Other Agencies	City of Perris Water System	1,800	1,900	2,100	2,200	2,300
Sales/Transfers/Exchanges to Other Agencies	Western Municipal Water District Murrieta Division	1,000	1,300	1,600	2,000	2,300
Sales/Transfers/Exchanges to Other Agencies	Nuevo Water Company	500	1,000	1,100	1,200	1,200
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District (Potable)	27,100	20,000	21,000	15,200	16,500
Sales/Transfers/Exchanges to Other Agencies	Rancho California Water District (Raw)	15,200	15,200	15,200	22,300	22,300
Sales/Transfers/Exchanges to Other Agencies	City of Hemet	0	0	0	0	0
Sales/Transfers/Exchanges to Other Agencies	City of San Jacinto	0	0	0	0	0
Sales/Transfers/Exchanges to Other Agencies	Lake Hemet Municipal Water District	5,100	5,500	5,900	6,300	6,700
TOTAL:		58,200	52,400	54,400	56,700	58,800

- 1) Lake Hemet Municipal Water District generally receives raw water, but may purchase some potable water in the future based on operational conditions
- 2) Groundwater recharge will occur under the Hemet/San Jacinto Water Management Plan.

In addition to potable and raw water demands, EMWD also uses recycled water for beneficial uses such as municipal, industrial, landscape, agricultural and environmental use. These uses are described in more detail in **Chapter 6**.

The gross water use including recycled water for the retail and wholesale systems is shown in **Table 4-5** and **Table 4-6**.

Table 4-5. DWR 4-3R Total Gross Water Use

-	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1R and 4-2R	84,673	102,600	108,300	114,400	118,900	123,000
Recycled Water Demand* From Table 6-4R	31,243	43,330	49,020	54,500	59,800	64,100
TOTAL WATER USE:	115,916	145,930	157,320	168,900	178,700	187,100

Table 4-6. DWR 4-3W Total Gross Water Use

-	2020	2025	2030	2035	2040	2045
Potable and Raw Water From Table 4-1W and 4-2W	36,384	58,200	52,400	54,400	56,700	58,800
Recycled Water Demand* From Table 6-4W	1,285	4,770	5,180	5,600	5,600	5,600
TOTAL WATER DEMAND:	37,699	62,970	57,580	60,000	62,300	64,400

4.2 Distribution System Water Losses

Water loss is a combination of apparent losses and real losses. Apparent losses are attributed to unauthorized consumption, customer metering inaccuracies and systematic data handling errors. Real losses are attributed to such physical water losses as leakage along the pipe system, at the storage tanks, or at the service connections. Real losses in EMWD’s potable system are highest where pipelines are older and smaller in size, especially in the Hemet and San Jacinto areas that were once owned by the Fruitvale Mutual Water Company. EMWD tracks pipe leaks and identifies pipes for replacement as part of its capital improvement program. These efforts are described in more detail in **Chapter 9**.

EMWD used the American Water Works Association (AWWA) water system balance methodology to prepare water audits for the last five fiscal years. While EMWD provides both retail and wholesale service and generally reports these services separately throughout this UWMP, its physical facilities are shared. Therefore, losses cannot be easily attributed to one system or the other. For this reason, all of EMWD’s water losses are reported in a single table.

The results of the water audits are summarized in **Table 4-7**. The completed audits are included in **Appendix D**.

Table 4-7. DWR 4-4R 12 Month Water Loss Audit Reporting

REPORT PERIOD START DATE		VOLUME OF WATER LOSS (AF)
MM	YYYY	
7	2015	8,865
7	2016	6,221
7	2017	4,321
7	2018	7,360
7	2019	5,096

1) EMWD’s retail and wholesale physical facilities are shared. Therefore, losses cannot be easily attributed to one system or the other. For this reason, all of EMWD’s water losses are reported in the DWR Table 4-4 for retail.

2) Water Loss includes Real losses and Apparent losses

4.3 Water Use for Lower Income Households

Senate Bill 1087 requires that water use projections in an UWMP include the projected water use for single family and multi-family residential housing for lower income households as identified in the housing element of any city and county in the service area of the supplier. EMWD used the percent of low income and very low-income housing identified in the Regional Housing Needs Assessment (RHNA) for 2021 through 2029, approved by the Southern California Association of Governments, to estimate the number of new low-income housing units that may require service within EMWD’s retail service area. The number of projected low-income housing units within each jurisdiction served by EMWD is shown in **Table 4-8**. The demands for these units are included in the total projected residential retail demands.

Table 4-8. Low Income Housing Unit Projection

JURISDICTION	PROJECTED HOUSING UNITS			PERCENT VERY LOW INCOME OR LOW INCOME
	TOTAL	VERY LOW INCOME	LOW INCOME	
Hemet	6,466	812	732	24%
Menifee	6,609	1,761	1,051	43%
Moreno Valley	13,627	3,779	2,051	43%
Murrieta	3,043	1,009	583	52%
Perris	7,805	2,030	1,127	40%
San Jacinto	3,392	800	465	37%
Temecula	4,193	1,359	801	52%
TOTAL	45,135	11,550	6,810	41%

The demand projections in this UWMP include future water savings and demand for lower income residential households as summarized in **Table 4-9**.

Table 4-9. DWR 4-5R Inclusion in Water Use Projections

ARE FUTURE WATER SAVINGS INCLUDED IN PROJECTIONS? REFER TO APPENDIX K OF UWMP GUIDEBOOK.	Yes
SECTION OR PAGE NUMBER WHERE THE CITATIONS UTILIZED IN THE DEMAND PROJECTS CAN IT BE FOUND:	Section 4.1.1
ARE LOWER INCOME RESIDENTIAL DEMANDS INCLUDED IN PROJECTIONS?	Yes

4.4 Climate Change Considerations

EMWD has considered the impacts of climate change on water demands as part of long-term strategic planning. Climate change is expected to cause a rise in temperatures in the region which will increase evapotranspiration and water demand. This is particularly true for EMWD's agricultural sector. Additionally, in urbanized areas with limited vegetation, climate change can exacerbate the heat island effect which may result in increased energy and cooling demands.

EMWD's service area lies within the Santa Ana River and Santa Margarita River Watersheds. The Santa Ana River Watershed is covered under the Santa Ana Watershed Planning Authority's (SAWPA)'s Integrated Regional Water Management (IRWM) Plan for the Santa Ana River Watershed. A climate change vulnerability assessment was completed for the region as part of the IRWM Plan update. Key demand vulnerabilities identified by the SAWPA Region that relate to EMWD's service area include:

- Increased temperature could lead to increases in industrial cooling water needs
- Seasonal outdoor water use is expected to increase
- Climate-sensitive crops will be impacted
- Continued education and increased employment of efficient use technologies will be required
- Changes in snowmelt patterns in the future may make it difficult to balance water demands

EMWD continues to work toward decreasing demands for potable water through water conservation programs and full utilization of recycled water. EMWD's conversion of agricultural, landscape and industrial uses to recycled water has helped EMWD mitigate climate change impacts on these demands.

EMWD is currently preparing a Climate Action Plan (CAP). EMWD has a two-pronged approach for investing in projects that address climate change. EMWD is committed to investing in climate resilient water supplies and landscapes as well as demand reduction efforts. EMWD is also committed to investing in projects that mitigate climate change by maximizing energy independence, reducing GHG emissions, and advancing policies and strategies that address climate adaptation.



5 SB X7-7 Baseline, Targets and 2020 Compliance

The Water Conservation Act of 2009, SB X7-7, set a requirement for water agencies to reduce their per capita water use by the year 2020. The overall goal was to reach a statewide reduction of per capita urban water use of 20 percent by December 31, 2020.

DWR, through a public process, developed and published Methodologies for Calculating Baseline and Compliance Urban Water Per Capita Use for consistent application of SB X7-7 throughout the state.

IN THIS SECTION

- Baselines & Targets
- 2020 Compliance

As a wholesaler, EMWD is required to provide an assessment of its present and proposed future measures, programs, and policies that will help its wholesale customers achieve their SB X7-7 water use reduction targets. As both a wholesaler and a retailer, EMWD currently participates in and supports programs developed and implemented by Metropolitan that benefit its entire service area, including wholesale customers. These programs include region-wide rebates for both commercial and residential customers, conservation messaging and outreach, and research and development of new conservation programs and devices. EMWD also actively promotes conservation throughout Riverside County through participation in organizations such as the Riverside County Water Task Force. EMWD will continue to support water reduction by wholesale customers through the use of outreach, technical support, and participation in regional programs. EMWD’s wholesale water conservation efforts are described in more detail in Chapter 9.

Any one of four methods can be used to determine the per capita water use targets. Three methods were specified in the legislation, and the fourth was developed by DWR. The four methods are:

- Method 1: Use 80 percent of the baseline as the per capita water use target.
- Method 2: Use an efficiency standard with targets for indoor use, landscape use, and commercial, industrial, and institutional (CII) use and an optional target for agricultural use.
- Method 3: Use 95 percent of the applicable state hydrologic region target developed by DWR and published in the state’s 20X2020 Water Conservation Plan.
- Method 4: Use an alternative method developed by DWR that accounts for water savings due to water metering and achieving water conservation measures in three water use sectors.

As documented in its 2015 UWMP, EMWD used Method 2 to calculate its target water use for 2020.

Water purveyors were required to define a continuous 10- to 15-year baseline period ending between December 31, 2004 and December 31, 2010 and calculate an average water use over this period. If the percentage of recycled water used in the year 2008 was at least 10 percent of the total water used, the agency could use up to a 15-year period. If the percentage of recycled water was less than 10 percent, a 10-year baseline period was required. Additionally, a continuous five-year period ending between December 31, 2007 and December 31, 2010 was used to confirm that the selected 2020 target meets the minimum water use reduction requirements.

EMWD selected a 10-year baseline period beginning 1999 and ending 2008 despite providing more than 10 percent recycled water in 2008. A 5-year baseline period was chosen between 2003 and 2007 for the target confirmation.

5.1 SB X7-7 Forms and Tables

EMWD has completed the required forms for compliance with SB X7-7 and included them in **Appendix C**.

5.1.1 Baselines and Target Summary

The baselines and targets calculated in EMWD’s 2015 UWMP are summarized in **Table 5-1**. EMWD is not making any changes to its baselines or targets in the 2020 UWMP.

Table 5-1. DWR 5-1R Baselines and Targets Summary

BASILINE PERIOD	START YEAR	END YEAR	AVERAGE BASELINE GPCD*	CONFIRMED 2020 TARGET *
10-15 Year	1999	2008	197	176
5 Year	2003	2007	195	

*All values are in Gallons per Capita per Day (GPCD)

5.2 Methods for Calculating Population and Gross Water Use

EMWD used methods consistent with previous UWMPs and guidance from DWR to calculate service area population and gross water use for 2020.

5.2.1 Service Area Population

EMWD’s retail baseline population was calculated using DWR’s Population Tool. For 2020, EMWD used the Population Tool in combination with data from the Southern California Association of Governments and estimated persons per connection. The Population Tool uses preloaded Census data for the years 1990, 2000, and 2010 and uploaded service area boundary maps for the corresponding years to calculate service area population in Census years. The annual numbers of single family and multi-family connections in EMWD’s retail service area were used to calculate a population-per-connection ratio for Census years. The Population Tool interpolated the population-per-connection ratio to estimate population for non-Census years.

5.2.2 Gross Water Use

Gross water use was calculated using the best available meter data for water entering and exiting EMWD’s distribution system. The distribution system includes potable water service for both domestic and agricultural demand, and raw water service to a few agricultural customers.

Potable sources include potable groundwater wells, treated water from two desalination plants, imported water from Metropolitan and water wheeled from other agencies. Imported water from Metropolitan includes water delivered directly to the potable distribution system and raw water treated at EMWD facilities. Small amounts of water are also delivered from Western Municipal Water District and Rancho California Water District. Only water delivered to the distribution system is included in the gross water calculations. The single source for the raw water system is imported raw water from Metropolitan.

EMWD sells a portion of the water that enters its distribution system to wholesale customers. Some Metropolitan connections also have a portion of water that is diverted to other agencies without entering EMWD’s distribution system. RCWD, EMWD’s largest wholesale customer, has dedicated connections to Metropolitan’s system and does not impact EMWD’s distribution system.

5.3 2020 Compliance Daily Per-Capita Water Use (GPCD)

In the 2020 UWMP, agencies must demonstrate compliance with their confirmed 2020 Target GPCD. EMWD estimated its gross water use and service area populations using the methods described for previous years. EMWD did not make any optional adjustments to its 2020 gross water use.

A summary of EMWD’s compliance is provided in Table 5.2.

Table 5-2. DWR 5-2R 2020 Compliance

ACTUAL 2020 GPCD*	OPTIONAL ADJUSTMENTS TO 2020 GPCD		2020 CONFIRMED TARGET GPCD	SUPPLIER ACHIEVED TARGETED REDUCTION IN 2020
	TOTAL ADJUSTMENTS*	ADJUSTED 2020 GPCD*		
125	0	0	176	Yes

*All values are in Gallons per Capita per Day (GPCD)

5.3.1 Adjustments Due to Factors Outside of a Supplier's Control

EMWD has not made any special adjustments to its water use for 2020.

5.4 Regional Alliance

EMWD has elected to comply with SB X7-7 as an individual agency and is not participating in a Regional Alliance.



6 Water Supply Characterization

This chapter describes the sources of supply used by EMWD to meet demands.

EMWD's supply sources include local groundwater, imported water from Metropolitan, and recycled water. The discussion in this chapter is structured to follow the order recommended by DWR.

IN THIS SECTION

- Sources of Supply
- Recycled Water Program
- Projected Future Supply Portfolio

6.1 Water Supply Analysis Overview

EMWD has a diverse portfolio of local and imported supplies. Local supplies include recycled water, potable groundwater, and desalinated groundwater. EMWD is a leader in recycled water production and use. EMWD generally uses 100 percent of its recycled water to irrigate landscape and agricultural fields and provide water for industrial customers.

Groundwater is produced from two management areas within the service area. EMWD works diligently with other stakeholders to protect the quality and integrity of the groundwater basins. These efforts include recharging the basins with imported water and limiting native groundwater production when appropriate. EMWD has developed plans to expand groundwater recharge to improve reliability for its customers during normal and dry year demand periods. These plans include water banking which allows for imported water from northern California to be percolated into local aquifers for use during dry years and implementation of an advanced water purification facility for water to be used in aquifer recharge.

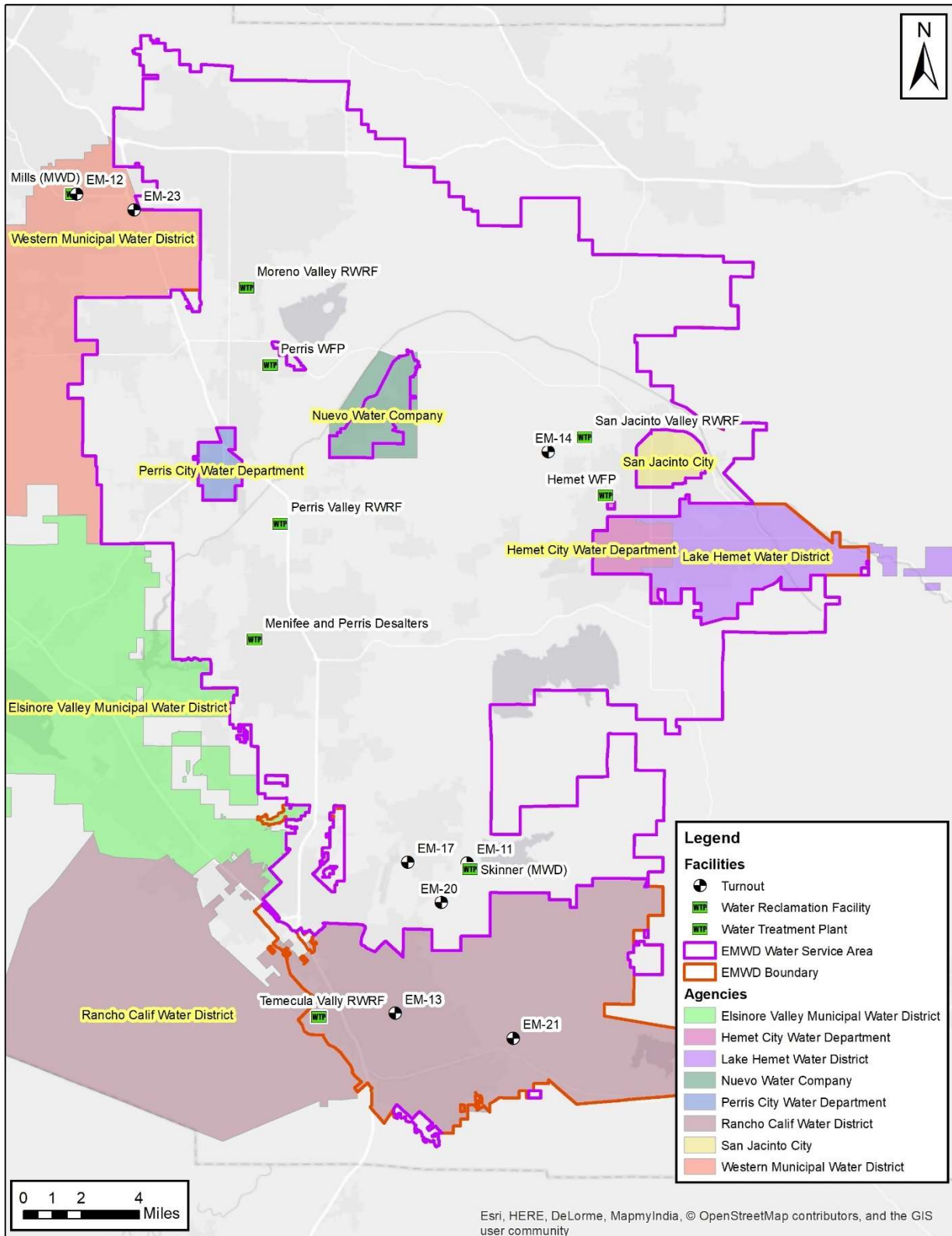
In addition to the production of potable groundwater, EMWD treats brackish groundwater at two locations, with a third desalter scheduled to come online during 2021. EMWD's groundwater desalination program has the benefit of not only providing a sustainable, reliable source of potable water for its customers, but also protecting higher quality groundwater from rising levels of brackish groundwater. These local supplies help EMWD meet regional goals for supply reliability and help limit the impact of imported water shortages.

In addition to local supplies, EMWD receives imported water from the Metropolitan Water District of Southern California (Metropolitan) in three forms: delivered directly as potable water, delivered to EMWD as raw water and then treated at EMWD's two local filtration plants, or delivered to EMWD as raw water for non-potable use and groundwater recharge.

Approximately half of the water used in the EMWD service area is imported by Metropolitan. EMWD has been able to maintain a balance of local and imported water even as new connections have been added. This has been accomplished through the implementation of local supply projects and increased water use efficiency.

These supplies are discussed in more detail in the sections that follow. Key facilities in EMWD's service area are shown in **Figure 6-1**.

Figure 6-1. Agencies and Facilities



6.2 UWMP Water Supply Characterization

6.2.1 Purchased or Imported Water

Metropolitan was formed in 1928 by thirteen Southern California cities to develop, store and distribute water for domestic and municipal purposes to the residents of Southern California. Today, the Metropolitan service area stretches across the Southern California coastal plain to 26 member agencies and includes portions of Los Angeles, Orange, Riverside, San Bernardino, and Ventura counties.

Metropolitan is a wholesale water provider and has no retail customers. It provides treated and untreated water directly to its member agencies. Over the last ten years, Metropolitan has provided between 50 percent and 60 percent of the municipal, industrial, and agricultural water used in its nearly 5,200-square mile service area. The remaining water is provided through local resources and imported water from other sources.

EMWD is one of the 26 member agencies that make up Metropolitan, which include fourteen cities, ten other municipal water districts and one county water authority. The statutory relationship between Metropolitan and its member agencies establishes the scope of EMWD's entitlements from Metropolitan. EMWD, like other member agencies, receives deliveries at different points in the system and pays for the service through a rate structure made up of multiple components. Each year member agencies advise Metropolitan how much water they anticipate they will need during the next five years. Metropolitan then works with member agencies to develop forecasts of long-term future water supply.

Metropolitan delivers supply to member agencies from two sources, the Colorado River Aqueduct (CRA), which it owns and operates, and the State Water Project (SWP), owned and operated by DWR. Additional information about Metropolitan is provided in Metropolitan's 2020 UWMP.

EMWD and Metropolitan

The original mission of Metropolitan was to build the CRA, bringing Colorado River water to Southern California. As Metropolitan was constructing the San Jacinto Tunnel Portion of the project, a large amount of seepage was encountered in the pipeline. As the seepage began to affect local water resources within the region, residents began to organize to protect their water supply. Around the same time, the region experienced a period of dry weather conditions and the groundwater basin began to experience overdraft. It became clear that a source of imported water was necessary. EMWD was formed in 1950 to bring imported water into the area. In 1951, it was annexed into Metropolitan and the first major sale of Colorado River water within EMWD began in July of 1952.

In 1960, Metropolitan contracted for additional water supplies from the SWP, operated by DWR. In 1972, the SWP began conveying water from the wet climate of northern California to the dry climate of Southern California. Through the 1980s, EMWD built facilities to take advantage of the SWP water available, and today, EMWD continues to receive a portion of its imported water supply from Northern California. Treated potable water is available in the north from the Mills Water Treatment Plant and in the south through the Skinner Water Treatment Plant. EMWD also owns and operates two water filtration plants that treat raw imported water, in Perris and Hemet. Raw imported water is also used for recharge purposes and to meet agricultural demands.

Metropolitan does not provide supply projections for each member agency. Instead Metropolitan uses a regional approach to developing projections. Metropolitan calculates the demand for the entire region, as discussed in its UWMP. Using information about existing and proposed local projects, Metropolitan then determines the amount of imported water supply and demand. Throughout the preparation of the 2020 UWMP, EMWD has provided to Metropolitan information about local supply

and projects, clarifications on boundary information, and population projections. Based on this information and information provided by other member agencies, Metropolitan has determined it is able to meet the demands of all member agencies through 2045.

6.2.2 Groundwater

EMWD produces potable groundwater from two management plan areas within the San Jacinto Groundwater Basin. Both management plan areas are part of the San Jacinto Groundwater Basin (DWR Bulletin 118 Groundwater Basin Number 8-05). The areas are the West San Jacinto Groundwater Sustainability Agency Plan Area (West San Jacinto Basin) and the Hemet/San Jacinto Water Management Plan area (Hemet/San Jacinto Basin). EMWD also owns and operates two desalination plants that convert brackish groundwater from the West San Jacinto Basin into potable water. These plants not only provide a reliable source of potable water, but they also protect potable sources of groundwater and support EMWD's groundwater salinity management program.

EMWD is a key player in three cooperative efforts to protect groundwater quality and reliability:

- The West San Jacinto Basin was formerly governed by the West San Jacinto Groundwater Basin Management Plan (WSJ Management Plan), developed in 1995 and included in Appendix E of this UWMP. Eastern Municipal Water District (EMWD), acting as the Groundwater Sustainability Agency (GSA) for the non-adjudicated portions of the San Jacinto Groundwater Basin, has developed a Groundwater Sustainability Plan (GSP) in compliance with the 2014 Sustainable Groundwater Management Act (SGMA), which is codified in California Water Code (CWC), Part 2.75 (Sustainable Groundwater Management), Section 10720 et seq. The West San Jacinto Basin will be governed by the GSP following its adoption by January 31, 2022.
- The Hemet / San Jacinto (HSJ) Management Plan is implemented by the Hemet-San Jacinto Watermaster (Watermaster). The Watermaster was appointed and is supervised by the Superior Court of the State of California for the County of Riverside, pursuant to the Stipulated Judgment entered in April 2013 (Appendix G).
- Additionally, a subset of participants (EMWD, LHMWD and the Soboba Band of Luiseño Indians [Soboba Tribe]) also actively manage water levels under a separate agreement under the Canyon Operating Plan.

Native potable groundwater production in the Hemet/San Jacinto Basin is limited according to HSJ Management Plan provisions to prevent continued overdraft. EMWD anticipated the limitations on native groundwater production it has experienced and has developed alternatives to assure reliability including an Integrated Recharge and Recovery Program (IRRP), filtration plants to treat and deliver imported water to areas dependent on groundwater, and recycled water use for irrigation of landscape and agriculture. In addition to the existing IRRP, EMWD is developing the Enhanced Recharge and Recovery Program (ERRP) to increase conjunctive use and facilitate groundwater banking. Phase 1 of the ERRP program is included in the Santa Ana River Conservation & Conjunctive Use Program (SARCCUP), a cooperative program between Metropolitan, EMWD, and other agencies in the Santa Ana Watershed to store imported water during wet years for use during dry years.

Portions of EMWD also overlay the Santa Margarita Valley Groundwater Basin. EMWD does not extract groundwater from the Santa Margarita Valley Groundwater Basin and has no plans to do so.

6.2.2.1 Basin Description

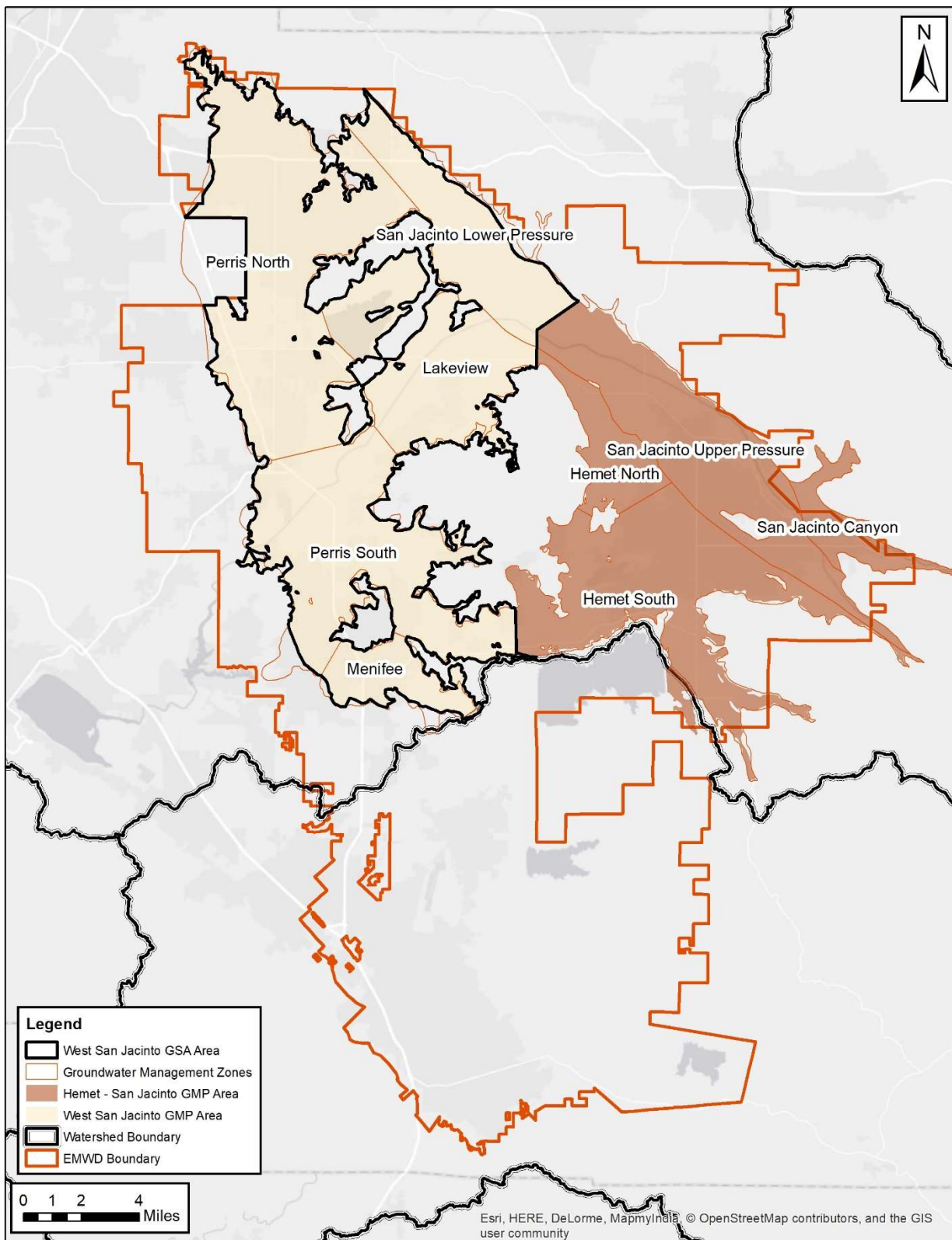
The West San Jacinto Basin and the Hemet/San Jacinto Basin are both located within the San Jacinto Groundwater Basin. Groundwater management zones within the San Jacinto Groundwater Basin were delineated based on areas of lower groundwater flow, groundwater divides, and changes in groundwater quality. The West San Jacinto Basin covers the Perris North, Perris South, San Jacinto Lower Pressure, and Menifee Groundwater Management Zones, and the Lakeview portion of the Lakeview/Hemet North Groundwater Management Zone. The Hemet/San Jacinto Basin is comprised of the Hemet South, Canyon, and San Jacinto Upper Pressure Groundwater Management Zones, as well as the Hemet North portion of the Lakeview/Hemet North Groundwater Management Zone.

EMWD produces water for potable use or blending in four of the groundwater management zones: Perris North, Hemet South, San Jacinto Upper Pressure and Canyon. Desalter production wells are located in the Perris South and Lakeview/Hemet North Groundwater Management Zones. The Groundwater Management Zones are summarized in **Table 6-1** and are shown in **Figure 6-2**.

Table 6-1. Groundwater Management Zones

BASIN	MANAGEMENT AREA	DESCRIPTION
WEST SAN JACINTO	Perris North	Boundaries include the Casa Loma fault to the northeast bordering the San Jacinto Lower Pressure Management Zone; a bedrock constriction to the south bordering the Perris South Groundwater Management Zone; the Bernasconi Hills and the Lakeview Mountains to the west; and the bedrock and surrounding hills the north and west. The Casa Loma fault zone is generally not a barrier to groundwater flow in this section of the fault. Therefore, groundwater leaks across the fault zone as underflow from the San Jacinto Lower Pressure Groundwater Management Zone. Lake Perris is located to the east of the Perris North Groundwater Management Zone and is surrounded by the Bernasconi Hills and Lakeview Mountains to the north, east, and south, and a dam on the west side. Seepage is known to occur under the dam through a subterranean channel into the Perris North Groundwater Management Zone.
	Perris South	Boundaries include a groundwater divide in the Winchester area; bedrock constrictions/saddles bordering the Menifee Groundwater Management Zone; a bedrock constriction/saddle bordering the Lakeview/Hemet North Groundwater Management Zone; a bedrock constriction bordering the Perris North Groundwater Management Zone; and the surrounding bedrock mountains and hills. A groundwater divide exists in the Winchester area near Highway 79. The divide is likely an artifact of natural and artificial recharge and groundwater production patterns. As such, the position (or the very existence) of this groundwater divide may vary with changing seasons, artificial recharge and/or production patterns. Southwest of EMWD's Winchester Ponds, a narrow constriction in the bedrock coincides with a buried bedrock saddle. This area of constriction in the water-bearing alluvium is a boundary between the Perris South and Menifee Groundwater Management Zones. Groundwater can flow through this bedrock gap from the Winchester area into the Menifee Groundwater Management Zone; this is especially true during times of high groundwater levels. Southeast of Sun City, a bedrock constriction in the water-bearing alluvium is also a boundary between the Perris South and Menifee Groundwater Management Zones. Groundwater flows through this bedrock gap from the Sun City area into the Menifee Groundwater Management Zone. To the northeast, the gap between the Bernasconi Hills and the Lakeview Mountains becomes narrow and the buried bedrock surface forms a saddle. This area of constriction in the water-bearing alluvium is the boundary between the Perris South and Lakeview Groundwater Management Zones. Under historic flow conditions, groundwater flowed westward from Lakeview into Perris South. However, groundwater currently flows from Perris South eastward into Lakeview toward a "pumping depression" in the groundwater table.
	San Jacinto Lower Pressure	Boundaries include the Claremont fault to the northeast; the Casa Loma fault and its northwestward extension; various crystalline bedrock outcrops to the north and west; and the flow system boundary with the San Jacinto Upper Pressure Groundwater Management Zone to the southeast. The Casa Loma fault zone is a leaky barrier to groundwater flow to the Perris North Groundwater Management Zone in this section of the San Jacinto Groundwater Basin. Recharge rates along with water quality differences between San Jacinto Upper Pressure and San Jacinto Lower Pressure characterize the location of the barrier between the two zones.
	Menifee	Boundaries include the bedrock constrictions/saddles bordering the Perris South Groundwater Management Zone, a bedrock constriction to the east, and the surrounding bedrock mountains and hills. Southwest of the Winchester Ponds, a narrow constriction in the bedrock coincides with a buried bedrock saddle surface. This area of constriction in the water-bearing alluvium is a boundary between the Perris South and Menifee Groundwater Management Zones. Groundwater can flow through this bedrock gap from the Winchester area into the Menifee Groundwater Management Zone, especially during times of high groundwater levels. Southeast of Sun City, a bedrock constriction in the water-bearing alluvium is also a boundary between the Perris South and Menifee Groundwater Management Zones. Groundwater flows through this bedrock gap from the Sun City area into the Menifee Groundwater Management Zone.
WSJ AND HSJ	Lakeview / Hemet North	Boundaries of the Lakeview/Hemet North Groundwater Management Zone include the Casa Loma fault zone to the east; the groundwater divide near Esplanade Avenue to the south; the Lakeview Mountains to the west and south; the Bernasconi Hills to the north; and a bedrock constriction/saddle to the west. The Casa Loma fault zone is a partial barrier to groundwater flow. Generally, groundwater leaks across the fault zone as underflow from the San Jacinto Upper Pressure Groundwater Management Zone. Impermeable, crystalline bedrock outcrops that compose the Bernasconi Hills and the Lakeview Mountains to the north and south, respectively, are hard rock barriers to groundwater flow. To the west, the gap between the Bernasconi Hills and the Lakeview Mountains becomes narrow and the buried bedrock surface forms a saddle. This area of constriction in the water-bearing alluvium is the boundary between the Perris South and Lakeview/Hemet North Groundwater Management Zones.
HEMET/SAN JACINTO	Hemet South	Boundaries include the Casa Loma and Bautista Creek fault zones to the east; the groundwater divide near Esplanade Avenue to the north; the Lakeview Mountains to the northwest; the groundwater divide in the Winchester area to the west; and various crystalline bedrock outcrops to the south. The Casa Loma and Bautista Creek fault zones are generally known barriers to groundwater. However, groundwater leaks across portions of the Casa Loma Fault Zone as underflow into the San Jacinto Upper Pressure Groundwater Management Zone.
	San Jacinto Canyon	The boundaries include the San Jacinto Mountains to the east, north, and south, as well as the San Jacinto fault zone to the west. The San Jacinto Mountains are composed of consolidated crystalline bedrock and semi-consolidated sedimentary rocks. These rocks are relatively impermeable, providing limited groundwater seepage into the basin and bound the water-bearing, alluvium-filled canyons within this groundwater management zone. A branch of the San Jacinto fault zone extends southeast along the channel of Bautista Creek until it intersects the Park Hill fault and acts as an impermeable barrier at depth. The barrier effect of the fault forces groundwater upwards within the San Jacinto River upstream of the fault causing muddy areas at the surface. This area is known as the Cienega and is an area of significant municipal groundwater production.
	San Jacinto Upper Pressure	The San Jacinto Upper Pressure Groundwater Management Zone is bounded by the San Jacinto fault to the northeast, the Casa Loma and Bautista Creek fault zones to the southwest and the flow system boundary with the San Jacinto Lower Pressure Groundwater Management Zone to the northwest. The Claremont fault is a known barrier to groundwater flow and separates the San Jacinto Graben from both the San Timoteo Badlands and the San Jacinto Mountains. East of the City of San Jacinto, a branch of the San Jacinto fault zone cuts the alluvial fill by extending southeast across the San Jacinto River and along the channel of Bautista Creek until it intersects the Park Hill fault. This branch of the San Jacinto fault zone separates the San Jacinto Upper Pressure Groundwater Management Zone from the Canyon Groundwater Management Zone. The Casa Loma and Bautista Creek fault zones are generally known barriers to groundwater flow. However, studies show groundwater leaks across portions of the Casa Loma Fault zones as underflow along the Hemet South and Lakeview/Hemet North Groundwater Management Zones.

Figure 6-2. Groundwater Management Zones



6.2.2.2 WSJ Management

In the West San Jacinto Basin, a cooperative groundwater management plan is already in place to protect the reliability and quality of the water supply. In June 1995, EMWD adopted the WSJ Management Plan in accordance with the statutes in the California Water Code Sections 10750 through 10755 resulting from the passage of AB 3030. The plan was adopted after extensive public outreach and meetings with interested individuals and agencies. A copy of the Management Plan is included in **Appendix E**.

Implementation of the WSJ Management Plan began directly after its adoption. Initial efforts to implement the WSJ Management Plan included establishing an advisory committee; prioritizing the management zones; evaluating groundwater resources including establishing groundwater quality, level, and extraction monitoring programs; and conducting hydro-geophysical investigations. The West San Jacinto Groundwater Basin Management Plan Annual Report, documenting the implementation of the plan and activities in the groundwater management zones, has been published annually since 1996.

SGMA was passed into law in 2014 and required that medium and high priority groundwater basins designated by the DWR be managed by GSAs. The San Jacinto Groundwater Basin was deemed a high priority basin by the DWR. Subsequently, EMWD notified DWR of its intent to become the GSA for the non-adjudicated portion of the San Jacinto Groundwater Basin in January 2017. EMWD performed an extensive public outreach effort to ensure that the interests of all beneficial uses and users of groundwater would be considered in the process of forming the GSA, and in the development and implementation of this GSP. After EMWD staff conducted public workshops, reached out to stakeholder agencies (e.g., cities, counties, water districts, watermasters, and state agencies), and circulated notices in the press, the EMWD Board of Directors approved Resolution No. 2016-135 in December 2016, which formalized EMWD's intention to be the GSA for the West San Jacinto GSA Area and, EMWD's Board of Directors became the exclusive GSA for the western portion of the San Jacinto Groundwater Basin on April 24, 2017.

EMWD, as the GSA, initiated the development of the San Jacinto Groundwater Basin GSP in February 2019 and is anticipated to adopt and submit the GSP to the DWR by January 31, 2022. The purpose of the GSP is to define the conditions under which the groundwater resources of the West San Jacinto GSA Plan Area, which support agricultural, domestic, municipal and industrial, and environmental uses, will be managed sustainably in the future. The adoption of the GSP represents the commitment of the West San Jacinto GSA to maintain long-term, sustainable use of groundwater resources within the West San Jacinto GSA Plan Area, as required by SGMA. Over the next 20 years, data will continue to be gathered, analyzed, and used to refine the estimated sustainable yield and understanding of the sources of and influences on degraded water quality. As the understanding of the West San Jacinto GSA Plan Area improves, the findings of this GSP will be evaluated and updated as necessary. The GSP documents a viable approach, determined by the GSA in collaboration with stakeholders and informed by the best available information, to maintaining the long-term sustainability of the groundwater resources within the West San Jacinto GSA Plan Area.

6.2.2.3 HSJ Management

In 2001, the Cities of Hemet and San Jacinto, LHMWD, EMWD, and representatives of the private groundwater producers, with DWR acting as an impartial mediator, began working on a groundwater management plan for the Hemet/San Jacinto Basin. The group discussed and resolved several controversial issues, including San Jacinto Tunnel seepage water, the Fruitvale Judgment and Decree, export of groundwater from the basins, and how to maximize the use of recycled water. As a result of their efforts, a final HSJ Management Plan was completed in 2007, and a Stipulated Judgment was entered with the Superior Court of the State of California for the County of Riverside in April of 2013. These documents are included in **Appendix G**.

The HSJ Management Plan:

- Limits the amount of water being extracted from the basin free of the replenishment charge to a sustainable yield.
- Implements continued recharge of the basin using imported water through the IRRP.
- Ensures settlement claims by the Soboba Tribe are facilitated and accommodated.
- Expands the existing water production and water services system to meet future urban growth through the use of imported water recharged into the basin.
- Protects and/or enhances water quality in the Hemet/San Jacinto Basin.
- Supports cost-effective water supplies and treatment by the public agencies.
- Eliminates groundwater overdraft and enhances basin yield.
- Continues the monitoring program to promote and provide for best management and engineering principles to protect water resources.

Long-term groundwater management includes recharge using Metropolitan replenishment water via permanent facilities through the IRRP Program. An agreement with the Soboba Tribe (the Soboba Settlement Agreement) requires Metropolitan to deliver, on average, 7,500 AFY of water for the next 30 years to EMWD, LHMWD, and the Cities of Hemet and San Jacinto as part of an effort to recharge groundwater in the Hemet/San Jacinto Basin, fulfilling the Soboba Tribe's water rights and addressing chronic groundwater overdraft. A copy of the Agreement is included in **Appendix H**.

In 2015, the Canyon Operating Plan, an agreement between EMWD, LHMWD and the Soboba Tribe, was completed as a result of a Memorandum of Understanding (MOU) related to the Soboba Settlement Act. The Canyon Operating Plan provides a framework for operating the Canyon Management Zone in a manner to avoid significant impacts to the Soboba Tribe's wells and does not reduce the overall supply available in the Hemet/San Jacinto Basin.

The HSJ Management Plan recognizes that the Hemet/San Jacinto Basin is presently in a condition of groundwater overdraft. The Watermaster has implemented long-term base production rights that will eliminate overdraft conditions within the Hemet/San Jacinto Basin, with interim production rights that step down gradually. The long-term adjusted base production right for EMWD is 7,303 AF annually.

In addition to the recharge occurring under the Soboba Settlement Agreement and future recharge under ERRP, EMWD has historically also recharged groundwater in the Hemet/San Jacinto Basin with imported surplus water from Metropolitan since 1990 using temporary facilities constructed under various pilot programs. EMWD and the other three local HSJ agencies are also contributing to the replenishment of the basin by providing recycled water in lieu of groundwater production. The Recycled In-Lieu Program supplies recycled water for agricultural irrigation in-lieu of pumping native groundwater. The project costs are jointly funded by EMWD, LHMWD, and the Cities of Hemet and San Jacinto. Agreements that set limits on groundwater production and provide for a payment of a portion of the operation and maintenance costs have been in place since 2008.

6.2.2.4 Past Five Years

The volume of groundwater pumped by EMWD for the past five years is reported in **Table 6-2**. The volumes in the table include potable groundwater pumped from the Hemet/San Jacinto Basin and the West San Jacinto Basin as well as brackish groundwater pumped from the West San Jacinto Basin that is treated at EMWD’s desalters before being used as a potable supply. Brackish groundwater volumes reported in **Table 6-2** are reported as a desalinated water supply in other supply tables of this UWMP. EMWD does not use groundwater to meet wholesale demands.

Table 6-2. DWR 6-1R Groundwater Volume Pumped

GROUNDWATER TYPE	LOCATION OR BASIN NAME	2016	2017	2018	2019	2020
Alluvial Basin	Hemet/San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	6,171	6,498	6,367	5,213	9,383
Alluvial Basin	Pumping of EMWD share of unused Soboba Settlement Water recharged in the Hemet/San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	3,585	3,864	3,850	1,508	2,625
Alluvial Basin	West San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	4,429	2,908	3,307	1,323	2,402
Alluvial Basin	Brackish Groundwater from the West San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	10,254	8,585	8,547	9,801	9,565
TOTAL:		24,439	21,855	22,071	17,845	23,975

1) Brackish groundwater pumped from the West San Jacinto Basin is not a direct supply – it is used to feed desalination facilities. The treated volume of this supply is shown in the other supply tables of this chapter as desalinated water instead of groundwater.

2) EMWD share of unused Soboba Settlement Water is pumped from wells in the Hemet/San Jacinto Basin. However, since this volume originates from water imported under the Soboba Settlement Agreement (and unused by the Soboba Tribe), this supply is shown in other supply tables of this chapter as imported water instead of groundwater.

3) In 2019 EMWD voluntarily reduced groundwater pumping through participation in Metropolitan’s cyclic storage program.

6.2.3 Surface Water

EMWD holds a right to divert up to 5,760 AFY of San Jacinto River flows for recharge and subsequent use from September 1st through June 30th each year. EMWD’s diversion and recharge of San Jacinto River surface water to the Canyon Management Zone takes place at EMWD’s Grant Avenue Ponds in the Valle Vista area. EMWD’s diverted water is recharged into the groundwater aquifer of the Canyon Groundwater Management Zone and is not used for direct use or sale. The San Jacinto River is an ephemeral river and, consequently, river flows may be insufficient for any diversion at all in some years. Water that is recharged helps the regional water balance and contributes to the safe yield of the basin.

6.2.4 Stormwater

The San Jacinto Water Harvesting Project allows EMWD to capture stormwater for the purposes of recharging the groundwater aquifers in the Hemet/San Jacinto Basin. The San Jacinto Water Harvesting Project uses the San Jacinto Reservoir as a retention basin for flows rerouted from Riverside County Flood Control and Water Conservation District storm drain Line E. The San Jacinto Water Harvesting Project is currently not monitored; however, at time of construction, the project was estimated to capture 300 to 320 AFY of storm water on a long-term average.

A potential stormwater capture component was considered during preliminary design of the Phase I Facilities, but it was not determined to be cost-effective. Later phases of the ERRP project may reevaluate the cost-effectiveness of a stormwater capture component.

6.2.5 Wastewater and Recycled Water

EMWD provides wastewater collection, treatment, and recycled water services throughout its service area. Recycled water is extensively used in EMWD’s service area to meet non-potable demands. The supply of recycled water will continue to increase with EMWD’s population size (though it is also impacted by conservation measures). The four RWRFs that EMWD operates have recently completed expansions. Recycled water is currently used for both municipal and agricultural purposes. Municipal customers use recycled water for landscape irrigation and industrial process water. Agricultural customers use recycled water for irrigation of crops. A portion of agricultural demand for recycled water is provided in-lieu of using groundwater. Due in part to drier conditions and higher demands, EMWD has been able to meet its goal of eliminating discharges and using almost all of the recycled water available within EMWD. Some of the recycled water use offsets demands of existing potable customers.

6.2.5.1 Wastewater Collection, Treatment, and Disposal

EMWD is responsible for all wastewater collection and treatment in its service area. It has four operational RWRFs located throughout EMWD. Inter-connections between the local collection systems serving each treatment plant allow for operational flexibility, improved reliability, and expanded deliveries of recycled water. All of EMWD’s RWRFs produce tertiary effluent, suitable for all permitted uses, including irrigation of food crops and full-body contact. The four RWRFs have a combined capacity of 86,300 AFY as summarized in **Table 6-3**.

Table 6-3. RWRf Treatment Capacity

FACILITY	TREATMENT CAPACITY (AFY)
San Jacinto Valley	15,700
Moreno Valley	17,900
Temecula Valley	25,800
Perris Valley	26,900
TOTAL	86,300

Table 6-4. DWR 6-2R Wastewater Collected within Service Area in 2020

WASTEWATER COLLECTION			RECIPIENT OF COLLECTED WASTEWATER			
NAME OF WASTEWATER COLLECTION AGENCY	WASTEWATER VOLUME METERED OR ESTIMATED	WASTEWATER VOLUME COLLECTED FROM UWMP SERVICE AREA IN 2020 (AFY)	NAME OF WASTEWATER AGENCY RECEIVING COLLECTED WASTEWATER	WASTEWATER TREATMENT PLANT NAME	WASTEWATER TREATMENT PLANT LOCATED WITHIN UWMP AREA	WWTP OPERATION CONTRACTED TO A THIRD PARTY
Eastern Municipal Water District	Metered	8,194	Eastern Municipal Water District	San Jacinto Valley RWRF	Yes	No
Eastern Municipal Water District	Metered	11,507	Eastern Municipal Water District	Moreno Valley RWRF	Yes	No
Eastern Municipal Water District	Metered	16,090	Eastern Municipal Water District	Temecula Valley RWRF	Yes	No
Eastern Municipal Water District	Metered	17,282	Eastern Municipal Water District	Perris Valley RWRF	Yes	No
TOTAL:		53,073				

Table 6-5. DWR 6-3R 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	PLANT TREATS WASTEWATER GENERATED OUTSIDE THE SERVICE AREA	TREATMENT LEVEL	2020 VOLUMES (AFY)				INSTREAM FLOW PERMIT REQUIREMENT
							WASTEWATER TREATED	DISCHARGED TREATED WASTEWATER	RECYCLED WITHIN SERVICE AREA	RECYCLED OUTSIDE OF SERVICE AREA	
San Jacinto Valley RWRF	Reach 4 Dissipater	Temescal Creek		River or creek outfall	No	Tertiary	7,441	436	6,319		
Moreno Valley RWRF	Reach 4 Dissipater	Temescal Creek		River or creek outfall	No	Tertiary	10,451	1,600	8,874		
Temecula Valley RWRF	Reach 4 Dissipater	Temescal Creek		River or creek outfall	No	Tertiary	14,612	1,600	12,407		
Perris Valley RWRF	Reach 4 Dissipater	Temescal Creek		River or creek outfall	No	Tertiary	15,696	3,637	13,327		
TOTAL:							48,200	7,273	40,927	0	0

1) Volumes recycled from each facility in the table were estimated based on the proportion of wastewater collected and treated at each plant compared to the total volume of wastewater treated

2) Recycled water sold to RCWD and EVMWD is included in the total volume recycled within EMWD's service area and not reported separately in DWR Table 6-3 for wholesale. Recycled water deliveries to wholesale customers are distinguished from retail sales in DWR Table 6-4.

6.2.5.2 Recycled Water Coordination

As a full-spectrum provider of water, wastewater collection, and treatment and recycled water services, EMWD has been active in developing local and regional plans for expanded water recycling in its service area. EMWD's first Recycled Water Facilities Master Plan was developed in 1990. In 2009, EMWD completed a Recycled Water System Strategic Plan that provides guidelines for moving forward with recycled water projects. Information from the strategic plan was incorporated into the EMWD Integrated Resource Plan (IRP) to evaluate potential recycled water projects. Both the Recycled Water Facilities Master Plan and the Recycled Water Strategic Plan were updated in 2016. EMWD's local water recycling plan is also incorporated into the IRWM Plan developed by SAWPA for the Santa Ana River Watershed.

EMWD has worked closely with the Santa Ana Regional Water Quality Control Board in updating local basin plans and developing a long-term salinity management plan to support and ensure compliance with local basin objectives for salinity and nitrogen. EMWD is involved with a variety of local agencies and public interest groups in recycled water planning efforts and has coordinated with these agencies as part of the development of this UWMP. **Table 6-6** lists agencies participating in recycled water planning.

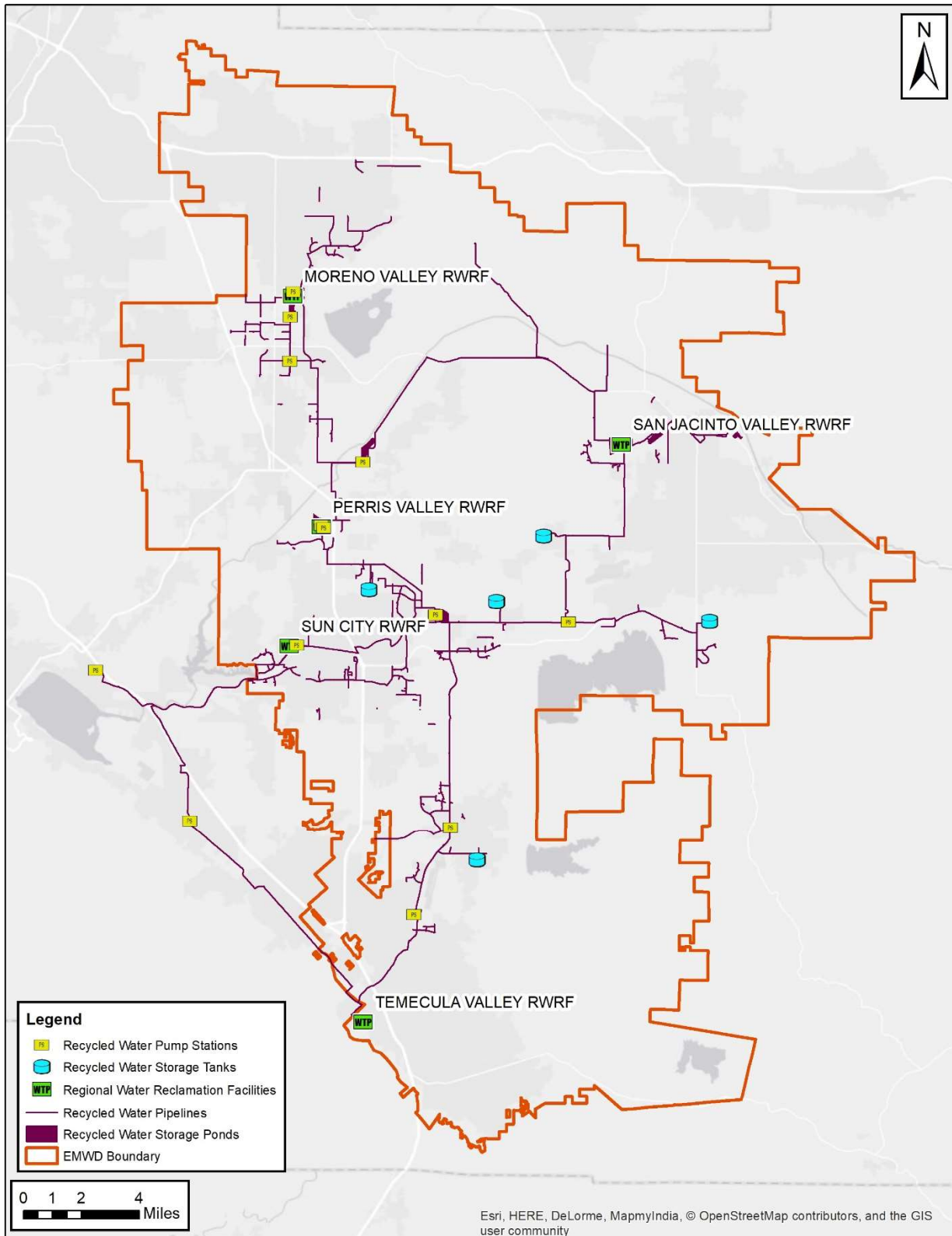
Table 6-6. Recycled Water Coordination Agencies

GROUP / AGENCY	ROLE
Santa Ana Watershed Project Authority	Regional Cooperative Planning
Santa Ana Regional Water Quality Control Board	Basin Planning / Salinity Management.
Rancho California Water District	Facility Planning / Market Development
West San Jacinto Groundwater Management Plan Advisory Board	Plan Review / Public Oversight
Hemet/San Jacinto Groundwater Management Plan Policy Committee (Cities of Hemet and San Jacinto, and Lake Hemet Municipal Water District)	Plan Review / Public Oversight
Elsinore Valley Municipal Water District	Facility Planning / Market Development
EMWD Recycled Water Advisory Committee	Plan Review / Public Oversight
San Jacinto Watershed Council	Plan Review / Public Oversight
Lake Elsinore/San Jacinto Watershed Authority	Plan Review / Water Quality
Metropolitan Water District of Southern California	Regional Urban Water Mgmt. Planning / Funding

6.2.5.3 Recycled Water System Description

The majority of recycled water sold is used for agricultural irrigation. A portion of the water sold for agriculture is used in lieu of groundwater, preserving the groundwater basin, and improving water supply reliability. In addition to meeting agricultural demand, recycled water is delivered to municipal customers for landscape irrigation. EMWD also sells recycled water to the California Department of Fish and Wildlife (CDFW) for environmental use within the San Jacinto Wildlife Area and to recreational customers that are comprised of private duck clubs and bird sanctuaries that use recycled water for ponds. EMWD uses existing storage facilities to store water during off peak periods for delivery in peak months and maximize the amount of recycled water sold. EMWD's recycled water production and distribution facilities are shown in **Figure 6-3**.

Figure 6-3. EMWD Recycled Water System



6.2.5.4 Potential, Current, and Projected Recycled Water Uses

EMWD's current and projected retail recycled water sales are summarized in **Table 6-7**.

EMWD's wholesale customer category consists of recycled water delivered to other agencies for use in their service areas. EMWD delivers recycled water to EVMWD and RCWD. EMWD's wholesale current and projected recycled water use is shown in **Table 6-8**.

Table 6-7. DWR 6-4R Recycled Water within Service Area in 2020

Name of Supplier Producing (Treating) the Recycled Water:	Eastern Municipal Water District									
Name of Supplier Operating the Recycled Water Distribution System:	Eastern Municipal Water District									
Supplemental Volume of Water Added in 2020:	0									
Source of 2020 Supplemental Water:	N/A									
BENEFICIAL USE TYPE	POTENTIAL BENEFICIAL USES OF RECYCLED WATER	AMOUNT OF POTENTIAL USES OF RECYCLED WATER	GENERAL DESCRIPTION OF 2020 USES	LEVEL OF TREATMENT	2020	2025	2030	2035	2040	2045
AGRICULTURAL IRRIGATION				Tertiary	21,178	22,240	24,640	20,000	20,000	20,000
LANDSCAPE IRRIGATION (EXCLUDES GOLF COURSES)				Tertiary	4,275	7,600	10,080	10,600	11,100	11,100
GOLF COURSE IRRIGATION				Tertiary	1,457	2,750	3,130	3,500	3,500	3,500
INDUSTRIAL USE				Tertiary	0	440	870	1,310	1,310	1,310
RECREATIONAL IMPOUNDMENT				Tertiary	1,029	1,400	1,400	1,400	1,400	1,400
WETLANDS OR WILDLIFE HABITAT				Tertiary	3,231	4,500	4,500	4,500	4,500	4,500
GROUNDWATER RECHARGE (INDIRECT POTABLE REUSE)				Blend of Tertiary and Advanced Water Treatment		4,100	4,100	12,300	12,300	12,300
OTHER			Split between agricultural and landscape usage, proportion to be determined in future	Tertiary				590	5,390	9,690
OTHER			Construction	Tertiary	73	300	300	300	300	300
TOTAL:					31,243	43,330	49,020	54,500	59,800	64,100

Note: Some recycled water in EMWD's storage ponds infiltrates into the ground or evaporates. DWR does not consider this water to be put to beneficial use, and therefore those volumes are not included in the table.

Table 6-8. DWR 6-4W Recycled Water Within Service Area in 2020

NAME OF RECEIVING SUPPLIER OR DIRECT USE BY WHOLESALER	LEVEL OF TREATMENT	2020	2025	2030	2035	2040	2045
Elsinore Valley Municipal Water District	Tertiary	533	1,120	1,120	1,120	1,120	1,120
Rancho California Water District	Tertiary	752	3,650	4,060	4,480	4,480	4,480
TOTAL:		1,285	4,770	5,180	5,600	5,600	5,600

EMWD's board has a policy to reuse 100 percent of the recycled water produced. The actual 2020 use is compared to the projections from the 2015 UWMP in **Table 6-9** and **Table 6-10**.

Table 6-9. DWR 6-5R 2015 Recycled Water Use Projection Compared to 2020 Actual

BENEFICIAL USE TYPE	2015 PROJECTION FOR 2020	2020 ACTUAL USE
Agricultural Irrigation	18,784	21,178
Landscape Irrigation (excludes golf courses)	5,124	4,275
Golf Course Irrigation	2,375	1,457
Commercial Use	300	0
Industrial Use	2,912	0
Recreational Impoundment	1,250	1,029
Wetlands or Wildlife Habitat	4,500	3,231
Other (Construction)	0	73
TOTAL:	35,245	31,243

Note: Some recycled water in EMWD's storage ponds infiltrates into the ground or evaporates. DWR does not consider this water to be put to beneficial use, and therefore those volumes are not included in the table.

Table 6-10. DWR 6-5W 2015 Recycled Water Use Projection Compared to 2020 Actual

NAME OF RECEIVING SUPPLIER OR DIRECT USE BY WHOLESALER	2015 PROJECTION FOR 2020	2020 ACTUAL USE
Elsinore Valley Municipal Water District	289	533
Rancho California Water District	1,367	752
TOTAL:	1,656	1,285

6.2.5.5 Actions to Exchange and Optimize Future Recycled Water Use

EMWD is considering several options for the expansion of recycled water use in EMWD's service area. Historically, EMWD has used recycled water to meet the needs of agricultural and landscape demands. Water has also been used for environmental purposes at the CDFW's San Jacinto Wildlife Area. Other proposed special projects include Indirect Potable Reuse (IPR) using recycled water from the San Jacinto Valley RWRf for groundwater recharge.

IPR is included in EMWD's IRP and modeled under several hydraulic and supply conditions. EMWD's Recycled Water Strategic Plan and Recycled Water Facilities Master Plan also evaluate the storage and system improvements needed to offset peak demand. Additional storage is not required to fully utilize EMWD's recycled water supply.

To ensure that recycled water continues to be used to the fullest extent possible, EMWD uses five methods to expand the use of recycled water within its service area. These methods are:

1. **Mandatory Recycled Water Use Ordinance** – EMWD has adopted an ordinance requiring new and existing customers to use recycled water for appropriate permitted uses when it is available. This ordinance provides a basis for denying potable water service and providing recycled water for permitted uses.
2. **Rate Incentives** – Recycled water is currently priced below the cost of potable water for both municipal and agricultural use.

3. **Water Supply Assessments** – EMWD’s Water Supply Assessments require all major new developments to use recycled water as a condition of service where it is available and permitted.
4. **Public Education** – EMWD actively promotes the use of recycled water with its water education program. EMWD also places prominent signage at public recycled water use sites promoting the benefits of water recycling.
5. **Facilities Financing** – EMWD will work with private parties to arrange or provide financing for construction of facilities needed to convert potable demands to recycled water.

EMWD does not have any data to support a projection of how much increased recycled water sales will result from each of the listed methods of encouraging recycled water use. Historically, the low cost of recycled water was the primary inducement for agricultural customers to use recycled water in-lieu of groundwater. However, as municipal customers continue to replace agriculture, it is reasonable to assume that the mandatory provisions of EMWD’s Recycled Water Use Ordinance will play a major role in program expansion.

Table 6-11 summarizes EMWD’s methods to expand future retail recycled water use.

Table 6-11. DWR 6-6R Methods to Expand Future Recycled Water Use

NAME OF ACTION	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	EXPECTED INCREASE OF RECYCLED WATER USE
Mandatory Recycled Water Use Ordinance	The ordinance requiring new and existing customers to use recycled water for appropriate permitted uses when it is available	Ongoing	
Rate Incentives	EMWD prices recycled water below the cost of potable water for both municipal and agricultural use	Ongoing	
Water Supply Assessments	Assessments condition all major new developments to use recycled water as a condition of service where it is available and permitted	Ongoing	
Public Education	EMWD has a recycled water public education campaign to promote the benefits of recycled water	Ongoing	
Facilities Financing	EMWD helps arrange or provide financing for the construction of facilities needed to convert potable demands to recycled water	Ongoing	
TOTAL:			

EMWD does not have data to support a projection of how much increased recycled water sales will result from each of the listed methods of encouraging recycled water use. Historically, the low cost of recycled water was the primary inducement for agricultural customers to use recycled water in-lieu of groundwater. However, as municipal customers continue to replace agriculture, it is reasonable to assume that the mandatory provisions of EMWD’s Recycled Water Use Ordinance will play a major role in program expansion.

6.2.6 Desalinated Water Opportunities

EMWD currently uses groundwater desalination to remove salts from basins in the West San Jacinto Basin. The 250 square mile area experiences increasing water levels due to the inward migration of high total dissolved solids (TDS) groundwater and decreased production. The high TDS groundwater is migrating into the Lakeview portion of the Lakeview/Hemet North Management Zone, which is an area of good quality groundwater. Lowering groundwater levels and removal of saline groundwater is an integral element of the WSJ Management Plan. To address these concerns, EMWD implemented a Groundwater Salinity Management Program. This program currently consists of two desalination facilities owned and operated by EMWD, with a third under construction. These facilities recover high TDS groundwater from the Menifee and Perris South Management Zones, and the Lakeview portion of the Lakeview/Hemet North Management Zone, for potable use. In addition to being a source of potable water, the main role of the desalters is to play a part in managing the groundwater management zones by addressing the migration of brackish groundwater into areas of good quality groundwater.

Desalter wells pump water to an integrated brackish water system that delivers water to the desalination plants where it is treated prior to entering the distribution system. The Menifee Desalter was the first desalter to be built. This facility began producing potable water in 2003. The second desalter, the Perris I Desalter, is located next to the Menifee Desalter in Sun City. This plant began production in 2006 and has a production capacity of approximately 7,500 AFY. Groundwater extraction for use in the desalter program has caused local declines in water levels to date; but the overall West San Jacinto Basin shows groundwater levels that continue to exhibit a stable or upward trend.

High iron and manganese concentrations along with silica irreversibly impact the desalter membranes and have resulted in several brackish groundwater extraction wells being offline. In 2004, an effort was initiated to evaluate alternative technologies for removal of iron and manganese prior to desalination. In late 2013, iron and manganese removal facilities were placed online and allowed EMWD to begin producing from four previously inactive wells.

6.2.7 Water Exchanges and Transfers

EMWD currently relies on Metropolitan for any transfers or exchanges. As a member agency, EMWD benefits from Metropolitan's efforts to improve supply reliability through transfers and exchanges, as detailed in Metropolitan's 2020 UWMP.

In addition to relying on Metropolitan, water transfers have been identified as a method of improving reliability, especially during periods of water shortage. The five regional water agencies in the Santa Ana River Watershed have identified a watershed scale project, the Santa Ana Conservation and Conjunctive Use Program (SARCCUP), to store imported water during wet years in order to help meet dry-year demands. The group includes representatives from the following regional water agencies:

- EMWD
- Inland Empire Utilities Agency
- Orange County Water District
- San Bernardino Valley Municipal Water District
- Western Municipal Water District

The program goals of SARCCUP include:

- Providing watershed wide benefits based upon regional collaboration
- Creating significant new dry year yield (about 70,000 AFY in Phase 1)
- Increasing resiliency and reliability of water supply

The SARCCUP includes four separate groundwater banks located in different groundwater basins within the Santa Ana Watershed. The total storage proposed for SARCCUP is about 137,000 AF. Each of the banks is expected to be able to recharge and extract one third of its storage capacity in any year. The combined extraction capacity is 45,667 AFY. Since the participants are sharing the benefits equally, each agency receives 25 percent (1/4) of the total capacity (IEUA does not currently have any storage capacity), resulting in each of the SARCCUP agencies receiving 11,417 AFY of new dry year yield. This may require transfers, in-lieu, or exchanges between the agencies in both wet and dry years. EMWD's SARCCUP facilities include recharge facilities, three production wells, eleven monitoring wells, and associated equipping and ancillary facilities.

In early 2016, SAWPA was formally notified that it had been awarded \$64,268,000 by DWR for its Proposition 84 2015 IRWM grant proposal, which included the SARCCUP. From the grant, SAWPA governance designated \$55 million for SARCCUP implementation. The SARCCUP Proposition 84 grant award includes the development of a Decision Support Model which was used to help refine the proposed facilities and identified additional facilities that could be included in future phases of the program. The total cost of Phase 1 of the SARCCUP program is approximately \$150 million.

Construction of the SARCCUP facilities is on-going and estimated to be complete by 2023. The SARCCUP agencies will continue work to finalize all of the individual agreements needed for operations of the facilities and water purchases. This includes an agreement between the SARCCUP agencies and Metropolitan to allow purchase of water made available under the program and special conditions associated with use of the water during droughts and emergencies. Metropolitan recently authorized agreements associated with SARCCUP to be executed. All agreements associated with SARCCUP have been or will be presented to EMWD's Board for approval prior to completion of the SARCCUP facilities.

6.2.8 Future Water Projects

EMWD is in the process of updating planning efforts for wastewater, water and recycled water supplies and facilities. EMWD's expected future water supply projects and programs that have a quantifiable increase in supply and are reasonably expected to be implemented over the next 25 years are summarized in **Table 6-12**.

Table 6-12. DWR 6-7R Expected Future Water Supply Projects or Programs

NAME OF FUTURE PROJECTS OR PROGRAMS	JOINT PROJECT WITH OTHER SUPPLIERS	AGENCY NAME	DESCRIPTION	PLANNED IMPLEMENTATION YEAR	PLANNED FOR USE IN YEAR TYPE	EXPECTED INCREASE IN WATER SUPPLY TO SUPPLIER
SARCCUP / San Jacinto Enhanced Recharge and Recovery Program (ERRP) Phase I	Yes	Inland Empire Utilities Agencies, Orange County Water District, San Bernardino Valley Municipal Water District, Western Municipal Water District, DWR	Project to be completed in phases and includes conjunctive use of groundwater recharge	2025	Multi-Dry Year	7,000 AFY
Perris North Basin Groundwater Contamination Prevention and Remediation Program	Yes	SWRCB (funding partner), WMWD	Combined MV and North Perris GW Development, and wells near MARB	2023	Average Year	6,450 AFY
Perris II Desalter	Yes	Army Corps of Engineers	Expected to be online mid-2021	2021	Average Year	5,400 AFY
Purified Water Replenishment, Phase I (IPR)	No	N/A	Advanced treated recycled water used to recharge the Hemet/San Jacinto Basin	2024	Average Year	4,000 AFY
Purified Water Replenishment, Phase II (IPR)	No	N/A	Advanced treated recycled water used to recharge the Hemet/San Jacinto Basin - could be increased to 11,000 AFY if brine issues are resolved	2035	Average Year	8,000 AFY
San Jacinto Enhanced Recharge and Recovery Program (ERRP) Phase II	No		Project to be completed in phases and includes conjunctive use of groundwater recharge	2030 - 2035	Multi-Dry Year	7,500 AFY
San Jacinto Enhanced Recharge and Recovery Program (ERRP) Phase III	No		Project to be completed in phases and includes conjunctive use of groundwater recharge	2040 - 2050	Multi-Dry Year	TBD

6.2.9 Summary of Existing and Planned Sources of Water

As described throughout this chapter, EMWD has developed a number of local supplies to offset imported water demand including recycled water, groundwater, and desalinated groundwater. EMWD's planned supply projects will increase supply reliability to mitigate against impacts to supply during dry and multi-dry years.

The following tables summarize EMWD's retail and wholesale current and projected supplies.

Table 6-13. DWR 6-8R Actual Water Supplies

WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	2020	
		ACTUAL VOLUME (AF)	WATER QUALITY
Purchased or Imported Water	Treated water purchased from Metropolitan	44,726	Drinking Water
Purchased or Imported Water	Untreated water purchased from Metropolitan, treated at EMWD Filtration Plants	17,584	Drinking Water
Purchased or Imported Water	EMWD share of unused Soboba Settlement Water	2,625	Drinking Water
Purchased or Imported Water	Raw Water for Agriculture	642	Other Non-Potable Water
Groundwater (not desalinated)	Potable water pumped from the Hemet/San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	9,383	Drinking Water
Groundwater (not desalinated)	Potable water pumped from the West San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	2,402	Drinking Water
Groundwater (not desalinated)	Brackish water pumped from the West San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05) used to supplement the recycled water system	0	Other Non-Potable Water
Desalinated Water - Groundwater	Desalinated water pumped from the West San Jacinto Basin portion of the San Jacinto Groundwater Basin (DWR 8-05)	7,310	Drinking Water
Recycled Water	Includes Storage Pond Incidental Recharge / Evaporation	39,642	Other Non-Potable Water
TOTAL:		124,314	

Table 6-14. DWR 6-8W Actual Water Supplies

WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	2020	
		ACTUAL VOLUME (AF)	WATER QUALITY
Purchased or Imported Water	Treated Water purchased from Metropolitan	15,008	Drinking Water
Purchased or Imported Water	Raw Water purchased from Metropolitan	14,909	Other Non-Potable Water
Purchased or Imported Water	Soboba Settlement Water	6,467	Other Non-Potable Water
Recycled Water		1,285	Recycled Water
TOTAL:		37,669	

Table 6-15. DWR 6-9R Projected Water Supplies

WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	PROJECTED WATER SUPPLY (AFY)				
		REASONABLY AVAILABLE VOLUME				
		2025	2030	2035	2040	2045
Purchased or Imported Water	Metropolitan Treated/ Untreated	66,447	72,147	70,247	74,747	78,847
Groundwater (not desalinated)	Pumped from the Hemet/San Jacinto Basin	7,303	7,303	7,303	7,303	7,303
Groundwater (not desalinated)	Pumped from the West San Jacinto Basin	11,450	11,450	11,450	11,450	11,450
Desalinated Water - Groundwater	Desalinated water from the West San Jacinto Basin	13,400	13,400	13,400	13,400	13,400
Recycled Water	Excludes Storage Pond Incidental Recharge / Evaporation	43,330	49,020	54,500	59,800	64,100
Other	Purified Water Replenishment (IPR)	4,000	4,000	12,000	12,000	12,000
TOTAL:		145,930	157,320	168,900	178,700	187,100

The projected recycled water supply total is inclusive of recycled water that is required to be recharged as part of EMWD’s planning Purified Water Replenishment (PWR) Program – an Indirect Potable Reuse project with multiple phases. This recharge volume is reported under the groundwater recharge line item in Table 6-7 (DWR 6-4R) as a demand/beneficial use of EMWD’s recycled water supply. The projected supply total under the “other” category reflects the volume of water produced by PWR that will be used to meet demands on EMWD’s potable water system.

Table 6-16. DWR 6-9W Projected Water Supplies

WATER SUPPLY	ADDITIONAL DETAIL ON WATER SUPPLY	PROJECTED WATER SUPPLY (AFY)				
		REASONABLY AVAILABLE VOLUME				
		2025	2030	2035	2040	2045
Purchased or Imported Water	Metropolitan Treated / Untreated	50,700	44,900	46,900	49,200	51,300
Purchased or Imported Water	Soboba Settlement Water	7,500	7,500	7,500	7,500	7,500
Recycled Water		4,770	5,180	5,600	5,600	5,600
TOTAL:		62,970	57,580	60,000	62,300	64,400

Soboba Settlement requires Metropolitan to provide a long term annual average recharge of 7,500 AFY - any portion unused by the Soboba Tribe is split for use by EMWD, LHMWD, City of Hemet, and the City of San Jacinto

6.2.10 Climate Change Effects

EMWD has considered the impact of climate change on water supplies as part of its long-term strategic planning. Climate change has the potential to affect not only local demand and supplies, but to reduce the amount of water available for import. Warmer temperatures will lead to higher demand for water within EMWD's service area and throughout California. An increase in intensity and frequency of extreme weather events can impact both local and imported supplies. EMWD gets approximately half of its retail supply from Metropolitan which imports water from the Bay-Delta system through the SWP and the Colorado River through the CRA. Potential impacts to these imported supplies are discussed in Metropolitan's UWMP.

In its climate change vulnerability assessment for the Santa Ana River Watershed, the SAWPA Region identified key supply vulnerabilities to climate change. The vulnerabilities identified in the assessment related to EMWD's supplies include:

- Reduction in the Sierra Nevada snowpack;
- Increased strain on imported supplies
- Inability to meet water demands during drought
- Shortage of long-term water storage

One of the outcomes of climate change could be more frequent limitations on imported supplies. To limit the impact of climate change, EMWD's long-term planning focuses on the development of reliable local resources and the implementation of water use efficiency. This includes the full utilization of recycled water, which is a highly resilient supply source, and the proactive management, monitoring, and recharge of local groundwater basins to ensure supply reliability even during potential periods of severe hydrologic conditions. EMWD is also focused on reducing demand for water supplies, especially outdoors. Increasing the use of local resources and reducing the need for imported water has the dual benefit of not only improving water supply reliability, but reducing the energy required to import water to EMWD's service area.

6.3 Energy Intensity

EMWD has calculated the energy intensity of its water management operations using the approach recommended by DWR. EMWD has self-regenerated renewable energy for both the potable and recycled water systems. This renewable energy is provided through solar generation and use of digester gas. The energy generated is used for the treatment processes and helps reduce the need for purchased power. The energy use for calendar year 2019 for the two systems are shown in **Table 6-17** and **Table 6-18**.

Table 6-17. DWR Table O-1-1B Energy Intensity of Water Operations

Urban Water Supplier: Eastern Municipal Water District			
Water Delivery Product (If delivering more than one type of product use Table O-1C): Other			
TABLE O-1B: RECOMMENDED ENERGY REPORTING - TOTAL UTILITY APPROACH			
Start Date for Reporting Period: 1/1/2019 End Date for Reporting Period: 12/31/2019	URBAN WATER SUPPLIER OPERATIONAL CONTROL		
Is upstream embedded in the values reported?	SUM OF ALL WATER MANAGEMENT PROCESSES	NON-CONSEQUENTIAL HYDROPOWER	
Water Volume Units Used	TOTAL UTILITY	HYDROPOWER	NET UTILITY
Volume of Water Entering Process (volume unit)	119205	0	119205
Energy Consumed (kWh)	53763864	0	53763864
ENERGY INTENSITY (KWH/VOLUME)	451.0	0.0	451.0
QUANTITY OF SELF-GENERATED RENEWABLE ENERGY			
0 kWh			
DATA QUALITY (ESTIMATE, METERED DATA, COMBINATION OF ESTIMATES AND METERED DATA)			
Combination of Estimates and Metered Data			
DATA QUALITY NARRATIVE:			
NARRATIVE:			

Table 6-18. DWR Table O-2 Energy Intensity of Wastewater and Recycled Water Operations

TABLE O-2: RECOMMENDED ENERGY REPORTING - WASTEWATER & RECYCLED WATER				
Start Date for Reporting Period: 1/1/2019 End Date for Reporting Period: 12/31/2019	URBAN WATER SUPPLIER OPERATIONAL CONTROL WATER MANAGEMENT PROCESS			
Is upstream embedded in the values reported? Volume of Water Units Used AF	COLLECTION / CONVEYANCE	TREATMENT	DISCHARGE / DISTRIBUTION	TOTAL
Volume of Wastewater Entering Process (volume units selected above)	48,415	48,415	6,120	48,415
Wastewater Energy Consumed (kWh)	17,014,851	54,199,173	0	71,214,024
WASTEWATER ENERGY INTENSITY (KWH/VOLUME)	351.4	1,119.5	0.0	1,470.9
Volume of Recycled Water Entering Process (AF)	0	0	42,300	42,300
Recycled Water Energy Consumed (kWh)	0	0	7,415,833	7,415,833
RECYCLED WATER ENERGY INTENSITY (KWH/VOLUME)	0.0	0.0	175.3	175.3
QUANTITY OF SELF-GENERATED RENEWABLE ENERGY RELATED TO RECYCLED WATER AND WASTEWATER OPERATIONS				
Wastewater system: 8,756,363 kWh of self-generated solar (included in use above)				
Recycled water system: 2,213,990 kWh of self-generated solar (included in use above)				
Wastewater system: 21,486,638 kWh of digester gas generation (included in use above)				
DATA QUALITY (ESTIMATE, METERED DATA, COMBINATION OF ESTIMATES AND METERED DATA)				
Combination of Estimates and Metered Data				
DATA QUALITY NARRATIVE:				
NARRATIVE:				



7 Water Service Reliability and Drought Risk Assessment

This chapter presents a comparison of EMWD’s expected supplies and demands during future conditions

Each of EMWD supply’s sources has potential constraints that could affect future reliability. This section describes these potential constraints. EMWD’s diverse supply portfolio is expected to allow it to maintain reliable water service for the next 25 years.

IN THIS SECTION

- Water Service Reliability Assessment
- Drought Risk Assessment

7.1 Water Service Reliability Assessment

This section presents an assessment of the expected reliability of EMWD's sources of supply.

7.1.1 Imported Water Reliability

Approximately half of EMWD's current and projected retail water supplies are imported through Metropolitan. EMWD also imports water from Metropolitan to augment the supplies of its wholesale customers. Metropolitan's resource management strategy depends on improving the reliability and availability of imported water supplies, increasing local storage and developing local resources. In Metropolitan's 2020 UWMP, it evaluated challenges to supply reliability, including drought conditions, environmental regulations, water quality concerns, infrastructure vulnerabilities to natural disaster, and responses to variations in water supply availability from year to year.

Flexible and adaptive regional planning strategies are required. Metropolitan's continued progress in developing a diverse resource portfolio will allow it to meet the region's water supply needs. Metropolitan's 2020 UWMP details its planning initiatives and based on these efforts concludes that with the storage and transfer programs developed, Metropolitan has sufficient supply capabilities to meet the expected demands of its member agencies from 2020 through 2045 under normal, historic single-dry and historic multiple-dry year conditions. EMWD is relying on Metropolitan's 2020 UWMP to evaluate the reliability of imported supplies and the amount of imported water which will be available in EMWD's service area during normal, single dry, and multiple dry water year periods.

In February 2008, Metropolitan adopted its Water Supply Allocation Plan (WSAP) to allocate water based on need during periods of mandatory imported water allocations throughout the region. The WSAP contains a specific formula and methodology to determine member agency supply allocations. Metropolitan works with member agencies to periodically review the WSAP formula and make adjustments as needed. The most recent revision to the WSAP was completed in December of 2014. The plan takes into consideration:

- The impact on retail customers and the economy
- Population and growth
- Changes and/or loss of local supply
- Reclamation and recycling
- Conservation
- Investment in local resources

In the event allocation is required, the WSAP establishes base period demands and then adjusts them for population growth and changes in local supply; it then calculates the water supply allocation for each member agency based on the calculated needs. Regional shortages are defined in 10 stages and credits are given for conservation and investment in local extraordinary supplies. These credits would potentially reduce a member agency's cutback under an allocation. EMWD currently expects that its contribution to SARCCUP would qualify for the extraordinary supply credit. It is Metropolitan's intent to prevent member agencies from experiencing retail shortages that are greater than corresponding regional shortages.

The probability of Metropolitan meeting dry year demands is dependent on the amount of water Metropolitan has in its reserves. Under some conditions, Metropolitan may choose to implement the WSAP proactively to preserve storage reserved for a future year. Accordingly, a Metropolitan allocation does not necessarily represent a Metropolitan shortage, and member agencies are not prohibiting from

making purchases over their allocated volume. However, any purchases made over the allocation would be subject to a surcharge.

7.1.2 Groundwater and Desalinated Groundwater Supply Reliability

Protecting the available groundwater supply is an integral component of EMWD's planning efforts. EMWD is actively working with other agencies and groups to ensure that groundwater will be a reliable resource far into the future. To improve groundwater reliability EMWD and other groundwater producers are reducing production of native groundwater and using imported water to supplement natural recharge.

EMWD and the other participants in the Hemet/San Jacinto area have agreed to reduce production. The long-term adjusted base production right for EMWD is 7,303 AFY.

Production over the base production right requires basin replenishment. There is a long-term agreement in place for Metropolitan to provide an average of 7,500 AFY for replenishment in the Hemet/San Jacinto Basin. This water is to be used by the Soboba Tribe with any unused water available to the other municipal producers in the Hemet/San Jacinto Basin, as described in Chapter 6. The municipal producers are allowed to carry over quantities of both unused replenishment water and adjusted base production rights to future years. EMWD has also purchased carry over credits from other municipal producers in the basin. At the end of 2020, EMWD's carry over credit balance in the Hemet/San Jacinto Basin was over 25,000 acre-feet.

EMWD has plans to expand recharge through the ERRP.

Potable groundwater production from the West San Jacinto Basin will increase once the Perris North Basin Groundwater Contamination Prevention and Remediation Program is completed, and brackish groundwater production will increase as EMWD's desalter program comes online in 2021.

Desalination of groundwater from the West San Jacinto Basin increases groundwater supply reliability in the San Jacinto Basin by helping manage increasing groundwater levels that are due to decreased production. Desalination also prevents migration of brackish groundwater that could otherwise contaminate potable groundwater supplies.

7.1.3 Recycled Water Supply Reliability

EMWD has established a strategic goal of maximizing beneficial reuse of recycled water and frequently reuses 100 percent of the wastewater generated in its service area as recycled water. Because recycled water supply is dependent on wastewater generation and not precipitation, it is considered a nearly 100 percent reliable, drought-resistant supply. EMWD also has optimization efforts underway to improve operation of the recycled water system.

7.1.4 Water Quality Constraints on Water Sources

Promoting and protecting the quality of its water resources is a vital part of EMWD's planning and operations. Water quality constraints for imported water and groundwater are part of the criteria used to evaluate the value of a proposed project. EMWD does not anticipate a reduction in supply reliability due to water quality constraints. Contaminants of concern may require treatment or blending, but long-term supply planning indicates that the quantity of available water will not be diminished from projected levels due to quality.

7.1.4.1 Imported Water Quality

As part of the Metropolitan IRP and other planning efforts, Metropolitan has concentrated on maintaining the quality of source water and developing management programs that protect and enhance water quality. Metropolitan has two water sources: the CRA and the SWP. Metropolitan responds to water quality concerns by concentrating on protecting the quality of source water and developing water management programs that maintain and enhance water quality. Based on current knowledge, the only water quality threat to Metropolitan water supplies that may require future treatment is the potential for increased salinity levels.

To date, Metropolitan has not identified any other water quality issues that cannot be mitigated. Increased salinity may impact the amount of water available in the future. If additional treatment is required, Metropolitan could experience a loss of up to 15 percent of the water processed. Since only a small portion of the total water supply would be treated and blended with the remaining unprocessed water, there is no significant risk to Metropolitan's water supply availability.

Additional information and analysis of water quality is included in Metropolitan's 2020 UWMP.

7.1.4.2 Groundwater and Desalinated Groundwater Quality

EMWD has an extensive and proactive groundwater monitoring program that includes collecting, compiling and analyzing data related to groundwater quality. There are no known significant threats to EMWD's groundwater supply that cannot be mitigated by treatment or blending and EMWD does not anticipate a significant loss of supply due to water quality issues. EMWD may occasionally alter operational patterns to support treatment or blending.

EMWD protects groundwater supplies from potential water quality risks including contamination from salinity, nitrates, and chlorinated and other volatile organic compounds. Other contaminants have also been found in local groundwater sources at levels exceeding PHGs and may require additional treatment in the future.

Salinity and Nitrates

In partnership with other agencies, EMWD is responsible for the protection and preservation of local groundwater under the authority of the HSJ Management Plan and the WSJ Management Plan. Salinity and nitrate levels in groundwater increase due to agricultural activities, urban use, and recycled water use. EMWD monitors the salinity and nitrate levels in local basins as part of the groundwater management plan. EMWD also evaluates the ambient water quality for the basins and the data indicates that the basins are slowly increasing in concentrations of salinity and nutrients. Typically, the groundwater water quality meets the safe drinking water standards for salinity and nutrients and can be used directly. Where the salt and nutrients exceed the drinking water standards, EMWD addresses water quality through the efforts of the desalination program. Two operational desalination plants and one planned plant are part of EMWD's effort to remove salts and nutrients from the brackish water supply. In addition to supplying a source of drinking water, desalination also prevents the migration of brackish groundwater into other management zones.

Chlorinated Solvents and Other Volatile Organic Compounds

In the WSJ Management Plan, chlorinated solvents and other volatile organic compounds have been found in amounts that exceed PHGs. Chlorinated solvents are volatile organic compounds (VOCs) that contain chlorine. In general, they are used in aerospace and electronics industries, dry-cleaning, and degreasing industries. EMWD is vigilant in protecting groundwater basins from VOC contamination by closely monitoring the construction of new businesses such as gas stations and manufacturing within the vicinity of production wells. Through the review of proposed new development, EMWD works with local land agencies to ensure that groundwater quality is protected.

Arsenic

Arsenic is a naturally occurring compound found in rocks, soil, water and air. Arsenic has been found in several of EMWD's wells at levels that range from not detected to 12 µg/L (2015 data). In 2006, the MCL for arsenic in domestic water supplies was lowered to 10 µg/L by the USEPA. Currently, high arsenic concentration sources are blended with lower concentration sources to comply with the MCL. Should California lower the State's MCL below the federal level, some of EMWD's production wells could be impacted, requiring additional treatment facilities to utilize these wells.

Pharmaceuticals and Personal Care Products

Pharmaceuticals and Personal Care Products (PPCPs) are constituents of emerging concern and EMWD has been and will continue to be proactive in addressing water quality concerns that arise. EMWD participates in the USEPA's Unregulated Contaminant Monitoring Rule program, which recently has included monitoring for PPCPs.

Per- and Polyfluoroalkyl Substances

Per- and polyfluoroalkyl substances (PFAS) are a group of man-made chemicals that includes PFOA, PFOS, GenX and many other chemicals. Historical activities at the former March Air Force Base have been identified as sources of PFOA and PFOS contamination in the groundwater. PFOA and PFOS have been detected at levels that exceed the current Division of Drinking Water notification levels in the Perris North and Perris South subbasins; however, groundwater extracted from these basins for drinking water that exceed the notification levels is treated to reduce PFOA and PFOS concentrations to below the notification levels. Should California lower notification levels, establish MCLs that are lower than current notification levels, or add notification levels/MCLs for additional PFAS compounds, some of EMWD's production wells could be impacted, requiring additional treatment facilities to utilize these wells.

7.1.4.3 Recycled Water Quality

EMWD has an extensive recycled water program and this supply is used for landscape, agricultural, and environmental uses. It significantly offsets non-potable water demands throughout the EMWD. Water quality issues with recycled water include high salinity, nutrients, and PPCPs.

Salinity and Nutrient Management

One of the challenges with the use of the recycled water is that it has salinity and nutrient concentrations that exceed the Santa Ana Region's basin plan objectives. EMWD has a Salinity and Nutrient Management Program (SNMP) specifically designed to evaluate and address the salinity and nutrient impacts that may be associated with the use of recycled water. The SNMP determines whether or not the recycled water complies with the basin plan water quality objectives. In the basins where the recycled water does not meet the water quality objectives, the SNMP determines the excess loading to the basin and describes EMWD's offset mitigation measure to address the added salt and nutrient load. Because recycled water offers a great benefit to the region and reduces the demand on the potable water system for non-potable water purposes, the basin plan allows the excess salt and nutrient load to be mitigated. The SNMP describes the approved offset mitigation measures utilized by EMWD. This offset program ensures that for every excess pound of salt or nutrient added to the basin, a corresponding pound is removed by desalinization wells or mitigated by replenishment with higher quality water.

Pharmaceuticals and Personal Care Products

PPCPs are a source of concern in EMWD's recycled water. In 2008, EMWD participated with SAWPA to form a Task Force to develop a plan to characterize emerging constituents (ECs) throughout the region. In 2009, the Task Force presented an acceptable monitoring plan to the Santa Ana Regional

Water Quality Control Board to monitor specific ECs. The plan included monitoring by SAWPA members to evaluate EC levels in wastewater effluent, local receiving streams and other raw water supplies imported into the area. Samples were collected in the spring of 2010 and a final report was prepared by SAWPA in late 2010. The results indicated the presence of some ECs at trace levels (parts per trillion) in the wastewater effluent that are consistent with the results from other wastewater agencies. EMWD tests for ECs in recycled water every three years, and monitors efforts towards the development of regulations.

7.1.5 Year Type Characterization

Since approximately half of EMWD’s service area supplies are imported from Metropolitan, EMWD’s normal, single-dry, and multi-dry year conditions are based on the same years used by Metropolitan in its 2020 UWMP. As described in Metropolitan’s UWMP, these years are based on hydrological conditions impacting SWP supplies. EMWD’s single-dry year condition is represented by 1977 hydrology and the multiple-dry year condition is represented by 1988-1992 hydrology. EMWD’s average year is represented by the average of the 1922-2017 hydrologic conditions.

The base years for EMWD’s retail and wholesale supplies are identified in Table 7-1 and Table 7-2.

Table 7-1. DWR 7-1R Basis for Water Year Data (Reliability Assessment)

YEAR TYPE	BASE YEAR	AVAILABLE SUPPLY IF YEAR TYPE REPEATS	
		VOLUME AVAILABLE	PERCENT OF AVERAGE SUPPLY
AVERAGE YEAR	1922 - 2017		100%
SINGLE-DRY YEAR	1977		100%
CONSECUTIVE DRY YEARS 1ST YEAR	1988		100%
CONSECUTIVE DRY YEARS 2ND YEAR	1989		100%
CONSECUTIVE DRY YEARS 3RD YEAR	1990		100%
CONSECUTIVE DRY YEARS 4TH YEAR	1991		100%
CONSECUTIVE DRY YEARS 5TH YEAR	1992		100%

Note: Because EMWD is able to purchase additional water from Metropolitan to meet demands, percent of supply is 100% or greater.

Table 7-2. DWR 7-1W Basis for Water Year Data (Reliability Assessment)

		AVAILABLE SUPPLY IF YEAR TYPE REPEATS	
YEAR TYPE	BASE YEAR	VOLUME AVAILABLE	PERCENT OF AVERAGE SUPPLY
AVERAGE YEAR	1922 - 2017		100%
SINGLE-DRY YEAR	1977		100%
CONSECUTIVE DRY YEARS 1ST YEAR	1988		100%
CONSECUTIVE DRY YEARS 2ND YEAR	1989		100%
CONSECUTIVE DRY YEARS 3RD YEAR	1990		100%
CONSECUTIVE DRY YEARS 4TH YEAR	1991		100%
CONSECUTIVE DRY YEARS 5TH YEAR	1992		100%

Note: Because EMWD is able to purchase additional water from Metropolitan to meet demands, percent of supply is 100% or greater.

7.1.6 Water Service Reliability

Based on the information provided in the Metropolitan UWMP, EMWD has the ability to meet current and projected water demands through 2045 during normal, historic single-dry and historic multiple-dry year periods using imported water from Metropolitan with existing supply resources. Planned local supplies will complement imported supplies and improve reliability for EMWD and the region.

EMWD will continue to rely on imported water from Metropolitan as the main source of supply for its retail and wholesale customers, yet recognizes the need to increase local supplies and water conservation to manage supply and demand. Metropolitan evaluated challenges to supply reliability in its UWMP, including drought conditions, environmental regulations, water quality concerns, and infrastructure vulnerability. Metropolitan has undertaken several planning initiatives to assess and prepare for vulnerabilities including its Integrated Resources Plan, its Water Surplus and Drought Management Plan, and its Water Supply Allocation Plan (WSAP). Additionally, Metropolitan has developed dry-year storage through groundwater and surface water reservoirs that help meet dry-year demands. Based on the information provided in Metropolitan’s UWMP, Metropolitan has sufficient supply capabilities to meet the expected demands of its member agencies from 2020 through 2045 under normal, historic single-dry and historic multiple-dry year conditions.

If another multiple-dry year period were to occur over the next five years, Metropolitan could declare an allocation. EMWD is able to respond to a potential allocation through implementation of its WSCP and its balance of carry over credits in the Hemet/San Jacinto Management Plan Area. EMWD has the ability to meet current and projected water demands through 2045 under normal, historic single-dry and historic multiple-dry year conditions using a combination of imported water from Metropolitan and existing local supply resources.

7.1.6.1 Water Service Reliability – Normal Year

Table 7-3 and **Table 7-4** demonstrate that EMWD will have sufficient supplies to meet both retail and wholesale demands from 2020 to 2045 under average year conditions.

Table 7-3. DWR 7-2R Normal Year Supply and Demand Comparison

-	2025	2030	2035	2040	2045
Supply Totals From Table 6-9R	145,930	157,320	168,900	178,700	187,100
Demand Totals From Table 4-3R	145,930	157,320	168,900	178,700	187,100
DIFFERENCE:	0	0	0	0	0

Table 7-4. DWR 7-2W Normal Year Supply and Demand Comparison

-	2025	2030	2035	2040	2045
Supply Totals From Table 6-9W	62,970	57,580	60,000	62,300	64,400
Demand Totals From Table 4-3W	62,970	57,580	60,000	62,300	64,400
DIFFERENCE:	0	0	0	0	0

7.1.6.2 Water Service Reliability – Single Dry Year

The single-dry year represents the year with the lowest water supply available to the agency. EMWD’s single-dry year is represented using 1977 hydrologic conditions. EMWD has developed programs to help accommodate increases in demand during dry years including the planned ERRP project which would allow EMWD to rely more heavily on groundwater supplies to meet demand in dry years. Additionally, EMWD could import more water from Metropolitan to meet increases in demand. **Table 7-5** and **Table 7-6** demonstrate that EMWD will have sufficient supplies to meet both retail and wholesale demands from 2020 to 2045 under single-dry year conditions.

Table 7-5. DWR 7-3R Single Dry Year Supply and Demand Comparison

-	2025	2030	2035	2040	2045
Supply Totals	151,130	162,820	174,700	184,700	193,300
Demand Totals	151,130	162,820	174,700	184,700	193,300
DIFFERENCE:	0	0	0	0	0

Table 7-6. DWR 7-3W Single Dry Year Supply and Demand Comparison

-	2025	2030	2035	2040	2045
Supply Totals	64,770	59,080	61,600	63,600	65,900
Demand Totals	64,770	59,080	61,600	63,600	65,900
DIFFERENCE:	0	0	0	0	0

7.1.6.3 Water Service Reliability – Five Consecutive Dry Years

The multiple-dry year period represents the lowest average water supply availability to the agency for a consecutive five-year period. EMWD’s multiple-dry year period is represented using hydrologic conditions similar to the 1988-1992 period.

As demonstrated in **Table 7-7** and **Table 7-8**, EMWD will have sufficient supplies to meet both retail and wholesale demands from 2020 to 2045 under multiple-dry year conditions. During dry periods, EMWD would be able to utilize stored groundwater from the proposed ERRP project or import more water from Metropolitan to meet demands, if needed.

Table 7-7. DWR 7-4R Multiple Dry Years Supply and Demand Comparison

-	-	2025	2030	2035	2040	2045
First	Supply Totals	151,130	162,820	174,700	184,700	193,300
Year	Demand Totals	151,130	162,820	174,700	184,700	193,300
-	DIFFERENCE:	0	0	0	0	0
Second	Supply Totals	132,700	143,300	153,700	162,500	170,300
Year	Demand Totals	132,700	143,300	153,700	162,500	170,300
-	DIFFERENCE:	0	0	0	0	0
Third	Supply Totals	134,900	145,500	155,500	164,100	171,900
Year	Demand Totals	134,900	145,500	155,500	164,100	171,900
-	DIFFERENCE:	0	0	0	0	0
Fourth	Supply Totals	137,100	147,600	157,400	165,700	173,500
Year	Demand Totals	137,100	147,600	157,400	165,700	173,500
-	DIFFERENCE:	0	0	0	0	0
Fifth	Supply Totals	140,200	150,800	160,000	168,000	175,800
Year	Demand Totals	140,200	150,800	160,000	168,000	175,800
-	DIFFERENCE:	0	0	0	0	0

Table 7-8. DWR 7-4W Multiple Dry Years Supply and Demand Comparison

-	-	2025	2030	2035	2040	2045
First	Supply Totals	64,770	59,080	61,600	63,600	65,900
Year	Demand Totals	64,770	59,080	61,600	63,600	65,900
-	DIFFERENCE:	0	0	0	0	0
Second	Supply Totals	63,200	59,100	61,400	63,400	65,600
Year	Demand Totals	63,200	59,100	61,400	63,400	65,600
-	DIFFERENCE:	0	0	0	0	0
Third	Supply Totals	62,100	59,600	61,800	63,900	66,000
Year	Demand Totals	62,100	59,600	61,800	63,900	66,000
-	DIFFERENCE:	0	0	0	0	0
Fourth	Supply Totals	61,000	60,100	62,200	64,300	66,400
Year	Demand Totals	61,000	60,100	62,200	64,300	66,400
-	DIFFERENCE:	0	0	0	0	0
Fifth	Supply Totals	59,800	60,600	62,600	64,700	66,900
Year	Demand Totals	59,800	60,600	62,600	64,700	66,900
-	DIFFERENCE:	0	0	0	0	0

Note: Includes 7,500 AFY of Soboba Settlement Recharge.

7.2 Drought Risk Assessment

EMWD anticipates it will have enough supplies to meet demands under all water year conditions from 2020 through 2045. To supplement Metropolitan imported sources and improve reliability, EMWD has several local resource programs. Production of local groundwater has been a source of supply for EMWD's service area for decades, but overproduction of groundwater has led to a need for groundwater management. Native production is limited and plans are in place to recharge local ground water basins to increase supply reliability. Desalination of high TDS groundwater also provides a reliable local supply of water.

Recycled water production and sales reduce the demand for imported water and provide a sustainable supply. EMWD's continued investment in improved facilities will continue to grow the market for recycled water, and innovative planning and recycled water management will allow EMWD's recycled water supply to bring an even greater benefit to the service area.

EMWD also has several planned projects that will increase regional supply reliability by increasing local supplies and decreasing demands for imported water from Metropolitan. These projects include increasing local groundwater banking through the ERRP, expanding the desalter program with the Perris II Desalter, and full utilization of recycled water through implementation of IPR.

In addition to the development of local resources, EMWD aggressively promotes the efficient use of water. Through the implementation of local ordinances, conservation programs and an innovative tiered pricing structure, EMWD is reducing demands on retail accounts. Reducing demands allows existing and proposed water supplies to stretch farther and reduces the potential for water supply shortages.

The California Water Code requires suppliers to prepare a Five-Year Drought Risk Assessment (DRA) to assess their ability to meet demands if the next five years are dry.

The results of the DRA are summarized in **Table 7-9**.

Table 7-9. DWR 7-5 Five-Year Drought Risk Assessment

2021	Gross Water Use	177,900
	Total Supplies	177,900
	Surplus/Shortfall without 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 Percent Use Reduction from WSCP Action	0%
	2022	Gross Water Use
Total Supplies		185,400
Surplus/Shortfall without WSCP Action		0
Planned WSCP Actions (Use Reduction and Supply Augmentation)		
WSCP (Supply Augmentation Benefit)		
WSCP (Use Reduction Savings Benefit)		14,900
Revised Surplus/Shortfall		0
Resulting Percent Use Reduction from WSCP Action		8%
2023		Gross Water Use
	Total Supplies	194,400
	Surplus/Shortfall without WSCP Action	0
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	0
	WSCP (Use Reduction Savings Benefit)	15,400
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	8%
	2024	Gross Water Use
Total Supplies		209,400
Surplus/Shortfall without WSCP Action		0
Planned WSCP Actions (Use Reduction and Supply Augmentation)		
WSCP (Supply Augmentation Benefit)		0
WSCP (Use Reduction Savings Benefit)		16,000
Revised Surplus/Shortfall		0
Resulting Percent Use Reduction from WSCP Action		8%
2025		Gross Water Use
	Total Supplies	217,500
	Surplus/Shortfall without WSCP Action	0
	Planned WSCP Actions (Use Reduction and Supply Augmentation)	
	WSCP (Supply Augmentation Benefit)	0
	WSCP (Use Reduction Savings Benefit)	16,500
	Revised Surplus/Shortfall	0
	Resulting Percent Use Reduction from WSCP Action	8%

For each year: "revised surplus/shortfall" is still 0 AF because WSCP savings result in less purchases from Metropolitan.



8 Water Shortage Contingency Plan

For the 2020 UWMP reporting cycle, EMWD prepared a Water Shortage Contingency Plan (WSCP). The WSCP is an appendix to this document and is being adopted separately by the EMWD Board of Directors.

Adopting the UWMP as a separate document will allow EMWD to make adjustments as needed without triggering the need to amend and re-adopt the UWMP.

This chapter has been retained in the UWMP to maintain consistency with the chapter numbering defined in the DWR Guidebook.

IN THIS SECTION

- The WSCP is attached as Appendix I.

8.1 WSCP Overview

The WSCP includes a description of the shortage response actions that EMWD could implement to close a gap between supply and demand. It was developed and adopted as a separate document from the UWMP so that it can be modified if needed during the next five years.



9 Demand Management Measures

The CWC and UWMP Act require water agencies to describe the Demand Management Measures (DMMs) that an agency is implementing as part of its overall water conservation program. As both a retail and wholesale water agency, EMWD is responsible for fulfilling the requirements of both the retail and wholesale DMMs.

EMWD has established itself as a statewide leader in water use efficiency and continues to promote water conservation through investments in infrastructure, technology, education, and community outreach programs.

IN THIS SECTION

- Programs to Encourage and Incentivize Efficient Water Use

In 2009, EMWD first implemented the use of water budgets for its residential customers. The tiered water rate structure was designed to promote water conservation by encouraging efficient water use and discouraging wasteful water usage. All residential customers received a monthly water budget allocation customized to meet their specific household and landscape irrigation needs. The rate structure set budgets for indoor usage and usage in excess of the total budget. In 2017, the Board adopted a new water rate structure, adjusted to meet new State standards that call for making water efficiency a permanent way of life. The changes maintained the principles behind EMWD's rate structure, reflecting the cost of service while rewarding customers who use less and penalize those who are wasteful.

In 2019, EMWD launched its WaterWise Plus program, a comprehensive and forward-thinking program designed to assist customers and partner agencies with finding new and cost-effective ways to become more water efficient. The program integrates existing water use efficiency-based programs with long-term solutions that are promoted regardless of drought conditions. These programs help customers make lifestyle changes to their water use habits resulting in becoming more efficient with their water use, gaining a better understanding of their water usage, and making them better able to manage their monthly bills.

EMWD offers a wide range of programs for residential customers, including participation in the Metropolitan Water District of Southern California (Metropolitan) turf removal rebate program, EMWD offered water efficient devices and EMWD's Demonstration Garden which is available for customers to view to obtain ideas on various water efficient and sustainable landscape options.

EMWD is also working with government agencies and the business community to develop long-term sustainable approaches to see the benefits that the average residential customers may realize. It is partnering with the cities it serves in introducing a landscape transformation program, promoting investments in climate appropriate landscaping in commercial, industrial, and instructional areas through turf replacement programs. EMWD is also partnering with its local agricultural customers to better understand current irrigation practices and to incorporate programs that will further assist local farmers in managing their water use.

EMWD is an industry leader in recycled water, one of the largest by volume recyclers in the nation and one of the few agencies that achieves 100 percent beneficial reuse in most years. Its recycled water system receives and treats more than 45 million gallons of wastewater each day at its four operating regional treatment plants. About 75 percent of recycled water production is sold to agricultural irrigation, landscaping, and industrial customers. It also serves several schools, parks, cities and county streetscaping, HOA landscape areas, golf courses, wetlands habitat areas and industrial cooling towers. EMWD has the ability to store more than two billion gallons of recycled water. With significant urban development, it is prepared to manage the increase in recycled water production and is securing the regions' water future through water banking and its groundwater reliability efforts.

9.1 Demand Management Measures for Wholesale Suppliers

As a wholesale agency, EMWD is responsible for implementing DMMs for wholesale suppliers, as well as assisting its wholesale customers with their own DMM implementation. EMWD works closely with its wholesale customers to help fund, market, and implement a number of conservation programs.

9.1.1 Metering

All of EMWD's wholesale customers are fully metered and billed volumetrically each month.

9.1.2 Public Education and Outreach

As a wholesale agency, EMWD maintains extensive Public Information and School Education Programs for all of its wholesale customers.

Public Information Programs

As a wholesale agency, EMWD participates in a biennial landscaping competition with customers from EMWD, Western Municipal Water District (WMWD), and other water agencies throughout the Inland Empire as well as the respective sub agencies. EMWD initiated a long-term campaign to encourage all customers to use water wisely and offered materials with sub agencies. EMWD sponsors workshops and produces videos on California-friendly plants to promote landscaping using drought tolerant plants and the Water Waste Program to report/correct the wasteful use of water.

School Education Programs

EMWD implements an Education Program to foster understanding of water and wastewater issues and to promote wise water use among the future leaders of the community. EMWD's extensive education program is designed to provide a useful academic experience at all grade levels (K-12). Any school within EMWD's service area is eligible to benefit from the program. EMWD offers resources such as lesson plans, curriculum packets, and student materials.

As a wholesale agency, EMWD has created the language arts program "Write Off" for middle school students and is the lead agency in partnership with Rancho California Water District (RCWD), a sub agency of EMWD. Multiple presentations, which include complete curriculum packets, have resulted from this program, and agencies throughout California and other states have either duplicated the program or have requested materials to add to their current education programs.

9.1.3 Water Conservation Program Coordination and Staffing

EMWD maintains full-time staffing for water conservation programs.

EMWD's full time Conservation Staff include:

- One Executive Assistant
- One Conservation Program Assistant
- One Conservation Program Specialist
- One Water Resources Planning Manager
- One Principal Water Resources Specialist
- Two Water Resources Specialist Assistants
- One Water Resources Specialist Associate

9.1.4 Other Demand Management Measures

EMWD's wholesale agencies' customers are eligible to participate in the region-wide rebate program offered through Metropolitan. EMWD has also worked with wholesale customers to implement agency administered programs funded in part by Metropolitan. EMWD provides support and information about water use efficiency to sub agencies and offers training opportunities in landscape efficiency.

EMWD has a volume-based rate structure for wholesale customers.

9.1.5 Asset Management

EMWD's wholesale distribution system asset management program is the same as its retail asset management program.

The mission of EMWD is to deliver value to customers and the communities within EMWD's service area by providing safe, reliable, economical, and environmentally sustainable water, wastewater, and recycled water services. One of the ways this mission is carried out is through the EMWD's Asset Management program. This program was established to effectively manage assets throughout their lifecycle. The underpinnings of this program are rooted in research of other water agencies that have implemented Asset Management Plans.

One of the key components of the program is EMWD's Computerized Maintenance Management System. This system is a transactional database system that is used to capture physical attributes as well as work activities performed on assets. Asset technicians manage the asset records during new construction, refurbishment, and replacements. Two of the initial attributes captured for asset records are installation date and original purchase price. In addition, other important data is collected such as horsepower, revolutions per minute (rpm), and power requirements. Asset grouping is employed to compare histories of like assets. Further analysis may provide insight on premature failures and lead to the procurement of better performing assets.

The lifecycles of assets are determined by a number of factors. Due to the nature of business at EMWD, assets may be found in office, potable water, wastewater, and recycled water operating environments. Wastewater produces the harshest operating conditions and, therefore, decreases the life of an asset more than other EMWD environments. Another factor that impacts the life of an asset is its expected life. Empirical data is the best indicator for predicting an asset's expected life. This takes into account the operating conditions of the asset at a particular location using real-world parameters. However, this method takes time to build history from maintenance activities. An alternative method entails using industry standards from similar operations. Combining these factors allows for the remaining life of assets to be calculated.

An Asset Management model was produced to provide a framework for business decisions related to the replacement and refurbishment (R&R) of EMWD's assets. The inputs to the model include the

physical location, remaining life expectancy, and the corrective maintenance costs. The health of an asset can be determined, in part, by the cost of maintenance relative to like assets. For example, if a potable pump historically costs more to maintain than another potable pump operating under similar conditions it should be further analyzed to understand the cause. Another input to the model includes EMWD's Capital Improvement Projects. By including Capital Improvement Project commitments into the model, assets that are likely candidates based on maintenance costs or end of life may be excluded from R&R consideration.

Output from the Asset Management model is provided to management for budget preparation. Assets may be grouped by site for a holistic review. Furthermore, the model allows for grouping of assets by maintenance responsibility whether electrical, mechanical, or other maintenance group. Management can easily review assets nearing end of life or with higher than usual maintenance costs. Assets are earmarked for budget inclusion or deferred to a future budget cycle. These decisions are recorded in the Asset Management model for future reference.

9.1.6 Wholesale Supplier Assistance Programs

EMWD has implemented these programs:

- Financial incentives provided for by Metropolitan for a variety of water efficient devices are administered through the SoCal WaterSmart regional rebate program for residential and commercial customers. Both residential and commercial customers of EMWD's sub agencies are eligible to participate in the regional rebate programs.
- EMWD has hosted and/or conducted workshops for landscape professionals, including personnel and customers of EMWD's sub agencies, providing certification opportunities for smart irrigation controller technologies. EMWD's Board members hold Director Advisory Committee meetings with stakeholders throughout the year; and staff members attend/participate at local city councils and planning commissions. EMWD also provides assistance to sub agencies with various Geographic Information System (GIS) mapping requests.
- EMWD is the first water agency in Riverside County to offer the Qualified Water Efficient Landscaper (QWEL) professional certification program which provides landscape professionals with 24 hours of education on principles of proper plant selection for the local climate, irrigation system design and maintenance, and irrigation system programming and operation. In order to obtain the QWEL certification an individual must demonstrate their ability to perform an irrigation system audit as well as pass the QWEL exam.
- Staff meets with sub agencies to discuss conservation related topics. Regional incentive programs are administered through vendors assigned by Metropolitan and sub agencies are encouraged to participate in these programs. Metropolitan hosts monthly water use efficiency meetings to discuss the implementation of conservation programs; EMWD's sub agencies are encouraged to participate.
- During a shortage, supply to wholesale customers could be allocated using the formula and methodology based on Metropolitan's Water Supply Allocation Plan (WSAP). This plan takes into consideration: the impact on retail customers and the economy; population and growth; changes and/or loss of local supply; reclamation and recycling; conservation; and investment in local resources.
- EMWD will establish base period demands and then adjust them for growth and changes in local supply. Regional shortages will be phased in 10 stages. At each stage the wholesale customers will not experience shortages on the wholesale level that are greater than one-and-a-half times the percentage shortage of regional water supplies; nor will they face a retail shortage less than the regional shortage. Credits will be given for conservation and investment in local supplies.

9.2 Existing Demand Management Measures for Retail

EMWD has implemented programs to meet the requirements for DMMs as a retail agency.

9.2.1 Water Waste Prevention Ordinances

EMWD has implemented the following initiatives:

- **Ordinance 72.25** – Water Use Efficiency Ordinance, implemented January 1991. EMWD reviews ordinances on a regular basis with the most recent revision effective February 2016. This ordinance prohibits water waste, imposes penalties for runoff, and requires efficient design in new development. The ordinance is enforced in two ways, (1) through EMWD’s allocation-based tiered rate structure for single family, multi-family and landscape accounts utilizing the domestic water system; and (2) through penalties for runoff.
- **Ordinance 117.2** – Water Shortage Contingency Plan, implemented July 2005. EMWD reviews the WSCP on a regular basis with the most recent modification adopted in 2017. This ordinance is designed for the purpose of protecting the integrity of water supply facilities (infrastructure), and implementing a contingency plan in times of drought, supply reductions, failure of water distribution systems or emergencies. The ordinance is included in Title 5, Article 10 of EMWD’s administrative code (amended by Resolution No 2017-152 on December 20, 2017).
- EMWD supports legislation and local ordinances that prohibit water waste, and supports local ordinances that establish requirements for water efficient design in new development. As a member of the Riverside County Water Task Force, EMWD participated in updating Riverside County’s Water Efficient Landscape Requirements Ordinance 859.
- In mid-2015, EMWD adopted new development standards to further promote conservation throughout its service area. Beginning in July 2015, all new developments are prohibited from having non-functional turf, including turf in the front yards of new homes. With more than 60 percent of water in EMWD’s service area being used outdoors, this was designed to be a long-term strategy to minimize the impact of new development. EMWD’s service area is currently 40 percent built out, making it one of the few regions in Southern California that will see significant population growth in the coming decades. EMWD also helped the County of Riverside adopt a similar ordinance prohibiting turf in the front yards of new homes in all unincorporated areas of Riverside County.
- EMWD has also prohibited the installation of non-functional turf in all new Commercial, Industrial, and Institutional (CII) developments. While turf is being allowed in functional areas of new development, including parks and schools, it is no longer permitted within common area landscaping that provides no functional community benefit. Non-functional turf can best be described as turf that is only ever walked on when it is being mowed.

9.2.2 Metering

A water meter is defined as a device that measures the actual volume of water delivered to an account in conformance with the guidelines of the American Water Works Association (AWWA).

EMWD has implemented this DMM through the following programs:

1. Meters are required on all new service connections
2. All service connections in EMWD’s service area are metered
3. Meters are read on a monthly basis and billed monthly in hundred cubic feet
4. EMWD’s program for meter testing and replacement is referenced in Table 9-1

5. EMWD has identified and measured all commercial customers with mixed use meters and completed creating water budgets for these customers in 2019
6. In an effort to reduce leaks, a continuous water use notification system was implemented in February 2016 which notifies customers of the presence of a constant water flow running through their meter (for every hour for several days), which is a strong indication of a possible leak
7. As part of the Water Loss Analysis that takes place every few years, EMWD now sends back approximately 30 small (5/8"-2") meters each month for random testing to ensure accuracy
8. To better serve its customers in a more accurate and efficient manner, EMWD upgraded its meters to Advanced Metering Infrastructure (AMI) technology and Flex Net meters.

Table 9-1. Meter Testing and Replacement Frequency

METER TYPE	METER SIZE	MONTHLY CONSUMPTION (HUNDRED CUBIC FEET)	METER TESTING FREQUENCY	METER REPLACEMENT FREQUENCY
Residential	5/8" – 2"	Not Applicable	Customer Request	Upon Failure
Commercial	3" and Larger	1,001 – Above	6 Months	Upon Failure
Commercial	3" and Larger	401 – 1,000	12 Months	Upon Failure
Commercial	3" and Larger	201 – 400	24 Months	Upon Failure
Commercial	3" and Larger	0 – 200	36 Months	Upon Failure
Sample	Not Applicable	Not Applicable	Bi-Annually	Upon Failure

1) Meter testing frequency based on age segment (1960's, 1961 – 1969, 1970 – 1979, etc.)

9.2.3 Conservation Pricing

Retail Water Rates

Conservation pricing provides economic incentives (a price signal) to customers to use water efficiently. Because conservation pricing requires a volumetric rate, metered water service is a necessary condition of conservation pricing.

This DMM is intended to reinforce the need for water agencies to establish a strong nexus between volume-related systems costs and volumetric commodity rates. Conservation pricing requires volumetric rates. The goal of this DMM is to recover the maximum amount of water sales revenue from volumetric rates that is consistent with utility costs (which may include utility long-run marginal costs), financial stability, revenue sufficiency, and customer equity. In addition to volumetric rates, conservation pricing may also include service connection charges, meter service charges and/or special rates and charges for temporary service, fire protection service and other irregular services provided by the utility.

The following volumetric rate designs are potentially consistent with the above definition:

1. Uniform rate in which the volumetric rate is constant regardless of the quantity consumed
2. Seasonal rates in which the volumetric rate reflects seasonal variation in water delivery costs
3. Tiered rates in which the volumetric rate increases as the quantity used increases
4. Allocation-based rates in which the consumption tiers and respective volumetric rates are based on water use norms and water delivery costs established by the utility

In February 2009, EMWD implemented an allocation-based tiered rate structure for single family residential, multi-family residential and landscape accounts. The rate structure was instituted to promote the efficient use of water and is designed to provide customers a significant economic incentive to use the proper amount of water required to serve indoor and outdoor (landscape) demands. This is accomplished by setting a customized “allocation” for each customer account based on a variety of factors such as: irrigated area, daily weather characteristics, size of household, and other more unique characteristics such as the presence of a pool, livestock, or medical needs. Water is then sold to customers under a four-tier structure based upon their monthly allocation which varies for landscape use relating to daily weather patterns. Customers using water within their allocation purchase water in the lower two tiers. Customers using in excess of their allocation also purchase water in the remaining two tiers that generally will result in relatively high water bills which can send a strong price signal for excessive use. The tiered rate structure was also designed so that 70 percent of the rate is variable.

In January 2019, EMWD implemented water budgets and tiered rates for additional commercial, industrial, and institutional (CII) customers. The water budgets for these non-residential customers are based on industry-standard methodology, which considers factors such as business, historical average use, and amount of irrigated landscape. The structure for the CII customers includes a three-tier structure, in which Tier 1 represents the budgeted supply, and, similar to the residential and landscape structure, customers using water within their allocation purchase water in the lower tier. Customers using in excess of their allocation also purchase water in the remaining two tiers that generally will result in relatively high water bills which can send a strong price signal for excessive use.

Retail Wastewater Rates

Conservation pricing of sewer service provides incentives to reduce average or peak use, or both. Such pricing includes: (a) rates designed to recover the cost of providing service, and (b) billing for sewer service based on metered water use.

The following rate options are available for wastewater service:

1. Uniform rates in which the unit rate is the same across all units of service
2. Increasing block rates in which the unit rate increases as the quantity of units purchased increases
3. Rates in which the unit rate is based upon the long-run marginal cost or the cost of adding the next unit of capacity to the sewer system
4. Rates that charge customers a fixed amount per billing cycle for sewer service regardless of the unit of service consumed; and/or rates in which the typical bill is determined by high fixed charges and low commodity charges do not satisfy the definition of conservation pricing of sewer services.

EMWD complies with an at least as effective approach for this DMM. EMWD and RCWD, its largest sub agency, both have allocation-based tiered rate billing structures. The allocation-based tiered rate billing structure sends a strong price signal against using excessive water both indoors and outdoors. EMWD also uses the household size provided water budgets to tier sewer pricing. Finally, EMWD recycles all of its wastewater and reuses it within the service area. These methods are at least as effective as a conserving rate structure for wastewater.

9.2.4 Public Education and Outreach

California water agencies have played a major role in promoting water use efficiency through both public information and school education programs. EMWD's Public Information and Education Programs for its retail service area are described below.

Public Information Programs

Public information programs are an effective tool to educate customers about the need for water use efficiency and to influence customer behavior towards conservation. The following actions are necessary to implement a public information program to promote water conservation and related benefits:

- Public speakers to employees, community groups and the media
- Advertising using paid and public service
- Customer communication using bill inserts and on bill comparison charts for multi-year usage
- Coordination with government agencies, industry groups, public interest groups and media
- Marketing designed to change attitudes and influence behavior

EMWD has implemented this DMM in the following ways:

1. EMWD provides public speakers at new employee orientation which is conducted twice each year; provides information to employees via intranet updates on a regular basis; and occasionally provides employees with fact sheets or talking points on industry issues that may be topics of discussion with individuals outside of EMWD. Public speakers are also provided to community groups, in a variety of settings such as rotary clubs, homeowners associations, religious organizations, and mobile home parks. EMWD's active speakers' bureau provides multiple presentations each month. EMWD maintains an active relationship with reporters by phone, email and direct contact regarding topical issues relating the need to encourage water use efficiency throughout its service area. EMWD utilizes a number of means for paid advertising such as various Chambers of Commerce programs and newsletters and a variety of community publications. Monthly cable slides are used for public service advertising. Customer communication includes bill inserts, bill messaging, monthly usage comparisons on the water bills, monthly emails, and bi-monthly newsletters.
2. EMWD provides public information to promote water conservation measures. In an effort to effect changes in attitude and influence behavior, EMWD has active pages on common social media sites that are updated regularly, and dedicated water use efficiency web pages that are updated on a regular basis. Addressing the subject of training stakeholders, EMWD has hosted and/or conducted workshops for landscape professionals, providing certification opportunities for smart irrigation controller technologies. EMWD's Board members hold Director Advisory Committee meetings with stakeholders throughout the year; and staff members attend/participate at local city councils, planning commissions, and chambers of commerce events. Ongoing outreach efforts targeting new residential customers consists of a welcome letter and bi-monthly newsletters containing seasonal tips and ideas for water use efficiency. EMWD enforces local and state landscape ordinances through the use of budget based tiered rates.
3. EMWD's Education Program uses a variety of grade-appropriate curriculum to educate area students about the importance of water use efficiency. Through its wide range of programs, EMWD reaches more than 60,000 students per year. The long-term objective of the program is to establish positive water use efficiency habits at a young age in order to have a future generation of ratepayers who understand the importance of using water efficiently. Among the programs offered are: school assembly programs, field trips, classroom and virtual presentations, annual "Write-Off"

contests where students write and illustrate a water-themed book, and participation in regional poster contests.

EMWD participates in Metropolitan’s regional rebate programs administered through SoCal Water\$mart for residential and commercial customers.

School Education Programs

School education programs have been implemented to reach the youngest water users at an early age and reinforce the need to engage in water conservation as a life-long behavior. The following actions are necessary to implement school education programs to promote water conservation and related benefits:

1. Provide instructional assistance to school districts and private schools within the service area
2. Provide educational materials and classroom presentations that identify urban, agricultural and environmental issues and conditions in the local watershed
3. Develop and/or provide grade appropriate educational materials that meet the state education framework requirements

EMWD has implemented this DMM in the following ways:

1. EMWD has a very robust school education program that promotes water conservation and all aspects of environmental education. Additionally, EMWD works very closely with public and private schools within both its retail and wholesale service areas to provide educational materials which are in alignment with the California content standards for grades K-12.
2. EMWD provides classroom presentations covering water conservation, potable water treatment, desalination, wastewater treatment, purified water replenishment, and all aspects of environmental education. EMWD sponsors weekly field trips for students in eleven school districts throughout EMWD’s service area to tour one of EMWD’s wastewater treatment facilities and wetlands project and includes water education activities that are conducted in the education facility. EMWD provides materials developed by EMWD education staff and Metropolitan for K-12 students.

EMWD has also developed a variety of curriculum for K-5 students including:

- Wastewater Treatment for All Curious Beings – activity book
- Dewie the Dragon – curriculum packet
- Gobi’s Adventure – curriculum packet
- Otis the Turtle gets Water Wise – curriculum packet
- Lily and the Seven Drops – curriculum packet
- Bartholomew the Bird Investigates How to Use Water Wisely – curriculum packet and puppet show

The following contests are also promoted by EMWD on an annual basis:

- Grades K-5 Students – Poster contest “Water Use it Wisely”
- Grades 6-8 Students – Language Arts contest “Write-Off” (results in a published book, written and illustrated by 6-8 grade students)
- Grades 9-12 Students – Solar Cup event (MWD provides boat hull for students to assemble and EMWD provides financial support for students to outfit the boat with a motor and solar panels); and new video contest

EMWD participates in the following school and community activities:

- Environmental, science, health, and community fairs – provide activities and materials
- Annual environmental youth conference – provided in partnership with other agencies
- Sponsoring an environmental assembly program for schools in EMWD's service area

EMWD offers the following assistance for teachers in the service area:

- Training programs offered by EMWD and Metropolitan
- Training workshops offered by EMWD in partnership with other agencies to spotlight programs
- Training for Project WET offered

Conservation and Education have joined together to develop the Augmented Reality Sandbox Program (ARS) to help students learn about watersheds and topography by shaping and molding kinetic sand. Students will learn about the importance of watersheds, how we can protect them, and study elevation levels to create measurements. The ARS directly supports fourth and fifth grade common curriculum by concentrating on mathematics and science standards.

EMWD is one of Metropolitan's member agencies, as such Metropolitan has taken the lead as the wholesale agency in the Student Poster Contest Program and the Annual Solar Cup Event. Metropolitan has also provided curriculum for K-12 students.

9.2.5 Programs to Assess and Manage Distribution System Real

The goals of modern water loss control methods include both an increase in water use efficiency in the utility operations and proper economic valuation of water losses to support water loss control activities. In May 2009, the AWWA published the 3rd Edition M36 Manual "Water Audits and Loss Control Programs." This DMM incorporates these water loss management procedures and applies them in California. Agencies are expected to use the AWWA Free Water Audit Software to complete their standard water audit and water balance. For the 2020 UWMP, water agencies are required to calculate water loss using the AWWA software and report it with water use in Chapter 4.

EMWD has implemented this DMM in the following ways:

1. EMWD has compiled the standard water audit report for the past five years and included those results in Chapter 4.
2. The following methods are used to test source, import and production meters:
 - Source Meters:** Well meters are recalibrated or replaced annually. Filtration Plant and Desalter system supply meters are monitored against the raw water supply meters and calibrated annually.
 - Import Meters:** Metropolitan tests their connection meters bi-annually. EMWD's system meters are recalibrated annually and flows are monitored daily. Significant differences with Metropolitan deliveries are addressed jointly between EMWD and Metropolitan.
 - Production Meters:** Production meters are bench tested by a certified independent laboratory. Some large volume meters are calibrated twice a year.
3. EMWD has completed component analyses of real losses for fiscal years 2010 and 2014.
4. EMWD repairs reported leaks and breaks to the extent that are cost effective. A work order tracking system is used to track pipeline and service leaks by type and completed repairs.
5. In order to identify unreported leaks, EMWD monitors water use by customers and notifies them of anomalies that could indicate a possible leak.

9.2.6 Water Conservation Program Coordination and Staffing Support

EMWD has implemented this DMM.

EMWD's full time Conservation Staff include

- One Executive Assistant
- One Conservation Program Assistant
- One Conservation Program Specialist
- One Water Resources Planning Manager
- One Principal Water Resources Specialist
- Two Water Resources Specialist Assistants
- One Water Resources Specialist Associate

The Principal Water Resources Specialist and Water Resources Planning Manager serve as liaisons between EMWD and other public agencies, community and industry groups, and the media; recommends, develops and coordinates implementation of EMWD conservation programs; and assists in analyzing program goals, performance measures, and sources of funding. The Water Resources Specialist Associate participates in the implementation of conservation programs; develops and implements programs to inform, educate and assist with efficient water use and conservation; represents EMWD with customers in community events and meetings regarding conservation issues; and develops and implements methods to measure improvements in water use efficiency and customer satisfaction. The Conservation Program Specialist assists in the development and implementation of conservation programs; conduct water leak investigations; issue citations to enforce mandatory water conservation ordinances during times of water shortage; and represent EMWD with customers and community events and meetings on conservation issues. The Conservation Program and Water Resources Specialist Assistants perform a variety of customer service functions related to water conservation; assists with residential, landscape and CII water surveys; measures landscape area for water budgets; sends water waste notices; research problems; and conducts related duties assigned. The Executive Assistant provides administrative support for the Conservation Program.

9.2.7 Other Demand Management Measures

EMWD has implemented the following additional DMMs.

Residential Assistance Program

In 1997 EMWD's Conservation staff began performing residential surveys on a limited basis; during FY 2007/2008 and a portion of FY 2008/2009 these surveys were outsourced to a third party. In early 2009, the number of Conservation staff members increased, and in April 2009 the function of performing residential surveys was resumed by internal staff. With a dramatic increase in field and office work in August 2013, the residential surveys were outsourced to a new vendor "Water-Wise Consulting". In 2020 a new vendor was selected through a competitive process and awarded to "ConServe Inc. and to date the vendor continues to perform both residential and multi-family home surveys. Components of the indoor water survey include checking the water meter leak detector and testing the water meter for accuracy; testing flow rates for kitchen faucet, bathroom faucet(s) and showerhead(s) to determine gallons per minute (gpm); verify toilet(s) gallons per flush and perform a leak detection dye test on each toilet; verify use of dishwasher, hot water heater setting and clothes washer type. Upon completion of each survey, the customer is provided with a report that includes survey results and water efficient recommendations, along with information on incentives for eligible

water saving devices when available. Showerheads, aerators and toilet flappers are distributed with surveys as needed.

In addition to surveys EMWD provides leak detection assistance to customers through the distribution of conservation packets. On average, staff members also distribute more than 250 conservation packets to residential customers each month. These packets are available in both English and Spanish to accommodate the needs of a majority of EMWD's residential retail customers. Conservation packets provide the customer with information on how to read their water meter, leak detection dye tablets for toilets, and instructions on how to identify leaks in the home.

In January 2010, EMWD began to distribute Outdoor Water Use Efficiency Kits to residential customers. The Outdoor Water Use Efficiency Kit is designed to help residential customers create a custom irrigation schedule, repair a leaky hose and eliminate water running from an unattended hose. Since 1990, EMWD has maintained a program to provide residential customers with water efficient showerheads and faucet aerators. These devices continue to be distributed when needed and are made available to customers at EMWD's office, as part of the residential survey program and at various outreach events.

EMWD was awarded a grant for the Spray-to-Drip Retrofit Kit Program (Kit Program) from the United States Bureau of Reclamation (USBR) in March 2019. Through this grant, 1,110 Spray-to-Drip conversion kits are offered to residential customers free of charge. The kits contain enough equipment to convert between 250 and 400 square-feet of planter beds from spray to drip irrigation, depending on planting density. As of February 2020, all 1,110 Spray-to-Drip conversion kits required for grant compliance have been distributed and installation verified. EMWD will look for opportunities to expand this program in the future.

EMWD was awarded a grant for the Residential Irrigation Efficiency Project (Project) from the USBR in September 2019. Through this grant, 50 single family homes will have their existing irrigation systems replaced with high efficiency irrigation equipment and manage the watering schedules for a one-year period. The equipment installation and watering schedule management will be conducted by a qualified contractor. Staff will monitor water consumption via EMWD's automated meter infrastructure system, and the homeowners will agree to keep their irrigation system in good working order for the duration of the project. The Project offers cost share funding for water use efficiency activities that result in water savings, improved water management and energy efficiency.

Landscape Water Survey

The landscape water survey requirement is being met through the implementation of tiered rates. A water budget for efficient landscape irrigation was developed for all residential customers. The water budget is enforced monthly through a tiered billing system. For those who exceed budget targets a residential survey may be performed to assist the customer in identifying where water can be saved. Staff members and/or the vendor perform on-site landscape surveys as part of the complete residential survey. Components of the outdoor water survey for single family residential accounts include checking the water meter leak detector and testing the water meter for accuracy; checking irrigation timer programming; running a one-minute test for each irrigation station to obtain gpm data and checking for system leaks; checking system pressure; obtaining plant and soil type(s) for reporting and measuring irrigated landscape area. Upon completion of each survey, the customer is provided with a report that includes survey results and a watering schedule, water efficient recommendations, and information on incentives for eligible water saving devices when available. EMWD has also developed a cost share program for the direct installation of residential smart irrigation controllers, high-efficiency precision nozzles, drip irrigation, and on-site landscape surveys as a component of this program.

High Efficiency Clothes Washers

EMWD has provided incentives for HECWs since 2001. In late 2010, EMWD established partnerships with the United States Bureau of Reclamation (USBR) through grant funding, and Southern California Gas Company, for the direct installation of HECWs with a water factor of 4.0 or less.

WaterSense Specification Toilets

EMWD began offering incentives for toilet retrofits in 1992, beginning with Ultra Low-Flush Toilets (ULFT). Incentives included customer rebates and free distribution events. Incentives for High Efficiency Toilets (HET) were added in 2005. HET incentive programs included customer rebates, free distribution events and a direct installation program which began in 2008. To continue to encourage the installation of water saving devices, the Replace and Save Multi-Family Toilet Program was implemented in 2014 and was targeted towards multi-family customers to help reduce or eliminate the cost associated with replacing older inefficient toilets with new efficient toilets.

Commercial, Industrial, and Institutional

CII water demands make up a large percentage of total demand for California. CII water use varies dramatically between business sectors as well as within a given water agency's territory. The goal of this DMM is to implement comprehensive yet flexible measures, allowing each water agency to tailor the implementation of each practice to fit local needs and opportunities. The end result is a practice that is successful and will produce the greatest amount of cost-effective water savings.

EMWD continues to encourage efficiency by CII customers and in 2019 implemented budget-based tiered rates for these customers. Financial incentives provided for by Metropolitan for a variety of water efficient devices used in the CII sector are administered through the SoCal WaterSmart regional rebate program. In 2008, EMWD implemented the Public School Retrofit program; providing surveys and direct installation of both indoor and outdoor devices for more than 40 school sites within EMWD's retail service area. In 2009, conservation staff developed a program to identify CII accounts with mixed use meters, accounts with the highest water use are contacted first and offered CII water use surveys. Components of the CII water use survey include checking the water meter leak detector and testing the water meter for accuracy; checking irrigation timer programming; running a one-minute test for each irrigation station obtain gpm data and check for system leaks; checking system pressure; obtaining plant and soil type(s) for reporting and measuring irrigated landscape area. Upon completion of each survey, the customer is provided with a report that includes survey results and a watering schedule, water efficient recommendations, and information on incentives for eligible water saving devices when available.

Landscape

Irrigation accounts for a large portion of urban water use in California. Irrigation water use varies dramatically depending on water pricing and availability, plant choice, geographic locations, seasonal conditions, and the level of commitment to sound water efficiency practices. The goal of this DMM is that irrigators, with assistance from signatories, will achieve a higher level of water use efficiency consistent with the actual irrigation needs of the plant materials. Reaching this goal would reduce overall demands for water, reduce demands during the peak summer months, and still result in a healthy and vibrant landscape in California.

Accounts with Dedicated Irrigation Meters:

- Through the tiered rate process, EMWD has developed water budgets for 100 percent of dedicated landscape accounts.

- Water bills for these accounts include data that reflect the relationship between the water budget 70 percent ETo and actual usage.
- Each water bill for dedicated landscape meters provides a contact number with an offer for assistance. An audit program and technical assistance are made available to customers that make a request.
- EMWD has offered financial incentive programs for landscape since 1992, including large landscape audits, soil moisture sensors, weather-based irrigation controller (WBIC) rebates and distribution, large rotary nozzle rebates, and rotating nozzle and synthetic turf rebates. In 2006, EMWD implemented a program to supplement the cost of high efficiency nozzles, including labor for installation, for large landscape accounts. In 2008, EMWD also implemented a public school retrofit program that includes the direct installation of WBICs and high efficiency nozzles. In 2012, EMWD implemented the Large Landscape Assistance Program which provides large landscape customers with the option to have Toro precision nozzles directly installed or receive a voucher for high efficiency nozzles and smart controllers.

Commercial, Industrial, Institutional Accounts without Meters or with Mixed-Use Meters

- EMWD’s retail service area includes an estimated 4,500 CII accounts.
- In July 2009, Conservation staff developed a program to identify CII accounts with mixed use meters and offer on-site surveys.
- EMWD has offered financial incentive programs for landscape since 1992, including large landscape audits, soil moisture sensors, WBIC rebate and distribution, large rotary nozzle rebates, rotating nozzle, and synthetic turf rebates.

9.3 Reporting Implementation

9.3.1 Implementation Over the Past Five Years

A summary of the extent to which these programs have been implemented is provided in **Table 9-2**.

Table 9-2. DMM Implementation

PROGRAM	TYPE	2016			2017			2018			2019			2020		
		DEVICES	COST	PARTICIPANTS	DEVICES	COST	PARTICIPANTS	DEVICES	COST	PARTICIPANTS	DEVICES	COST	PARTICIPANTS	DEVICES	COST	PARTICIPANTS
CI & Multi-Family Drip Rebate	Commercial	-	\$-	-	221,706	\$79,739	12	353,068	\$176,501	17	97,151	\$42,608	9	55,746	\$27,873	2
Drip Retrofit Kit Voucher Program	Residential	-	\$-	-	52	\$5,564	36	6	\$757	5	437	\$66,895	231	319	\$49,954	166
HECW Direct Install	Residential	161	\$10,465	161	845	\$54,015	831	332	\$21,450	330	173	\$11,245	173	232	\$14,885	228
Large Landscape Controller Voucher Program	Commercial	1	\$3,567	4	19	\$8,969	17	3	\$2,361	2	5	\$32,184	2	7	\$24,652	4
Large Landscape Nozzle Voucher Program	Commercial	3,994	\$20,138	11	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: Cistern	Residential	3	\$950	3	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: HECW	Residential	985	\$102,105	986	326	\$45,000	326	225	\$33,685	225	150	\$22,060	148	261	\$39,150	261
Regional Rebates: HET	Residential	233	\$19,153	133	35	\$1,400	19	37	\$1,480	18	27	\$1,475	19	579	\$23,160	9
Regional Rebates: HET	Commercial	2	\$196	1	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: Ice-Making Machine	Commercial	-	\$-	-	-	\$-	-	1	\$1,000	1	-	\$-	-	-	\$-	-
Regional Rebates: NOZZLES	Residential	392	\$1,110	10	291	\$580	6	235	\$470	5	144	\$288	3	95	\$190	3
Regional Rebates: NOZZLES	Commercial	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: RAIN BARREL	Residential	205	\$15,413	82	19	\$665	11	6	\$210	4	6	\$210	4	8	\$280	5
Regional Rebates: Soil Moisture Sensor System	Residential	-	\$-	-	-	\$-	-	1	\$145	1	-	\$-	-	-	\$-	-
Regional Rebates: Soil Moisture Sensor System	Commercial	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: Synthetic Turf	Residential	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: Urinal	Commercial	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Regional Rebates: WBIC	Residential	146	\$25,813	141	164	\$21,921	159	326	\$39,581	315	280	\$30,060	273	361	\$35,636	349
Regional Rebates: WBIC	Commercial	59	\$95,239	20	12	\$27,624	4	36	\$80,987	13	9	\$16,256	8	1	\$1,680	1
Residential Water Survey	Residential	113	\$14,125	113	94	\$11,750	94	473	\$59,125	473	252	\$31,500	252	77	\$9,625	77
Smart Controller Direct Install Program (Residential)	Residential	53	\$6,669	48	2	\$150	2	7	\$675	9	2	\$225	3	9	\$2575	8
Toro Direct Install Program (Commercial)	Commercial	3,417	\$10,319	6	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Toro Nozzle Direct Install Program (Residential)	Residential	1,194	\$7,304	23	-	\$-	-	-	\$-	-	-	\$-	-	-	\$-	-
Turf Buy Back Program	Residential	696,153	\$264,162	463	30,041	\$58,468	19	9,789	\$10,416	11	51,247	\$95,358	46	76,076	\$169,931	58
Turf Buy Back Program	Commercial	1,946,465	\$3,219,438	58	1,023,072	\$1,752,401	53	342,580	\$1,113,855	10	333,457	\$476,040	13	409,230	\$855,944	12

9.3.2 Implementation Achieve Water Use Targets

EMWD estimates water saving have occurred due to ordinances in place, the implementation of tiered rates and active conservation. EMWD will continue to improve water efficiency through a budget based tiered rate, requirements for water efficiency in new construction and an active conservation program. Water use reduction will be focused on outdoor demand reduction by all customer types. Even after surpassing its water efficiency target for 2020, EMWD estimates that there is the potential for additional conservation savings through 2045.

EMWD will continue to reduce potable water demand in two ways: using recycled water to offset potable water demand and reducing demand for water through conservation. In December 2015, EMWD completed a Water Use Efficiency Master Plan which articulates the goals, strategies, and tactics required to deliver long-term solutions for secure and reliable water supplies. The Water Use Efficiency Master Plan helped to identify and update the targets for saving water through active conservation and provided a portfolio of projects and actions to meet the requirements of SB X7-7. EMWD anticipates continuing these programs to meet the requirements of future water use standards.

9.4 Water Use Objectives (Future Requirements)

EMWD's final water use objectives have not yet been determined.



This chapter describes the processes for adoption of this UWMP and WSCP, submittal of required information to DWR and other entities, and EMWD’s implementation of the plan.

EMWD has coordinated with cities and counties within its service area to solicit input and feedback during preparation of this UWMP.

IN THIS SECTION

- Public Hearing Notices
- Adoption by EMWD Board of Directors
- Future Amendments

10.1 Inclusion of All 2020 Data

This UWMP and WSCP have been prepared on a calendar year basis and include data through the end of December 2020.

10.2 Notice of Public Hearing

EMWD encouraged public participation during the development of this UWMP and WSCP and provided opportunities for public review and comment. First, EMWD sent out notices via electronic mail on January 19, 2021 to cities within its retail and wholesale service area and the County of Riverside to inform these stakeholders that the UWMP was being reviewed, modified, and prepared in advance of the 60-day period leading up to the public hearing. Additional notices went out to these agencies announcing when the draft UWMP and WSCP would be available for public review and announcing the time and date of the public hearing. The agencies receiving these notices are shown in Table 10-1 and Table 10-2.

Notices of the public hearing were also published in the local newspaper and placed at the EMWD office. The notice included the time and date of the hearing and stated that the draft UWMP and WSCP were available for public review and comment until June 30, 2021 at the EMWD office or on EMWD's website. A copy of the public notice is provided in **Appendix J**.

EMWD conducted the public hearing on June 30, 2021 at the EMWD office to hear and discuss public comments on the draft UWMP and WSCP prior to EMWD Board adoption. No written comments were received on the draft documents.

10.2.1 Notice to Cities and Counties

Notices were provided to the cities and counties within the service area. Notice was provided more than 60 days before the public hearing, and subsequent notice was provided with information about the date and time of the public hearing.

10.2.1.1 60 Day Notification

EMWD provided notices to the agencies shown in **Table 10-1** and **Table 10-2** that this UWMP and WSCP was being updated and asking for input.

10.2.1.2 Notice of Public Hearing

EMWD provided notices to the agencies shown in **Table 10-1** and **Table 10-2** that a public hearing had been scheduled to review and consider adoption of the UWMP and WSCP.

Table 10-1. DWR 10-1R Notification to Cities and Counties

CITY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING
City of Beaumont	Yes	Yes
City of Canyon Lake	Yes	Yes
City of Menifee	Yes	Yes
City of Moreno Valley	Yes	Yes
City of Murrieta	Yes	Yes
City of Riverside	Yes	Yes
City of Temecula	Yes	Yes
Pechanga Band of Luiseño Indians	Yes	Yes
Soboba Band of Luiseño Indians	Yes	Yes
COUNTY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING
Riverside County	Yes	Yes

Table 10-2. DWR 10-1W Notification to Cities and Counties

CITY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING
City of Perris	Yes	Yes
City of Hemet	Yes	Yes
City of San Jacinto	Yes	Yes
COUNTY	60 DAY NOTICE	NOTICE OF PUBLIC HEARING
Riverside County	Yes	Yes
OTHER	60 DAY NOTICE	NOTICE OF PUBLIC HEARING
Lake Hemet Municipal Water District	Yes	Yes
Nuevo Water Company	Yes	Yes
Rancho California Water District	Yes	Yes
Western Municipal Water District	Yes	Yes
Elsinore Valley Municipal Water District	Yes	Yes
Metropolitan Water District of Southern California	Yes	Yes
Fallbrook Public Utility District	Yes	Yes
Rainbow Municipal Water District	Yes	Yes

10.2.2 Notice to the Public

EMWD provided notice to the public through its web site that the UWMP and WSCP were being updated. Notice of the public hearing was published twice in the local newspaper in accordance with Section 6066 of the Government Code. Copies of these notices are included in **Appendix J**.

10.3 Public Hearing and Adoption

EMWD's Board of Directors held a public hearing to consider adoption of this UWMP and WSCP. The documents were adopted by the Board after the hearing.

10.3.1 Public Hearing

EMWD held a public hearing on June 30, 2021 at 8:00 a.m. The meeting was held at EMWD's headquarters, with an option to join virtually through an online collaboration platform. EMWD staff made a brief presentation of the contents of the UWMP and WSCP, and the public was given the opportunity to provide comments.

10.3.2 Adoption

The UWMP and WSCP were adopted by the EMWD Board of Directors on June 30, 2021 after the public hearing. Copies of the resolutions are provided in **Appendix K**.

10.4 Plan Submittal

EMWD plans to implement the adopted UWMP in accordance with the schedule described in the plan. Any amendments made to this UWMP will require completion of the same series of notification, public hearing, adoption, and submittals as required in submittal of this UWMP.

10.4.1 Submittal of the UWMP and Water Shortage Contingency Plan to DWR

The UWMP and WSCP will be submitted to DWR electronically on or prior to the CWC's deadline of July 1, 2021.

10.4.2 Electronic Data Submittal

The standardized UWMP data tables will be uploaded to the WUEData portal electronically on or prior to the CWC's deadline of July 1, 2021.

10.4.3 Submittal of the UWMP to the California State Library

No later than 30 days after adoption, EMWD will submit a copy of the UWMP and WSCP to the California State Library.

10.4.4 Submittal of the UWMP to Cities and Counties

The UWMP will be made available to Riverside County and the cities within EMWD's service area. Email notifications were sent to these entities to make them aware that the plan was available.

10.5 Public Availability

A hard copy of the UWMP and WSCP will be made publicly available at the EMWD office, and an electronic copy of the UWMP and WSCP will be available for public viewing on the EMWD website.

10.6 Notification to Public Utilities Commission

EMWD is not regulated by the California Public Utilities Commission (CPUC) and is therefore not required to notify the CPUC that this report has been updated.

10.7 Amending an Adopted UWMP or Water Shortage Contingency Plan

If EMWD elects to make changes to the UWMP or WSCP, the required processes will be followed for notification and adoption.

10.7.1 Amending a UWMP

Amending this UWMP will require the same steps for notification, public hearing, adoption, and submittal as the original 2020 plan.

10.7.2 Amending a Water Shortage Contingency Plan

Amending the WSCP included in this UWMP will require the same steps for notification, public hearing, adoption, and submittal as the original 2020 plan.

