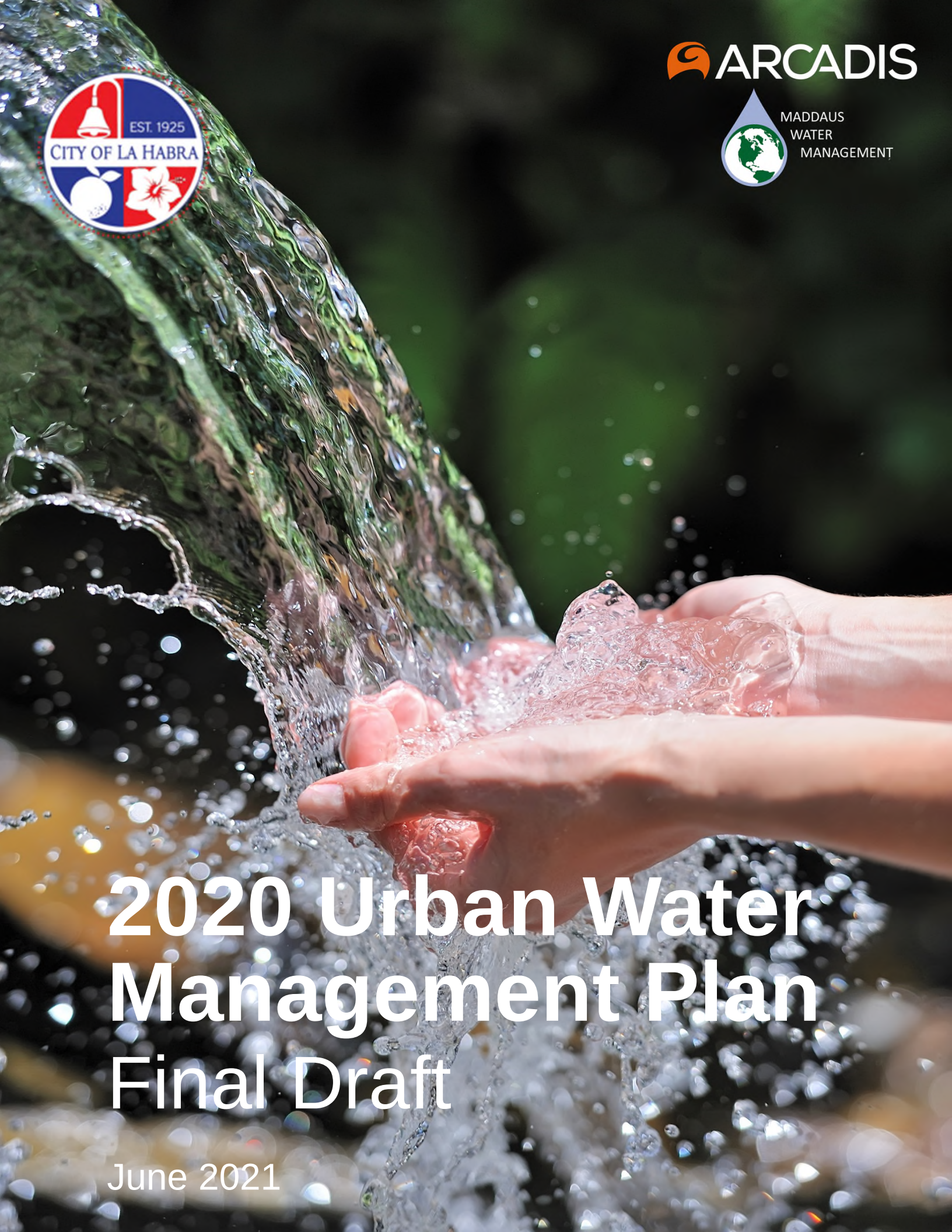

2020 Urban Water Management Plan

Final Draft

June 2021

2020 URBAN WATER MANAGEMENT PLAN

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ACRONYMS AND ABBREVIATIONS

%	Percent
20x2020	20% water use reduction in GPCD by year 2020
ADU	Accessory Dwelling Unit
Act	Urban Water Management Planning Act of 1983
AF	Acre-Feet
AFY	Acre-Feet per Year
AWWA	American Water Works Association
BEA	Basin Equity Assessment
Biops	Biological Opinions
BMP	Best Management Practice
CDR	Center for Demographic Research at California State University Fullerton
CDWC	California Domestic Water Company
CEE	Consortium for Energy Efficiency
cfs	Cubic Feet per Second
CII	Commercial/Industrial/Institutional
City	City of La Habra
CRA	Colorado River Aqueduct
CUP	Conjunctive Use Program
CVP	Central Valley Project
CY	Calendar Year
DAC	Disadvantaged Communities
DCP	Delta Conveyance Project
DDW	California State Division of Drinking Water
Delta	Sacramento-San Joaquin River Delta
DMM	Demand Management Measure
DOF	Department of Finance
DVL	Diamond Valley Lake
DRA	Drought Risk Assessment
DWR	Department of Water Resources
ESA	Endangered Species Act
FY	Fiscal Year
GAP	Green Acres Project
GHG	Greenhouse Gas
GPCD	Gallons per Capita per Day
gpf	Gallons per Flush
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
GWRS	Groundwater Replenishment System

H_2O_2	Hydrogen Peroxide
HECW	High Efficiency Clothes Washer
HEN	High Efficiency Nozzle
HET	High Efficiency Toilet
IRP	Integrated Water Resources Plan
JADU	Junior Accessory Dwelling Unit
kWh	Kilowatt-Hour
LRP	Local Resources Program
MAF	Million Acre-Feet
MCL	Maximum Contaminant Level
MET	Metropolitan Water District of Southern California
MF	Microfiltration
MG	Million Gallon
MGD	Million Gallons per Day
MHI	Median Household Income
MNWD	Moulton Niguel Water District
MTBE	Methyl Tertiary Butyl Ether
MWDOC	Municipal Water District of Orange County
MWELO	Model Water Use Efficiency Landscape Ordinance
NDMA	N-nitrosodimethylamine
NRW	Non-Revenue Water
OC	Orange County
OC Basin	Orange County Groundwater Basin
OC San	Orange County Sanitation District
OCWD	Orange County Water District
ORP	On-Site Retrofit Program
PFAS	Per- and polyfluoroalkyl substances
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfanate
Poseidon	Poseidon Resources LLC
PPCP	Pharmaceuticals and Personal Care Product
PPT	Parts Per Trillion
PSA	Public Service Announcement
QWEL	Qualified Water Efficient Landscaper
RA	Replenishment Assessment
RHNA	Regional Housing Needs Assessment
RO	Reverse Osmosis
RUWMP	Regional Urban Water Management Plan
SARCCUP	Santa Ana River Conservation and Conjunctive Use Project
SBx7-7	Senate Bill 7 as part of the Seventh Extraordinary Session

SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCWD	South Coast Water District
SDP	Seawater Desalination Program
sf	Square Feet
SMWD	Santa Margarita Water District
SOC	South Orange County
STEAM	Science Technology Engineering Arts and Mathematics
SWP	State Water Project
SWRCB	California State Water Resources Control Board
TAF	Thousand Acre-Feet
TDS	Total Dissolved Solids
USBR	United States Bureau of Reclamation
UV	Ultraviolet
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act of 1983
VOC	Volatile Organic Compound
Water Code	California Water Code
WBIC	Weather-Based Irrigation Controller
WF-21	Water Factory 21
WSAP	Water Supply Allocation Plan
WSCP	Water Shortage Contingency Plan
WSIP	Water Savings Incentive Program
WUO	Water Use Objective

EXECUTIVE SUMMARY

INTRODUCTION AND UWMP OVERVIEW

The City of La Habra (City) prepared this 2020 Urban Water Management Plan (UWMP) to satisfy the UWMP Act of 1983 (UWMP Act or Act) and subsequent California Water Code (Water Code) requirements. The City is a retail water supplier that provides water to its residents and other customers using the imported potable water supply obtained from its regional wholesaler, Municipal Water District of Orange County (MWDOC), imported groundwater supply from Main San Gabriel Basin, which is provided by California Domestic Water Company (CDWC), a mutual water company and the local groundwater from the La Habra Basin.

UWMPs are comprehensive documents that present an evaluation of a water supplier's reliability over a long-term horizon, typically 20-25 years. This 2020 UWMP provides an assessment of the present and future water supply sources and demands within the City's service area. It updates various 2015 UWMP items related to: water resource needs, water use efficiency, assessment of water reliability, and strategies to mitigate water shortage conditions. The 2020 UWMP adds a 2020 Water Shortage Contingency Plan (WSCP) to help the City effectively respond to potential water shortages. This 2020 UWMP contains all elements needed to comply with new requirements of the Act as amended since 2015.

UWMP PREPARATION

The City coordinated the preparation of this 2020 UWMP with other key entities, including MWDOC (regional wholesaler of imported water for Orange County), Metropolitan Water District of Southern California (MET) (regional wholesaler for Southern California and the direct supplier of imported water to MWDOC), and CDWC (Main San Gabriel Groundwater Basin manager). The City also coordinated with other entities, which provided valuable data for the analyses prepared in this UWMP, such as the Center for Demographic Research (CDR) at California State University Fullerton for population projections, through MWDOC's assistance.

SYSTEM DESCRIPTION

The City was incorporated under general law on January 20, 1925, with a population of 3,000 and is currently governed five-member City Council.

The City's water service area covers 7.3 square miles, in the most northern part of Orange County and borders the cities of Whittier, La Mirada, and La Habra Heights within Los Angeles County on the north and west, city of Brea on the east, and city of Fullerton to the south and southeast. The City's Water Utility operates three storage reservoirs totaling 16.8 million gallons (MG) in capacity, three groundwater wells, five booster pumping stations, and 49 pressure regulating stations and manages 165-mile water mains system with 14,522 service connections.

Lying in the South Coast Air Basin (SCAB), its climate is characterized by Southern California's "Mediterranean" climate with mild winters, warm summers, and moderate rainfall. In terms of land use, the City is primarily a residential community, with pockets of commercial, industrial, institutional/governmental land uses and open space and parks. The various ongoing and future planned developments in the City are mainly additions of residential units and mixed-use projects. Moving forward, the City will continue

planning for its Regional Housing Needs Assessment (RHNA) allocation and there may be an enhanced focus on accessory dwelling units (ADUS) as the means of affordable housing. The current population of 63,118 is projected to increase by 2.6% over the next 25 years.

WATER USE CHARACTERIZATION

Water use within the City's service area has been relatively stable in the past decade with an annual average of 8,900 AF for potable use. In FY2019/20, the City's water use was 8,591 AF of potable water (groundwater and imported). There is currently no recycled water use within the City's service area. In FY2019-20, the City's water use profile was comprised of 71.9% residential use (single and multi-family), 15.5% commercial, industrial, and institutional (CII) use, 5.4% large landscape/irrigation, with non-revenue water (NRW) comprising about 7.3%.

WATER USE PROJECTIONS: 5-YEAR AND 25-YEAR

The City's service area is almost completely built-out and is projected to add minimum land use and small population increase. Water demand is likely to increase 3.0% over the next 5 years. In the longer term, water demand is projected to increase 0.16% from 2025 through 2045. The projected potable water use for 2045 is 8,865 AF.

This demand projection considers such factors as current and future demographics, future water use efficiency measures, and long-term weather variability.

CONSERVATION TARGET COMPLIANCE

Retail water suppliers are required to comply with the requirements of Water Conservation Act of 2009, also known as SBx7-7 (Senate Bill 7 as part of the Seventh Extraordinary Session), which was signed into law in 2010 and requires the State of California to reduce urban water use by 20% by 2020 from a 2013 baseline.

The retail water suppliers can comply individually or as a region in collaboration with other retail water suppliers, in order to be eligible for water related state grants and loans. The City is part of the Orange County 20x2020 Regional Alliance created in collaboration with MWDOC, its retail member agencies as well as the Cities of Anaheim, Fullerton and Santa Ana. The Alliance was created to assist OC retail agencies in complying with SBx7-7.

The City met its 2020 water use target and is in compliance with SBx7-7; the actual 2020 consumption was 122 gallons per capita per day (GPCD), which is below its 2020 target of 142 GPCD.

WATER SUPPLY CHARACTERIZATION

The City meets its demands with a combination of imported water and local groundwater. The City works with two primary agencies, CDWCand MWDOC, to ensure a safe and reliable water supply that will continue to serve the community in periods of drought and shortage. The groundwater source is the La Habra Groundwater Basin. The sources of imported water include imported groundwater from the Main San Gabriel Groundwater Basin provided by CDWC and water from the Colorado River and the State Water Project (SWP) provided by MET and delivered through MWDOC.

In FY 2019-20, the City relied on 68% imported groundwater from CDWC, 31% local groundwater, and 1% imported water from MET.

It is projected that by 2045, the water supply portfolio will change to approximately 71% imported water from CDWC, 27% groundwater, and 1% imported MET water from MWDOC. Note that these representations of supply match the projected demand. The City can purchase more MET water through MWDOC, should the need arise.

The City does not own or operate wastewater treatment facilities but owns and operates the wastewater collection system in its service area that sends all wastewater to Orange County Sanitation District (OC San) for treatment and disposal.

WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

Every urban water supplier is required to assess the reliability of their water service to its customers under a normal year, a single dry year, and a drought period lasting five consecutive years. The water service reliability assessment compares projected supply to projected demand for the three hydrological conditions between 2025 and 2045. Factors affecting reliability, such as climate change and regulatory impacts, are accounted for as part of the assessment.

The City depends on a combination of local and imported supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. MET's and MWDOC's 2020 UWMPs conclude that they can meet full-service demands of their member agencies through 2045 during normal years, single-dry years, and multiple-dry years. Consequently, the City is projected to meet full-service demands through 2045 for the same scenarios.

The Drought Risk Assessment (DRA) evaluates the City's near-term ability to supply water assuming the City is experiencing a drought over the next five years. Even under the assumption of a drought over the next five years, MET's 2020 UWMP concludes a surplus of water supplies would be available to all of its Member Agencies, including MWDOC and in effect, the City, should the need for additional supplies arise to close any local supply gap. Additionally, the City partakes in various efforts to reduce its reliance on imported water supplies by increasing the use of local supplies.

WATER SHORTAGE CONTINGENCY PLANNING

Water shortage contingency planning (WSCP) is a strategic planning process that the City engages in to prepare for and respond to water shortages. A water shortage, when water supply available is insufficient to meet the normally expected customer water use at a given point in time, may occur due to a number of reasons, such as water supply quality changes, drought, and catastrophic events (e.g., earthquake). The City's WSCP provides real-time water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation will help maintain reliable supplies and reduce the impacts of supply interruptions.

The WSCP serves as the operating manual that the City will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The WSCP contains the processes and procedures that will be deployed when shortage conditions arise so that the City's governing body, its staff, and its retail agencies can easily identify and efficiently implement pre-determined steps to mitigate a water shortage to the level appropriate to the degree of water shortfall anticipated.

DEMAND MANAGEMENT MEASURES

The City, along with other retail water agencies in Orange County, recognizes the need to use existing water supplies efficiently. This ethic of efficient use of water has evolved as a result of the development and implementation of water use efficiency programs that make good economic sense and reflect responsible stewardship of the region's water resources. The City participates in regional water savings programs and works closely with MET and MWDOC to promote regional efficiency.

PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

The Water Code requires the UWMP to be adopted by the Supplier's governing body. Before the adoption of the UWMP, the City notified the public and the cities and counties within its service area per the Water Code and held a public hearing to receive input from the public on the UWMP. Post adoption, the City submitted the UWMP to DWR and other key agencies and made the document available for public review no later than 30 days after filing with DWR.

1 INTRODUCTION AND UWMP OVERVIEW

The City of La Habra (City) prepared this 2020 Urban Water Management Plan (UWMP or Plan) to submit to the California Department of Water Resources (DWR) to satisfy the UWMP Act of 1983 (Act or UWMP Act) and subsequent California Water Code (Water Code) requirements. The City is a retail water supplier that provides water to its residents and other customers using the imported potable water supply obtained from its regional wholesaler, Municipal Water District of Orange County (MWDOC), imported groundwater supply from Main San Gabriel Basin, which is provided by California Domestic Water Company (CDWC), a mutual water company and the local groundwater from the La Habra Basin. The City, as one of MWDOC's 28 member agencies, prepared this 2020 UWMP in collaboration with MWDOC, Metropolitan Water District of Southern California (MET) and other key agencies.

UWMPs are comprehensive documents that present an evaluation of a water supplier's reliability over a long-term (20-25 year) horizon. In response to the changing climatic conditions and regulatory updates since the 2015 UWMP, the City has been proactively managing its water supply and demand. The water loss audit program, water conservation measures and efforts for increased self-reliance in order to reduce dependency on imported water from the Sacramento-San Joaquin Delta (Delta) are some of the water management efforts that the City is a part of to maintain the reliability of water supply for its service area.

This 2020 UWMP provides an assessment of the present and future water supply sources and demands within the City's service area. It presents an update to the 2015 UWMP on City's water resource needs, water use efficiency programs, water reliability assessment and strategies to mitigate water shortage conditions. It presents a new 2020 Water Shortage Contingency Plan (WSCP) designed to prepare for and respond to water shortages. This 2020 UWMP contains all elements to meet compliance of the new requirements of the Act as amended since 2015.

1.1 Overview of Urban Water Management Plan Requirements

The UWMP Act enacted by California legislature requires every urban water supplier (Supplier) providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet (AF) of water annually to prepare, adopt, and file an UWMP with the DWR every five years in the years ending in zero and five.

For this 2020 UWMP cycle, DWR placed emphasis on achieving improvements for long term reliability and resilience to drought and climate change in California. Legislation related to water supply planning in California has evolved to address these issues, namely Making Conservation a Way of Life [Assembly Bill (AB) 1668 and Senate Bill (SB) 606] and Water Loss Performance Standard SB555. New UWMP requirements in 2020 are a direct result of these new water regulations. Two complementary components were added to the 2020 UWMP. First is the WSCP to assess the Supplier's near term 5-year drought risk assessment (DRA) and provide a structured guide for the Supplier to deal with water shortages. Second is the Annual Water Supply Demand Assessment (WSDA) to assess the current year plus one dry year i.e., short-term demand/supply outlook. Analyses over near- and long-term horizons together will provide a more complete picture of Supplier's reliability and will serve to inform appropriate actions it needs to take to build up capacity over the long term.

The various key new additions in the 2020 UWMP included as a result of the most recent water regulations are:

- **Water Shortage Contingency Plan (WSCP) –** WSCP helps a Supplier to better prepare for drought conditions and provides the steps and water use efficiency measures to be taken in times of water shortage conditions. WSCP now has more prescriptive elements, including an analysis of water supply reliability; the water use efficiency measures for each of the six standard water shortage levels, that correspond to water shortage percentages ranging from 0-10% to greater than 50%; an estimate of potential to close supply gap for each measure; protocols and procedures to communicate identified actions for any current or predicted water shortage conditions; procedures for an annual water supply and demand assessment; monitoring and reporting requirements to determine customer compliance; reevaluation and improvement procedures for evaluating the WSCP.
- **Drought Risk Assessment –** The Suppliers are now required to compare their total water use and supply projections and conduct a reliability assessment of all their sources for a consecutive five-year drought period beginning 2021.
- **Five Consecutive Dry-Year Water Reliability Assessment** - The three-year multiple dry year reliability assessment in previous UWMPs has now been extended from three to five consecutive dry years to include a more comprehensive assessment of the reliability of the water sources to improve preparedness of Suppliers for extended drought conditions.
- **Seismic Risk –** The UWMP now includes a seismic risk assessment of the water supply infrastructure and a plan to mitigate any seismic risks on the water supply assets.
- **Groundwater Supplies Coordination –** The UWMP should be in accordance with the Sustainable Groundwater Management Act of 2014 and consistent with the Groundwater Sustainability Plans, wherever applicable.
- **Lay Description** – To provide a better understanding of the UWMP to the general public, a lay description of the UWMP is included, especially summarizing the Supplier's detailed water service reliability assessment and the planned management steps and actions to mitigate any possible shortage scenarios.

1.2 UWMP Organization

This UWMP is organized into 10 main sections aligned with the DWR Guidebook recommendations. The subsections are customized to tell the City's story of water supply reliability and ways to overcome any water shortages over a planning horizon of the next 25 years.

Section 1 Introduction and UWMP Overview gives an overview of the UWMP fundamentals and briefly describes the new additional requirements passed by the Legislature for 2020 UWMP.

Section 2 UWMP Preparation identifies this UWMP as an individual planning effort of the City, lists the type of year and units of measure used and introduces the coordination and outreach activities conducted by the City to develop this UWMP.

Section 3 System Description gives a background on the City's water system and its climate characteristics, population projection, demographics, socioeconomics, and predominant current and projected land uses of its service area.

Section 4 Water Use Characterization provides historical, current, and projected water use by customer category for the next 25 years within the City's service area and the projection methodology used by MWDOC to develop the 25-year projections**.**

Section 5 Conservation Target Compliance reports the SB X7-7 water use conservation target compliance of the City (individually and as a member of the OC 20x2020 Regional Alliance).

Section 6 Water Supply Characterization describes the current water supply portfolio of the City as well as the planned and potential water supply projects and water exchange and transfer opportunities.

Section 7 Water Service Reliability and Drought Risk Assessment assesses the reliability of the City's water supply service to its customers for a normal year, single dry year, and five consecutive dry years scenarios. This section also includes a DRA of all the supply sources for a consecutive five-year drought period beginning 2021.

Section 8 Water Shortage Contingency Planning is a brief summary of the standalone WSCP document (Appendix H) which provides a structured guide for the City to deal with water shortages, incorporating prescriptive information and standardized action levels, lists the appropriate actions and water use efficiency measures to be taken to ensure water supply reliability in times of water shortage conditions, along with implementation actions in the event of a catastrophic supply interruption.

Section 9 Demand Management Measures provides a comprehensive description of the water conservation programs that the City has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets.

Section 10 Plan Adoption, Submittal, and Implementation provides a record of the process the City followed to adopt and implement its UWMP.

2 UWMP PREPARATION

The City's 2020 UWMP is an individual UWMP for the City to meet the Water Code compliance as a retail water supplier. While the City opted to prepare its own UWMP and meet Water Code compliance individually, the development of this UWMP involved close coordination with its whole supplier, MWDOC along with other key entities within the region.

2.1 Individual Planning and Compliance

The City opted to prepare its own UWMP (Table 2-1) and comply with the Water Code individually, while closely coordinating with MWDOC and various key entities as discussed in Section 2.2 to ensure regional integration. The UWMP Checklist was completed to confirm the compliance of this UWMP with the Water Code (Appendix A).

One consistency with MWDOC and the majority of its other retail member agencies is that the City selected to report demands and supplies using fiscal year (FY) basis (Table 2-2).

Table 2-1: Plan Identification

DWR Submittal Table 2-2: Plan Identification			
Select Only One	**Type of Plan**		**Name of RUWMP or Regional Alliance**
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☑	Water Supplier is also a member of a Regional Alliance	Orange County 20x2020 Regional Alliance
☐	**Regional Urban Water Management Plan (RUWMP)**		
NOTES:			

Table 2-2: Supplier Identification

DWR Submittal Table 2-3: Supplier Identification	
Type of Supplier	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year	
☐	UWMP Tables are in calendar years
☑	UWMP Tables are in fiscal years
If using fiscal years provide month and date that the fiscal year begins	
7/1	
Units of measure used in UWMP	
Unit	AF
NOTES: The energy intensity data is reported in calendar year consistent with the Greenhouse Gas Protocol.	

2.2 Coordination and Outreach

2.2.1 Integration with Other Planning Efforts

The City, as a retail water supplier, coordinated this UWMP preparation effort with other key entities, including MWDOC (regional wholesale supplier), MET (regional wholesaler for Southern California and the direct supplier of imported water to MWDOC), and CDWC (supplier of ground water from the Main San Gabriel Basin). The City also developed this Plan in conjunction with other MWDOC-led efforts such as population projection from the Center for Demographic Research at California State University Fullerton (CDR).

Some of the key planning and reporting documents that were used to develop this UWMP are:

- **MWDOC's 2020 UWMP** provides the basis for the projections of the imported supply availability over the next 25 years for the City's service area.
- **MWDOC's 2020 WSCP** provides a water supply availability assessment and structured steps designed to respond to actual conditions that will help maintain reliable supplies and reduce the impacts of supply interruptions.

- **2021 OC Water Demand Forecast for MWDOC and OCWD Technical Memorandum (Demand Forecast TM)** provides the basis for water demand projections for MWDOC's member agencies as well as Anaheim, Fullerton, and Santa Ana.
- **MET's 2020 Draft Integrated Water Resources Plan (IRP)** is a long-term planning document to ensure water supply availability in Southern California and provides a basis for water supply reliability in Orange County.
- **MET's 2020 UWMP** was developed as a part of the 2020 IRP planning process and was used by MWDOC as another basis for the projections of supply capability of the imported water received from MET.
- **MET's 2020 WSCP** provides a water supply assessment and guide for MET's intended actions during water shortage conditions.
- **OCWD's 2017 Basin 8-1 Alternative** is an alternative to the Groundwater Sustainability Plan (GSP) for the Orange County Groundwater Basin and provides significant information related to sustainable management of the basin in the past and hydrogeology of the basin, including groundwater quality and basin characteristics.
- **Hazard Mitigation Plan** provides the basis for the seismic risk analysis of the water system facilities.
- **Orange County Local Agency Formation Commission's 2020 Municipal Service Review for MWDOC Report** provides comprehensive review of the municipal services provided by MWDOC.
- **Water Master Plan** of the City provide information on water infrastructure planning projects and plans to address any required water system improvements.
- **Groundwater Management Plans for La Habra Basin and Main San Gabriel Basin** provide the groundwater sustainability goals for La Habra and Main San Gabriel basins and the programs, actions, strategies and activities that support those goals.

Statewide Water Planning

In addition to regional coordination with various agencies described above, the City as a MWDOC member agency is currently a part of MET's statewide planning effort to reduce reliance on the water imported from the Delta.

It is the policy of the State of California to reduce reliance on the Delta in meeting California's future water supply needs through a statewide strategy of investing in improved regional supplies, conservation, and water use efficiency. This policy is codified through the Delta Stewardship Council's Delta Plan Policy WR P1 and is measured through Supplier reporting in each Urban Water Management Planning cycle. WR P1 is relevant to water suppliers that plan to participate in multi-year water transfers, conveyance facilities, or new diversions in the Delta.

Through significant local and regional investment in water use efficiency, water recycling, advanced water technologies, local and regional water supply projects, and improved regional coordination of local and regional water supply efforts, the City has demonstrated a reduction in Delta reliance and a subsequent

improvement in regional self-reliance. For a detailed description and documentation of the City's consistency with Delta Plan Policy WR P1 see Section 7.4 and Appendix C.

2.2.2 Wholesale and Retail Coordination

The City developed its UWMP in conjunction with MWDOC's 2020 UWMP. The City provided its historical water use and initial water use projections data to MWDOC and CDWC (Table 2-3). MWDOC facilitated in refining the projections of the City's water demand and the imported supply from MWDOC over the next 25 years.

The City also has been taking part in many regional programs administered by MWDOC to assist retail agencies meet various State compliance, such as the OC Regional Alliance for SB x7-7 compliance, regional water loss program for SB555 compliance, and regional water use efficiency programs. Sections 5 and 9 provide detailed information on these programs.

Table 2-3 Retail: Water Supplier Information Exchange

DWR Submittal Table 2-4 Retail: Water Supplier Information Exchange
The retail Supplier has informed the following wholesale supplier(s) of projected water use in accordance with Water Code Section 10631.
Wholesale Water Supplier Name
California Domestic Water Company
Municipal Water District of Orange County
NOTES:

2.2.3 Public Participation

For further coordination with other key agencies and to encourage public participation in the review and update of this Plan, the City held a public hearing and notified key entities and the public per the Water Code requirements. Sections 10.2 and 10.3 describe these efforts in detail.

3 SYSTEM DESCRIPTION

The City was incorporated under general law on January 20, 1925, with a population of 3,000 and is currently governed five-member City Council.

The City's water service area covers 7.3 square miles, in the most northern part of Orange County and borders the cities of Whittier, La Mirada, and La Habra Heights within Los Angeles County on the north and west, city of Brea on the east, and city of Fullerton to the south and southeast. The City's Water Utility operates three storage reservoirs totaling 16.8 million gallons (MG) in capacity, three groundwater wells, five booster pumping stations, and 49 pressure regulating stations and manages 165-mile water mains system with 14,522 service connections.

Lying in the South Coast Air Basin (SCAB), its climate is characterized by Southern California's "Mediterranean" climate with mild winters, warm summers, and moderate rainfall. In terms of land use, the City is primarily a residential community, with pockets of commercial, industrial, institutional/governmental land uses and open space and parks. The various ongoing and future planned developments in the City are mainly additions of residential units and mixed-use projects. Moving forward, the City will continue planning for its Regional Housing Needs Assessment (RHNA) allocation and there may be an enhanced focus on accessory dwelling units (ADUS) as the means of affordable housing. The current population of 63,118 is projected to increase by 2.6% over the next 25 years.

3.1 Agency Overview

This section provides information on the formation and history of the City, its organizational structure, and relationship to MWDOC.

3.1.1 Formation and Purpose

The City was incorporated under general law on January 20, 1925, with a population of 3,000.

The history of the water service area provides a basis for understanding present conditions, limitations on the water supply sources, and a background of present policies and practices. Data and conditions that exist throughout much of the Lower Santa Ana Basin are not applicable to the City, which overlays a separate small non–adjudicated water basin. It is for this reason that a brief history of water development within the City's service area is included in this Plan.

Within the current City, Coyote Creek and the La Mirada Channel were the only surface water sources that were available to the early settlers. The fact that the surface water was not a reliable supply and only provided small quantities of water were probably the primary reasons that no record has been found of any permanent Native American settlement within the area that is now the City. Since these small streams were not large enough or dependable enough to provide irrigation water through dry periods or on a year-round basis, the early settlers attempted to save run–off water. However, due to limited rainfall this effort resulted in water used primarily for domestic and livestock use, rather than agriculture irrigation.

The first water wells within the City were hand dug, shallow, generally near the creek beds, and produced insufficient quantities of water to provide for agricultural irrigation. One settler constructed a

100,000-gallon reservoir, supplied by several small wells. Additionally, attempts to transport water from a spring in a neighboring area to supply water to the reservoir were unsuccessful. The largest early source of water supplied was a pit located on the Little Coyote Creek that supplied sufficient water for pumping water through a mile–long four-inch line to the aforementioned reservoir. This system, the first in the City, was sufficient to supply the owner's ranch and provide a small amount of water for sale to a few neighbors. Only a few wells of sufficient production quantity for irrigation purposes were developed within the City's service area.

In 1889, the East Whittier Land and Water Company was formed and financed the purchase of water bearing lands in the Basset area on the west side of the San Gabriel River and the construction of water transportation facilities from the well field to the East Whittier area (the western boundary of the historic La Habra Valley and water basin). Construction was completed in 1891 with a flow of 400 miner's inches (approximately 5,730 acre-feet per year (AFY) or 1.86 billion gallons). In 1898 the well was deepened. The Basset area is within the Upper San Gabriel Water Basin, in what is now the eastern portion of the City of El Monte and the extreme western portion of the City of Industry.

The La Habra Water Company was incorporated in October 1902 for the purpose of constructing facilities for farmers living in the area now within the boundaries of the City. At the same time, the CDWC was incorporated and simultaneously purchased the facilities of the East Whittier Land and Water Company. The La Habra Water Company originally owned 50% of the CDWC stock. Ultimately, the surviving company was CDWC. The facilities to supply the La Habra Water Company were completed, and water flowed to the service area in August 1903. With the California Domestic/La Habra Water Company facilities, the City became the first community in Orange County to import water from sources outside the County, a practice that continues to this day.

In 1913, the La Habra Domestic Water Company was formed, with the basic distribution lines constructed soon thereafter. Meters were installed in 1916. The company was sold by the original founders in 1928 to other investors and then sold to the City in 1933.

3.1.2 City Council

The residents of the City are represented by a five-member City Council. The members of the City Council are elected on an at-large basis to four-year terms. The current City Council members are:

- Rose Espinoza, Mayor
- Jose Medrano, Mayor Pro Tem
- James Gomez, Council Member
- Tim Shaw, Council Member
- Steve Simonian, Council Member

3.1.3 Relationship to MWDOC

The City is one of MWDOC's 28 member agencies purchasing imported water from MWDOC, Orange County's wholesale water supplier and a member agency of MET. The City's location within MWDOC's service area is shown on Figure 3-1.

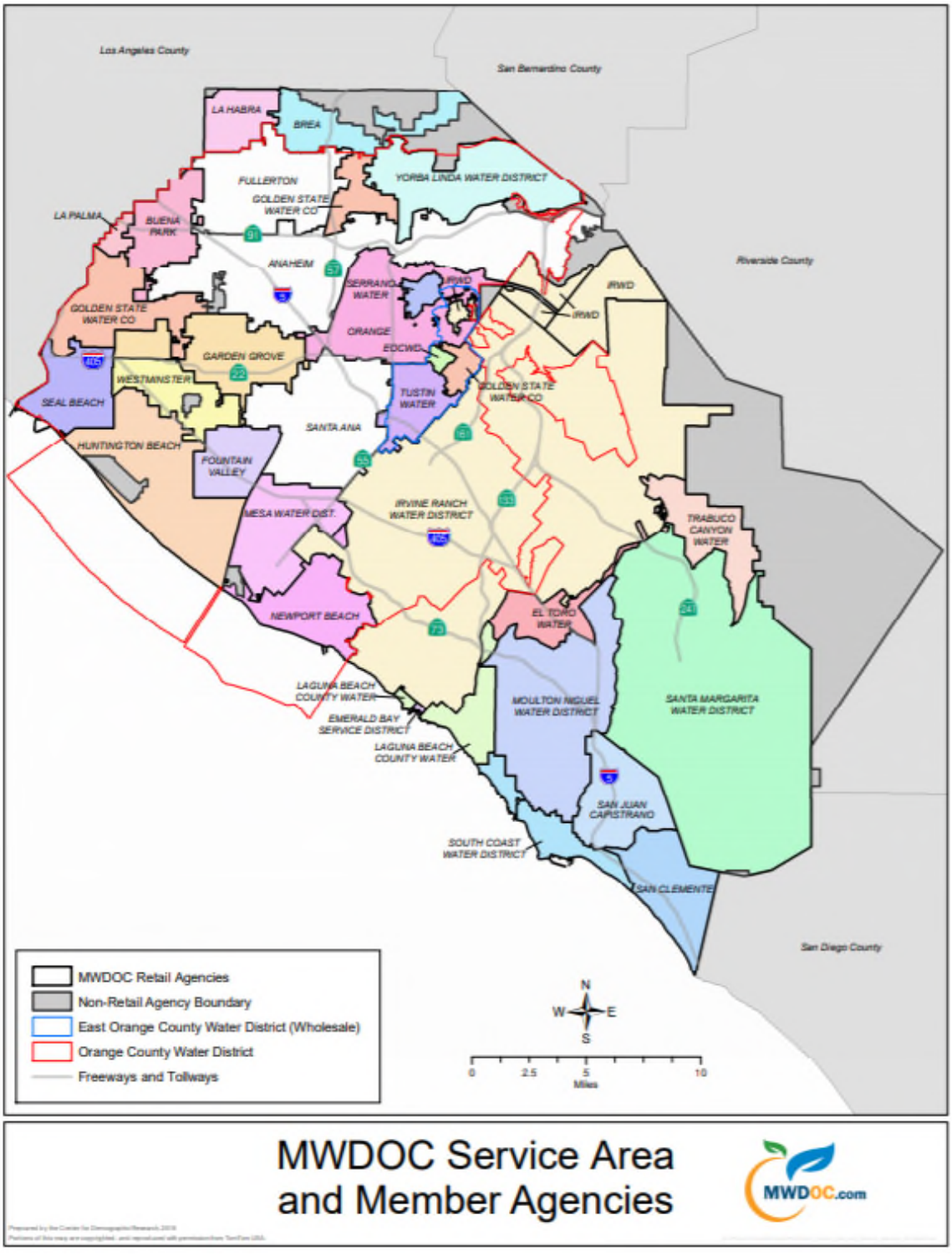

Figure 3-1: Regional Location of City of La Habra and Other MWDOC Member Agencies

3.2 Water Service Area and Facilities

3.2.1 Water Service Area

The City is located in the most northern part of Orange County and borders the cities of Whittier, La Mirada, and La Habra Heights within Los Angeles County on the north and west, city of Brea on the east, and city of Fullerton to the south and southeast. The City manages and operates its domestic water system that serves potable water to a 7.3 square mile area within the City limits. In May 2018, the Los Angeles and Orange County service islands (unincorporated area) were annexed into the City's service area. A map of the City's water service area is shown as Figure 3-2.

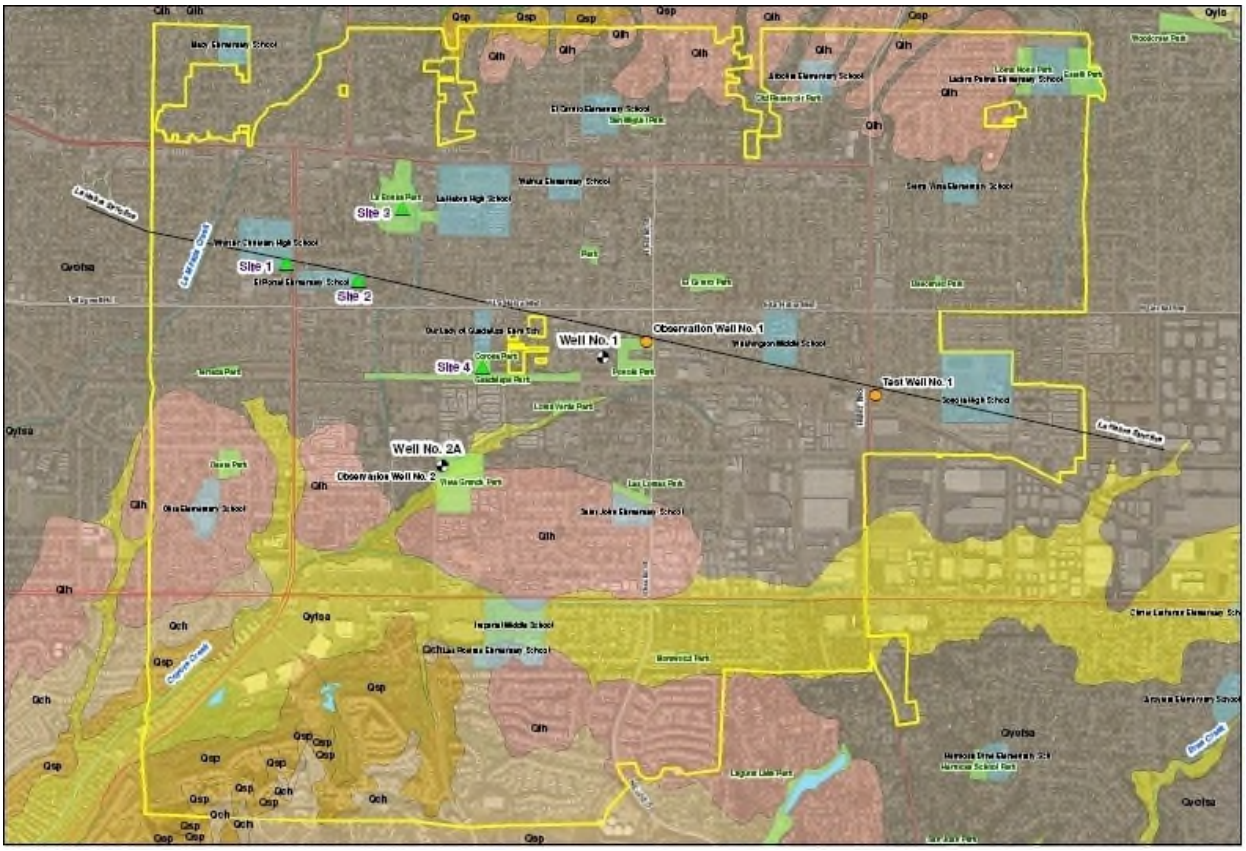

Figure 3-2: City of La Habra Water Service Area

3.2.2 Water Facilities

The City has three storage reservoirs totaling 16.8 MG in capacity within City limits as well as three groundwater wells, five booster pumping stations, and 49 pressure regulating stations. The pressure regulating stations divide the distribution system into 19 different pressure zones. The City serves water through approximately 165 miles of pipelines and also has two interconnections with MET, sixteen with CDWC, and a total of five emergency interconnections with Suburban Water Systems, City of Fullerton, and City of Brea.

The system connections and water volume supplied are summarized in Table 3-1.

Table 3-1: Retail Only: Public Water Systems

DWR Submittal Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020
CA3010018	City of La Habra	14,522	8,591
	TOTAL	14,522	8,591
NOTES:			

3.3 Climate

The City is located within the SCAB that encompasses all of OC, and the urban areas of Los Angeles, San Bernardino, and Riverside counties. The SCAB climate is characterized by Southern California's "Mediterranean" climate: a semi-arid environment with mild winters, warm summers and moderate rainfall.

Local rainfall has limited impacts on reducing water demand in the City, except for landscape irrigation demand. Water that infiltrates into the soil may enter groundwater supplies depending on the local geography. However, due to the large extent of impervious cover in Southern California, rainfall runoff quickly flows to a system of concrete storm drains and channels that lead directly to the ocean.

MET's water supplies come from the State Water Project (SWP) and the Colorado River Aqueduct (CRA), influenced by climate conditions in northern California and the Colorado River Basin, respectively. The years 2000-2018 have been the driest 19-year period in the history and both regions have been receiving record low precipitation which directly impact water supplies to Southern California. Due to the prolonged drought conditions since 2000, storage within the Colorado River system has declined to half of its reservoir capacity and has been fluctuating at that level (DWR, January 2020).

3.4 Population, Demographics, and Socioeconomics

3.4.1 Population

According to CDR, the City's service area has a 2020 population of 63,118, an increase from the 2015 population of 61,913. Overall, the population is projected to increase with a growth of 2.6% over the 25-year period from 2020 to 2045. Table 3-2 shows the population projections in five-year increments out to 2045 within the City's service area.

Table 3-2: Retail: Population - Current and Projected

DWR Submittal Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045
	63,118	63,165	64,434	64,921	65,089	64,738
NOTES: Source - Center for Demographic Research at California State University, Fullerton, 2020						

3.4.2 Demographics and Socioeconomics

As shown in Table 3-3 below, the total number of dwelling units in the City is expected to increase by 4% in the next 25 years from 20,593 in 2020 to 21,427 in 2045. Table 3-3 also shows a breakdown of the total dwelling units by type for the 25-year period from 2020 to 2045.

Table 3-3: City of La Habra Service Area Dwelling Units by Type

City of La Habra Service Area Dwelling Units by Type						
Dwelling Units	2020	2025	2030	2035	2040	2045
Total	**20,593**	**20,909**	**21,102**	**21,287**	**21,364**	**21,427**
Single Family	10,542	10,542	10,542	10,542	10,542	10,542
All Other*	10,051	10,367	10,560	10,745	10,822	10,885
Source: Center for Demographic Research at California State University, Fullerton, 2020 *Includes duplex, triplex, apartment, condo, townhouse, mobile home, etc. Yachts, houseboats, recreational vehicles, vans, etc. are included if is primary place of residence. Does not include group quartered units, cars, railroad box cars, etc.						

In addition to the types and proportions of dwelling units, various socio-economic factors such as age distribution, education levels, general health status, income and poverty levels affect City's water management and planning. Based on the U.S. Census Bureau's QuickFacts, the City has about 39.9% of population of 65 years and over, 12.8% under the age of 18 years and 3.4% under the age of 5 years. 94.9% of the City's population with an age of more than 25 years has a minimum of high school graduate and 49% of this age group has at least a bachelor's degree.

3.4.3 CDR Projection Methodology

The City obtains its services area population and dwelling unit data from MWDOC via CDR. MWDOC contracts with CDR to update the historic population estimates for 2010 to the current year and

provide an annual estimate of population served by each of its retail water suppliers within its service area. CDR uses GIS and data from the 2000 and 2010 U.S. Decennial Censuses, State Department of Finance (DOF) population estimates, and the CDR annual population estimates. These annual estimates incorporate annual revisions to the DOF annual population estimates, often for every year back to the most recent Decennial Census. As a result, all previous estimates were set aside and replaced with the most current set of annual estimates. Annexations and boundary changes for water suppliers are incorporated into these annual estimates.

In the summer of 2020, projections by water supplier for population and dwelling units by type were estimated using the 2018 Orange County Projections dataset. Growth for each of the five-year increments was allocated using GIS and a review of the traffic analysis zones (TAZ) with a 2019 aerial photo. The growth was added to the 2020 estimates by the water supplier.

3.5 Land Uses

3.5.1 Current Land Uses

Land use within the service area of the City is primarily residential with sections of commercial and industrial facilities. Based on the zoning designation collected and aggregated by Southern California Association of Governments (SCAG) around 2018, the current land use within the City's service area can be categorized as follows:

- Single family residential – 48%
- Multi-family residential – 14.1%
- Commercial – 10.8%
- Industrial – 7.1%
- Institutional/Governmental – 10.3%
- Open space and parks – 8.4%
- Other – 1.1% (e.g., Undevelopable or Protected Land, Water, and Vacant)
- No land use designations – 0.2%

In 2018, the City annexed the unincorporated islands in Los Angeles County and Orange County, which increased the service area of the City and added about 400 new service connections to the City's water system.

3.5.2 Projected Land Uses

The City has taken a progressive approach to growth and rezoned several commercial areas to mixed use. The City has four projects currently under construction. These projects include a 7-unit single family residential development, a 58-unit condominium complex, a multi-use complex with a 91-room hotel and 2 restaurants, and 1 industrial building. Other projects, currently under review, include a 37-unit mixed-use condominium complex, a 20,000 square feet (sf) medical building, and a 10,000 sf commercial building. Three projects have been approved but have yet to begin construction. They include a gas station and convenience store, a 30-unit apartment complex, and a 3-unit condominium complex. Two proposed projects, one for a 5-unit apartment complex, and another for a commercial expansion are in the process of plan check. Two conceptual projects include a 49-unit mixed use

condominium projects, and a 70-unit condominium project. The development of these residential units, some on previously commercial properties, is consistent with the City's dominantly residential land use trends. Figure 3-3 shows the City's planned development projects for 2020.

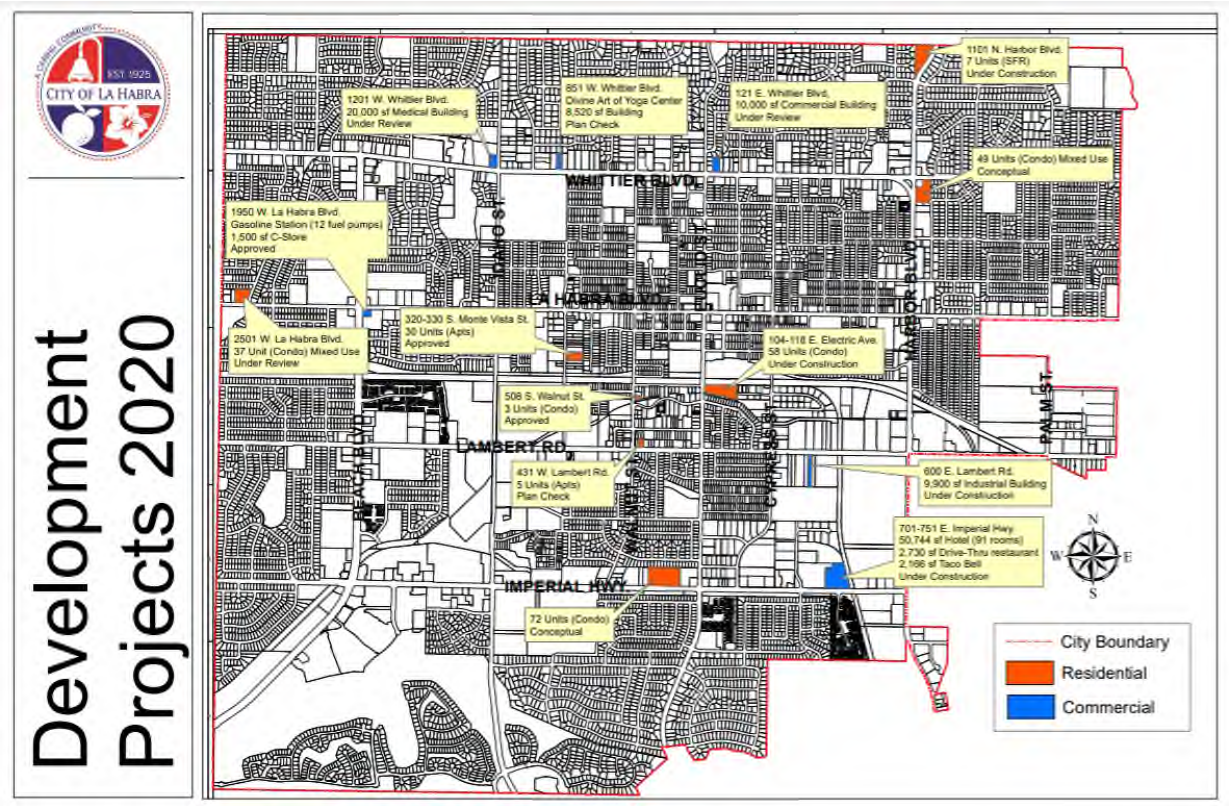

Figure 3-3: City of La Habra Development Projects

In addition to the above developments, the City will continue planning for its RHNA allocation requirements and new developments may potentially include ADUs beyond 2020.

State law requires jurisdictions to provide their share of the RHNA allocation. The SCAG determines the housing growth needs by income for local jurisdictions through RHNA. The City's RHNA allocation for the 2021 - 2029 is 804 units. This includes 192 units for very low-income households, 116 units for low-income households, 130 units for moderate-income households, and 366 units for above moderate-income households.

ADUs are separate small dwellings embedded within residential properties. There has been an increase in the construction of ADUs in California in response to the rise in interest to provide affordable housing supply. The City has issued a total of 30 applications for ADUs since 2018. The Legislature updated the ADU law effective January 1, 2020 to clarify and improve various provisions to promote the development of ADUs. (AB-881, "Accessory dwelling units," and AB-68, "Land use: accessory dwelling units") These include:

- allowing ADUs and Junior Accessory Dwelling Units (JADUs) to be built concurrently with a single-family dwelling. JADUs max size is 500 sf.

- opening areas where ADUs can be created to include all zoning districts that allow single-family and multi-family uses
- maximum size cannot be less than 850 sf for a one-bedroom ADU or 1,000 sf for more than one bedroom (California Department of Housing and Community Development, 2020).

About 92% of the ADUs in California are being built in the single family zoned parcels (University of California Berkeley, 2020). The increase in ADUs implies an increase in number of people per dwelling unit which potentially translates to higher water demand.

4 WATER USE CHARACTERIZATION

4.1 Water Use Overview

Water use within the City's service area has been relatively stable in the past decade with an annual average of 8,900 AF for potable use. In FY2019/20, the City's water use was 8,591 AF of potable water (groundwater and imported). There is currently no recycled water use within the City's service area. In FY2019-20, the City's water use profile was comprised of 71.9% residential use (single and multi-family), 15.5% commercial, industrial, and institutional (CII) use, 5.4% large landscape/irrigation, with non-revenue water (NRW) comprising about 7.3%. As described in Section 3, the City's service area is almost completely built-out and is projected to add minimum land use and small population increase. Water demand is likely to increase 3.0% over the next 5 years. In the longer term, water demand is projected to increase 0.16% from 2025 through 2045. The projected potable water use for 2045 is 8,865 AF. The passive savings are anticipated to continue for the next 25 years and are considered in the water use projections. Permanent water conservation requirements and water conservation strategies are discussed in Section 8 and 9 of this document.

4.2 Past and Current Water Use

Water use within the City's service area has been relatively stable in the past decade with an annual average of 8,900 AF. A stable trend is expected because the city is essentially built-out and the rate of population growth is expected to average about 0.18% per year for the next 25 years. Water conservation efforts also kept per capita water use down.

As a result of Governor Jerry Brown's mandatory water conservation order in 2014, retail water use within the City's service area has been decreased from the average of 9,364AF (FY 2010-11 and FY 2014-15) to the last five-year average of 8,437(FY 2015-16 and FY 2019-20). Between FY 2015-16 and FY 2019-20, water use within the City's service area ranged from 7,889 to 8,999 AFY.

All the water use within the City is for potable use and there is currently no recycled water use within the City's service area. As of FY 2019-20, there are 14,522 current customer active and inactive service connections in the City's water distribution system with all existing connections metered. Table 4-1 summarizes the City's total water use for FY 2019-20. Approximately 71.9% of the City's water demand is residential (single and multi-family combined). Commercial and institutional/governmental use account for 12.9% and 2.6% of the total water production, respectively. The City has a mix of commercial uses (markets, restaurants, etc.), public entities (schools, fire stations and government offices), office complexes, light industrial, warehouses and facilities serving the public. Large landscape (irrigation) accounts for about 5.4%, while NRW constitutes 7.3% of total water production. Within the non-residential sector, commercial uses are the most dominant of the City's total demand.

Table 4-1: Retail: Demands for Potable and Non-Potable Water – Actual

DWR Submittal Table 4-1 Retail: Demands for Potable and Non-Potable Water - Actual			
Use Type	2020 Actual		
	Additional Description	Level of Treatment When Delivered	Volume
Single Family		Drinking Water	4,035
Multi-Family		Drinking Water	2,142
Commercial		Drinking Water	1,104
Institutional/Governmental		Drinking Water	223
Landscape	Represents large landscape (with irrigation meters) served by potable water and not recycled water	Drinking Water	461
Losses		Drinking Water	625
		TOTAL	8,591
NOTES: Volumes in AF.			

4.3 Water Use Projections

A key component of this 2020 UWMP is to provide an insight into the City's future water demand outlook. This section discusses the considerations and methodology used to estimate the 25-year water use projection. Overall, total water demand is projected to increase 3.2% between 2020 and 2045. As a percentage of total demand, single-family residential usage is projected to decrease ~1.9% from 2025 to 2045; multifamily residential usage slightly increases as a percentage of total demand (0.23%). As a percentage of total demand, commercial and institutional/governmental uses slightly increase (roughly 1.6% in aggregate) while landscape applications (~7.2%) and NRW (~8.3%) uses stay relatively consistent during the same timeframe.

4.3.1 Water Use Projection Methodology

In 2021, MWDOC and OCWD, in collaboration with their member agencies, led the effort to update water demand projections originally done as part of the 2021 OC Water Demand Forecast for MWDOC and OCWD. The updated demand projections, prepared by CDM Smith, were for the Orange County region as a whole, and provided retail agency specific demands. The projections span the years of 2025-2050 and are based upon information surveyed from each Orange County water agency (Appendix E).

The forecast methodology began with a retail water agency survey that asked for FY 2017-18, FY 2018-19 and FY 2019-20 water use by major sector, including number of accounts. If a member agency provided recycled water to customers that information was also requested. Given that FY 2017-18 was a slightly above-normal demand year (warmer/drier than average) and FY 2018-19 was a slightly below-normal demand year (cooler/wetter than average), water use from these two years were averaged to represent an average-year base water demand.

For the residential sectors (single-family and multifamily) the base year water demand was divided by households in order to get a total per unit water use (gallons per home per day). In order to split household water use into indoor and outdoor uses, three sources of information were used, along with CDM Smith's expertise. The sources of information included: (1) *the Residential End Uses of Water* (Water Research Foundation, 2016); (2) California's plumbing codes and landscape ordinances; and (3) CA DWR's Model Water Efficient Landscape Ordinance (MWELO) calculator.

Three different periods of residential end uses of water were analyzed as follows:

- **Pre-2010 efficiency levels** – Has an average indoor water use that is considered to be moderately efficient, also does not include the most recent requirements for MWELO.
- **High-efficiency levels** – Includes the most recent plumbing codes that are considered to be highly efficient, and also includes the most recent requirements for MWELO.
- **Current average efficiency levels** – Represents the weighted average between pre-2010 efficiency and high efficiency levels, based on average age of homes for each retail water agency.

For outdoor residential water use, the indoor per capita total was multiplied by each member agency-specific persons per household in order to get an indoor residential household water use (gallons per day per home), and then was subtracted from the base year total household water use for single-family and multifamily for each agency based on actual water use as reported by the agency surveys.

For existing residential homes, the current average indoor and outdoor water use for each member agency were used for the year 2020. It was assumed that indoor water uses would reach the high efficiency level by 2040. Based on current age of homes, replacement/remodeling rates, and water utility rebate programs it is believed this assumption is very achievable. It was also assumed that current outdoor water use would be reduced by 5% by 2050.

For new homes, the indoor high efficiency level was assumed for the years 2025 through 2050. Outdoor uses for new homes were assumed to be 25% and 30% lower than current household water use for single-family and multifamily homes, respectively. This methodology is illustrated in Figure 4-1 below.

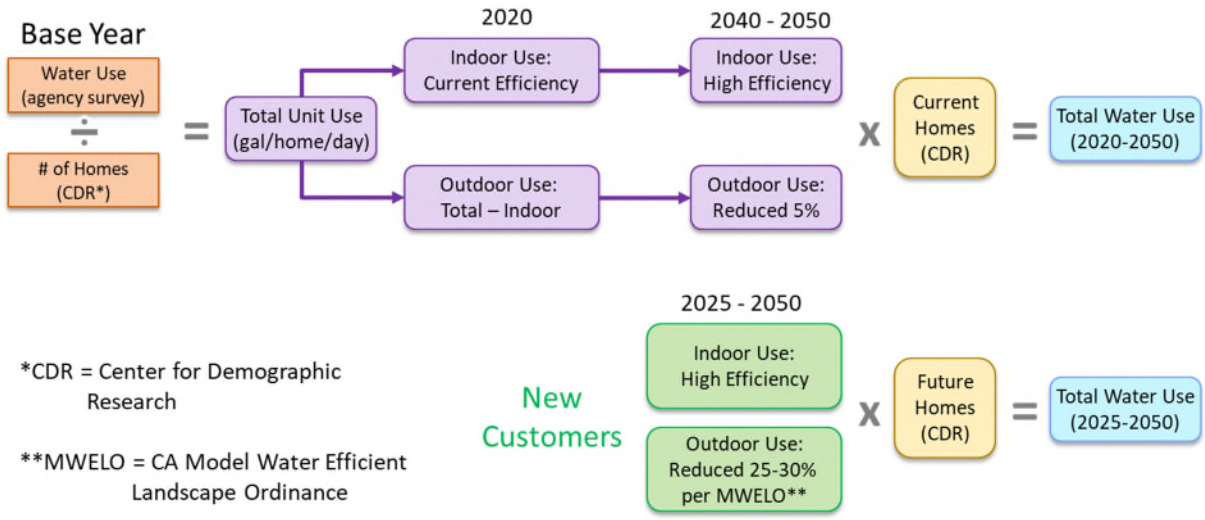

Figure 4-1: Water Use Projection Methodology Diagram

Existing and projected population, single-family and multifamily households for each retail water agency were provided by CDR under contract by MWDOC and OCWD. CDR provides historical and future demographics by census tracts for all of Orange County (Section 3.4). Census tract data is then clipped to retail water agency service boundaries in order to produce historical and projected demographic data by agency.

For the CII water demands, which have been fairly stable from a unit use perspective (gallons/account/day), it was assumed that the unit demand in FY 2019-20 would remain the same from 2020-2025 to represent COVID-19 impacts. Reviewing agency water use data from FY 2017-18 through FY 2019-20 revealed that residential water use increased slightly in FY 2019-20 while CII demands decreased slightly as a result of COVID-19. From 2030 to 2050, the average CII unit use from FY 2017-18 and 2018-19 was used. These unit use factors were then multiplied by an assumed growth of CII accounts under three broad scenarios:

- Low Scenario – assuming no growth in CII accounts
- Mid Scenario – assuming 0.5% annual growth in CII accounts
- High Scenario – assuming 1.5% annual growth in CII accounts

For most retail agencies, the Mid Scenario of CII account growth was used, but for those retail agencies that have had faster historical growth the High Scenario was used. For those retail agencies that have had relatively stable CII water demand, the Low Scenario was used. The mid-scenario was used for La Habra.

For those agencies that supply recycled water for non-potable demands, MWDOC used agency-specified growth assumptions. Most agencies have already maximized their recycled water and thus are not expecting for this category of demand to grow. However, a few agencies in South Orange County do expect moderate growth in recycled water customers.

For large landscape customers served currently by potable water use, MWDOC assumed these demands to be constant through 2050, except for agencies that have growing recycled water demands. For the agencies that have growing recycled water demands, large landscape demands served by potable water reduced accordingly. For non-revenue water, which represents the difference in total water production less all water billed to customers, this percentage was held constant through 2050. Note that 2050 data was not presented in the UWMP.

A member agency's water use demand projection is the summation of their residential water demand, CII demands, large landscape and recycled water demands, and water losses all projected over the 25-year time horizon. These demands were provided to each of the Orange County water agencies for their review, feedback, and revision before being finalized.

The MWDOC regional water demand projection was collaboratively developed between MWDOC and its member agencies. MWDOC's projections were built upon the same model developed by CDM Smith, and took into consideration specific assumptions and projections provided to MWDOC by its member agencies.

4.3.1.1 Weather Variability and Long-Term Climate Change Impacts

In any given year water demands can vary substantially due to weather. In addition, long-term climate change can have an impact on water demands into the future. For the 2014 OC Water Reliability Study, CDM Smith developed a statistical model of total water monthly production from 1990 to 2014 from a sample of retail water agencies. This model removed impacts from population growth, the economy and drought restrictions in order to estimate the impact on water use from temperature and precipitation.

The results of this statistical analysis are:

- Hot/dry weather demands will be 5.5% greater than current average weather demands
- Cooler/wet weather demands will be 6% lower than current average weather demands
- Climate change impacts will increase current average weather demands by:
    - 2% in 2030
    - 4% in 2040
    - 6% in 2050

4.3.2 25-Year Water Use Projection

The projected demand values were provided by MWDOC and reviewed by the City as part of the UWMP effort. As the regional wholesale supplier for much of Orange County, MWDOC works in collaboration with each of its retail agencies as well as MET, its wholesaler, to develop demand projections for imported water. The City has been proactively decreasing its reliance on imported water by pursuing a variety of water conservation strategies within the service area. Future water savings and low-income water use are included in these projected values.

4.3.2.1 Water Use Projections for 2021-2025

The water use projection for normal year conditions without drought conditions for 2021-2025 is presented in Table 4-2. A linear increase in total water demand is expected between 2021 and 2025, from 8,643 AF to 8,851 AF. This table will be adjusted to estimate the five-years' cumulative drought effects as described in the five-year DRA in Section 7.

Table 4-2: Water Use Projections for 2021 to 2025

Retail: Total Water Demand					
FY Ending	2021	2022	2023	2024	2025
Total Water Demand (AF)	8,643	8,695	8,747	8,799	8,851
NOTES:					

4.3.2.2 Water Use Projections for 2025-2045

Table 4-3 is a projection of the City's water demand for 2025-2045. Overall, total water demand is projected to increase 0.16%% between 2025 and 2045. As a percentage of total demand, single-family residential usage is projected to decrease ~1.9% from 2025 to 2045; multifamily residential usage slightly increases as a percentage of total demand (0.23%). As a percentage of total demand, commercial and institutional/governmental uses slightly increase (roughly 1.6% in aggregate) while landscape applications (~7.2%) and NRW (~8.3%) uses stay relatively consistent during the same timeframe.

The demand data presented in this section accounts for passive savings in the future. Passive savings are water savings as a result of codes, standards, ordinances and public outreach on water conservation and higher efficiency fixtures. Passive savings are anticipated to continue through 2045 and will result in continued water saving and reduced consumption levels. Permanent water conservation requirements and water conservation strategies are discussed in Section 8 and 9 of this document.

Table 4-3: Retail: Use for Potable and Non-Potable Water – Projected

DWR Submittal Table 4-2 Retail: Use for Potable and Non-Potable Water - Projected						
Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Single Family		4,019	3,936	3,886	3,862	3,860
Multi-Family		2,118	2,110	2,118	2,125	2,142
Commercial		1,113	1,157	1,198	1,225	1,229
Institutional/Governmental		225	234	242	248	249
Landscape		639	640	646	645	647

DWR Submittal Table 4-2 Retail: Use for Potable and Non-Potable Water - Projected						
Use Type	Additional Description	Projected Water Use				
		2025	2030	2035	2040	2045
Losses		737	733	734	736	738
TOTAL		8,851	8,810	8,825	8,840	8,865
NOTES: Volumes in AF.						

Based on the information provided above, the total demand for potable water is listed below in Table 4-4.

Table 4-4: Retail: Total Water Use (Potable and Non-Potable)

DWR Submittal Table 4-3 Retail: Total Gross Water Use (Potable and Non-Potable)						
	2020	2025	2030	2035	2040	2045
Potable Water, Raw, Other Non-potable	8,591	8,851	8,810	8,825	8,840	8,865
Recycled Water Demand	0	0	0	0	0	0
TOTAL WATER USE	8,591	8,851	8,810	8,825	8,840	8,865
NOTES: Volumes in AF.						

The City has been proactively decreasing its reliance on imported water by pursuing a variety of water conservation strategies. Future water savings and low-income water use are included in these projected values (Table 4-5).

Table 4-5: Retail Only: Inclusion in Water Use Projections

DWR Submittal Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, or otherwise are utilized in demand projections are found.	Section 8 and 9
Are Lower Income Residential Demands Included in Projections?	Yes
NOTES:	

4.3.2.3 Water Use Projections for Lower Income Households

Since 2010, the UWMP Act has required retail water suppliers to include water use projections for single-family and multi-family residential housing for lower income and affordable households. This will assist the

City in complying with the requirement under Government Code Section 65589.7 granting priority for providing water service to lower income households. A lower income household is defined as a household earning below 80% of the median household income (MHI).

DWR recommends retail suppliers rely on the housing elements of city or county general plans to quantify planned lower income housing with the City's service area (DWR, 2020). RHNA assists jurisdictions in updating general plan's housing elements section. The RHNA identifies additional housing needs and assesses households by income level for the City through 2010 decennial Census and 2005-2009 American Community Survey data. The sixth cycle of the RHNA covers the planning period of October 2021 to October 2029. The SCAG adopted the RHNA Allocation Plan for this cycle on March 4, 2021. The California Department of Housing and Community Development reviewed the housing elements data submitted by jurisdictions in the SCAG region and concluded the data meets statutory requirements for the assessment of current housing needs.

Under the assumption that the RHNA household allocations adequately represent ratios of the City's overall future income categories (not the exact ratio of all household by income but a conservative one for low-income household estimates), the RHNA low-income percentage can be used to estimate future low income demands. One objective of RHNA is to increase affordable housing, therefore RHNA has been allocating additional low-income households to various regions. Because relying on the RHNA distribution of households by income category is likely to produce an overestimate of low-income water demands, this approach represents a conservative projection of future low-income water use.

Table 4-6 presents the City's RHNA housing allocation. RHNA classifies low income housing into two categories: very low income (<30% - 50% MHI), and low income (51% - 80% MHI). Altogether 38.3% of the City's allocated housing need for the planning period of October 2021 to October 2029 are considered low-income housing (SCAG, 2021).

Table 4-6: SCAG 6th Cycle Household Allocation Based on Median Household Income

Household Category by Income	Number of Households	% of Total Allocated Households
Very Low Income	192	23.9%
Low Income	116	14.4%
Moderate Income	130	16.2%
Above Moderate Income	366	45.5%
Total Future Allocated Households	804	100.0%

By applying the percentage of low-income housing from the SCAG report to the total projected SF/MF residential demand calculated in Table 4-3 above, low-income demand can be conservatively estimated

for both SF and MF through 2045. For example, the total low-income single family residential demand is projected to be 1,540 AF in 2025 and 1,479 AF in 2045 (Table 4-7).

Table 4-7: Projected Water Use for Housing Needed for Low Income Households (AF)

Water Use Sector	FY Ending				
	2025	2030	2035	2040	2045
Total Residential Demand (AF)	6,137	6,046	6,004	5,987	6,002
Single-Family Residential Demand - Low Income Households (AF)	1,540	1,508	1,489	1,479	1,479
Multi-Family Residential Demand - Low Income Households (AF)	811	808	811	814	820
Total Low Income Households Demand (AF)	2,351	2,316	2,300	2,293	2,299

4.4 Water Loss

The City has conducted annual water loss audit since 2015 per the American Water Works Association (AWWA) methodology per SB 555 to understand the relationship between water loss, operating costs, and revenue losses. NRW for FY2014/15 –CY2019 (Figure 4-2) consists of three components: real losses (e.g., leakage in mains and service lines, and storage tank overflows), apparent losses (unauthorized consumption, customer metering inaccuracies and systematic data handling errors), and unbilled water (e.g. hydrant flushing, firefighting, and blow-off water from well start-ups). The City's real losses ranged from 368 AFY to 843 AFY and apparent losses ranged from 94 AFY to 218 AFY from FY2014/15 –CY2019. The unbilled water ranged from 21 AFY to 24 AFY in the same time frame.

Table 4-8 presents the last five years of water loss audit data. In the CY2019 water audit, the City's total water loss was 605 AFY (Table 4-8), compared to the total water use of 8,407 AF during the same timeframe. The total water loss consists of real loss of 510 AFY and apparent loss of 94 AFY in CY2019. The NRW was 625 AFY. The active and inactive service connections were consistent from FY 2014-15 – CY 2019 with 13,121 connections reported in the latest water audit. The real loss performance indicator was 35 gals/connection/day in CY2019. Figure 4-3 presents the performance indicators of gallons of real and apparent loss per connection per day. Understanding and controlling water loss from a distribution system is an effective way for the City to achieve regulatory standards and manage their existing resources. SWRCB is still developing water loss performance standards; these standards have not yet been adopted.

Table 4-8: Retail: Last Five Years of Water Loss Audit Reporting

DWR Submittal Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting	
Reporting Period Start Date	Volume of Water Loss*
07/2014	1,061
01/2016	487
01/2017	517
01/2018	573
01/2019	605
** Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.*	
NOTES: Water loss in AFY.	

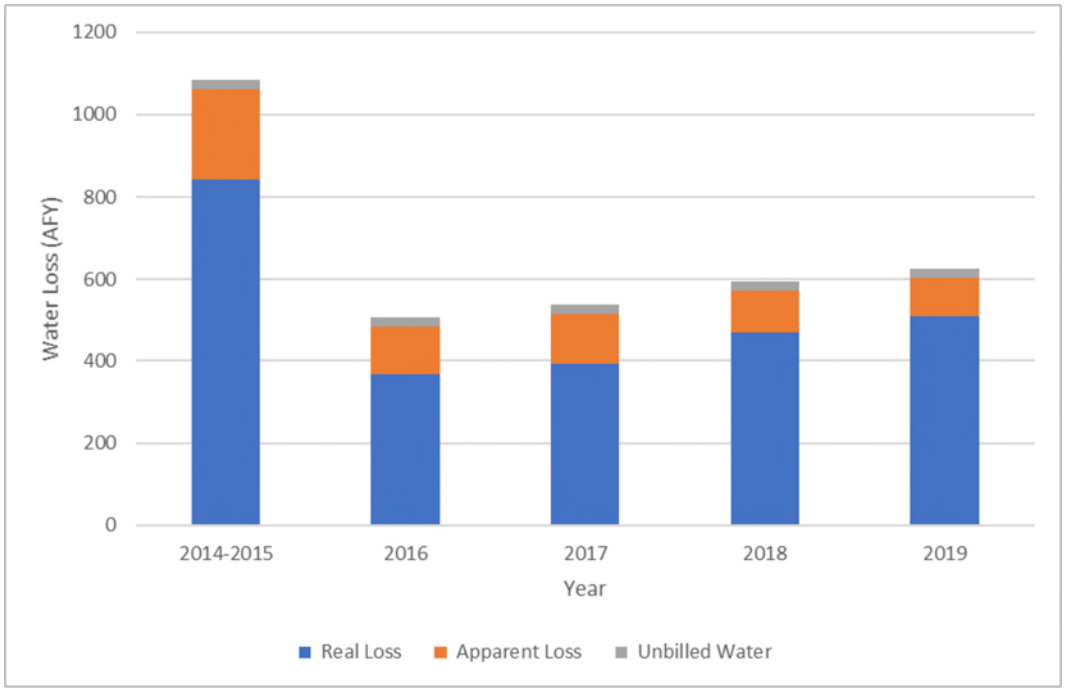

Figure 4-2: Water Loss Audit for FY 2014-15 –CY 2019

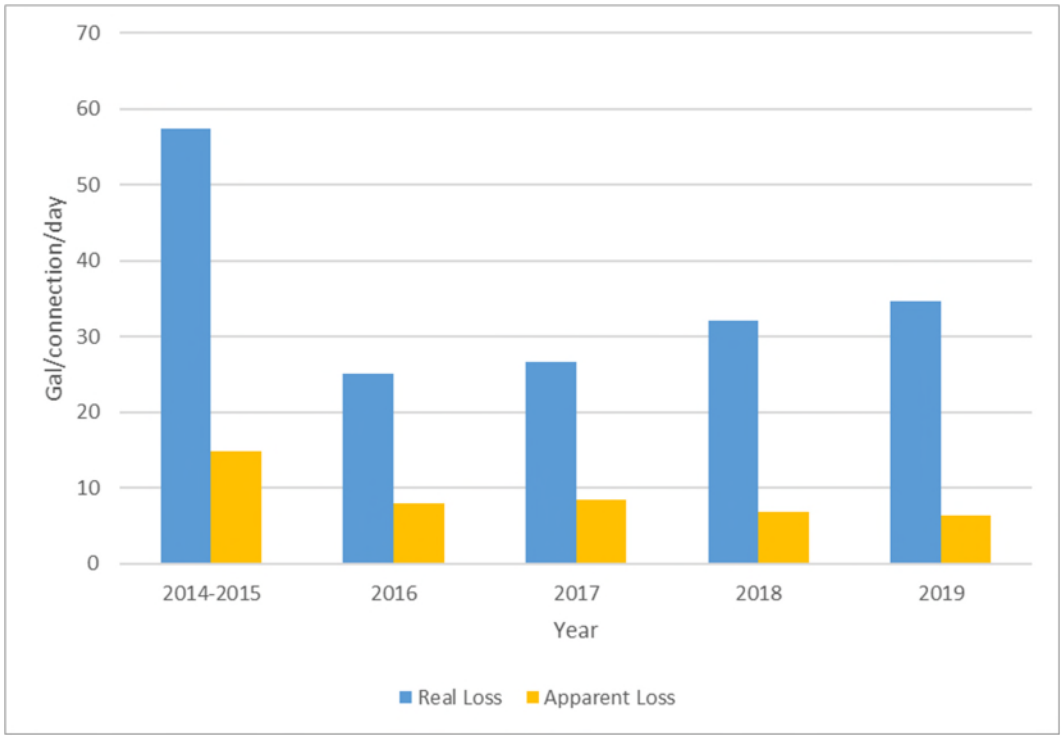

Figure 4-3 Water Loss Performance Indicator for FY 2014-15 –CY 2019

5 CONSERVATION TARGET COMPLIANCE

The Water Conservation Act of 2009, also known as SBx7-7 (Senate Bill 7 as part of the Seventh Extraordinary Session), signed into law on February 3, 2010, requires the State of California to reduce urban water use by 20% by the year 2020 (20x2020). To achieve this each retail urban water supplier must determine baseline water use during their baseline period and target water use for the years 2015 and 2020 to meet the state's water reduction goal. Retail water suppliers are required to comply with SBx7-7 individually or as a region in collaboration with other retail water suppliers, or demonstrate they have a plan or have secured funding to be in compliance, in order to be eligible for water related state grants and loans on or after July 16, 2016.

The City's actual 2020 water use is lower than its 2020 water use target, therefore, demonstrating compliance with SBx7-7. In its 2015 UWMP, the City revised its baseline per capita water use calculations using 2010 U.S. Census data. Changes in the baseline calculations resulted in updated per capita water use targets.

The following sections describe the efforts by the City to comply with the requirements of SBx7-7 and efforts by MWDOC to assist retail agencies, including the formation of a Regional Alliance to provide additional flexibility to all water suppliers in Orange County. A discussion of programs implemented to support retail agencies in achieving their per capita water reduction goals is covered in Section 9 – Demand Management Measures of this UWMP.

Complimentary to information presented in this section are SBx7-7 Verification and Compliance Forms, a set of standardized tables required by DWR to demonstrate compliance with the Water Conservation Act in this 2020 UWMP (Appendix D) including calculations of recycled water used for groundwater recharge (indirect reuse) to offset a portion of the agency's potable demand when meeting the regional as well as individual water use targets.

5.1 Baseline Water Use

The baseline water use is the City's gross water use divided by its service area population, reported in GPCD. Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period with certain allowable exclusions. These exclusions are:

- Recycled water delivered within the service area
- Indirect recycled water
- Water placed in long term storage
- Water conveyed to another urban supplier
- Water delivered for agricultural use
- Process water

Water suppliers must report baseline water use for two baseline periods, the 10- to 15-year baseline (baseline GPCD) and the five-year baseline (target confirmation) as described below.

5.1.1 Ten to 15-Year Baseline Period (Baseline GPCD)

The first step to calculating the City's water use targets is to determine its base daily per capita water use (baseline water use). The baseline water use is calculated as a continuous (rolling) 10-year average during a period, which ends no earlier than December 31, 2004 and no later than December 31, 2010. Water suppliers whose recycled water made up 10% or more of their 2008 retail water delivery can use up to a 15-year average for the calculation. Recycled water use was less than 10% of the City's retail delivery in 2008; therefore, a 10-year baseline period is used.

The City's baseline water use is 161 GPCD, obtained from the 10-year period July 1, 1995 to June 30, 2005.

5.1.2 Five-Year Baseline Period (Target Confirmation)

Water suppliers are required to calculate water use, in GPCD, for a five-year baseline period. This number is used to confirm that the selected 2020 target meets the minimum water use reduction requirements. Regardless of the compliance option adopted by the City, it will need to meet a minimum water use target of 5% reduction from the five-year baseline water use. This five-year baseline water use is calculated as a continuous five-year average during a period, which ends no earlier than December 31, 2007 and no later than December 31, 2010. The City's five-year baseline water use is 158 GPCD, obtained from the five-year period July 1, 2003 to June 30, 2008.

5.1.3 Service Area Population

The City's service area boundaries correspond with the boundaries for a city or census designated place. This allows the City to use service area population estimates prepared by the DOF. CDR is the entity which compiles population data for Orange County based on DOF data. The calculation of the City's baseline water use and water use targets in the 2010 UWMP was based on the 2000 U.S. Census population numbers obtained from CDR. The baseline water use and water use targets in the 2015 UWMP were revised based on the 2010 U.S. Census population obtained from CDR in 2012. That baseline remained in use in the 2020 calculations.

5.2 SBx7-7 Water Use Targets

In the 2020 UWMP, the City may update its 2020 water use target by selecting a different target method than what was used previously. The target methods and determination of the 2015 and 2020 targets are described below. The City selected Option 3 consistent with 2015 and maintained the same 2020 target water uses as reported in its 2015 UWMP.

5.2.1 SBx7-7 Target Methods

DWR has established four target calculation methods for urban retail water suppliers to choose from. The City is required to adopt one of the four options to comply with SBx7-7 requirements.

The four options include:

- *Option 1* requires a simple 20% reduction from the baseline by 2020 and 10% by 2015.
- *Option 2* employs a budget-based approach by requiring an agency to achieve a performance standard based on three metrics
  - Residential indoor water use of 55 GPCD
  - Landscape water use commensurate with the Model Landscape Ordinance
  - 10% reduction in baseline CII water use
- *Option 3* is to achieve 95% of the applicable state hydrologic region target as set forth in the State's 202020 Water Conservation Plan.
- *Option 4* requires the subtraction of Total Savings from the baseline GPCD:
  - Total savings includes indoor residential savings, meter savings, CII savings, and landscape and water loss savings.

With MWDOC's assistance in the calculation of the City's base daily per capita use and water use targets, the City selected to comply with Option 3 consistent with the option selected in 2010 and 2015.

5.2.2 2020 Targets and Compliance

Under Compliance Option 3, to achieve 95% of the South Coast Hydrologic Region target as set forth in the State's 20x2020 Water Conservation Plan, the City's 2020 target is 142 GPCD as summarized in Table 5-1. In addition, the confirmed 2020 target needs to meet a minimum of 5% reduction from the five-year baseline water use.

Table 5-1: Baselines and Targets Summary

DWR Submittal Table 5-1 Baselines and Targets Summary From SB X7-7 Verification Form *Retail Supplier or Regional Alliance Only*				
Baseline Period	Start Year *	End Year *	Average Baseline GPCD*	Confirmed 2020 Target*
10-15 year	*1996*	*2005*	*161*	*142*
5 Year	*2004*	*2008*	*158*	
**All cells in this table should be populated manually from the supplier's SBX7-7 Verification Form and reported in Gallons per Capita per Day (GPCD)*				
NOTES:				

The City's actual 2020 consumption is 122 GPCD which is below its 2020 target of 142 GPCD (Table 5-2). The City met its 2020 water use target and is in compliance with SBx7-7.

Table 5-2: 2020 Compliance

DWR Submittal Table 5-2: 2020 Compliance From SB X7-7 2020 Compliance Form *Retail Supplier or Regional Alliance Only*				
2020 GPCD			2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020?
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD*		
122	0	122	142	Y
**All cells in this table should be populated manually from the supplier's SBX7-7 2020 Compliance Form and reported in Gallons per Capita per Day (GPCD)*				
NOTES:				

5.3 Orange County 20x2020 Regional Alliance

A retail supplier may choose to meet the SBx7-7 targets on its own or it may form a regional alliance with other retail suppliers to meet the water use target as a region. Within a Regional Alliance, each retail water supplier will have an additional opportunity to achieve compliance under both an individual target and a regional target.

- If the Regional Alliance meets its water use target on a regional basis, all agencies in the alliance are deemed compliant.
- If the Regional Alliance fails to meet its water use target, each individual supplier will have an opportunity to meet their water use targets individually.

The City is a member of the Orange County 20x2020 Regional Alliance formed by MWDOC, its wholesaler. This regional alliance consists of 29 retail agencies in Orange County as described in MWDOC's 2020 UWMP. MWDOC provides assistance in the calculation of each retail agency's baseline water use and water use targets.

In 2015, the regional baseline and targets were revised to account for any revisions made by the retail agencies to their individual 2015 and 2020 targets. The regional water use target is the weighted average of the individual retail agencies' targets (by population). The Orange County 20x2020 Regional Alliance weighted 2020 target is 159 GPCD. The actual 2020 water use in the region is 109 GPCD, i.e., the region met its 2020 GPCD goal.

6 WATER SUPPLY CHARACTERIZATION

As a counterpart to Section 4's Water Use Characterization, this section characterizes the City's water supply. This section includes identification and quantification of water supply sources through 2045, descriptions of each water supply source and their management, opportunities for exchanges and transfers, and discussion regarding any planned future water supply projects. This section also includes the energy intensity of the water service, a new UWMP requirement.

6.1 Water Supply Overview

The City meets all of its demands with a combination of imported water and local groundwater. The City works with two primary agencies, CDWC and MWDOC, to ensure a safe and reliable water supply that will continue to serve the community in periods of drought and shortage. The sources of imported water include imported groundwater from the Main San Gabriel Groundwater Basin provided by CDWC and water from the Colorado River and the SWP provided by MET and delivered through MWDOC.

The City's main source of water supply is imported groundwater from the Main San Gabriel Basin delivered through CDWC. Local groundwater and imported water from MWDOC make up the rest of the City's water supply portfolio. In FY 2019-20, the City relied mainly on 68% imported groundwater from CDWC, 31% local groundwater, and 1% imported MET water delivered through MWDOC.

It is projected that by 2045, the water supply portfolio will change to approximately 71% imported water from CDWC, 27% groundwater, and 2% imported MET water from MWDOC (Table 6-2 and Figure 6-1). Note that these representations of supply match the projected demand. However, the City can purchase more MET water through MWDOC, should the need arise.

The following subsections provide a detailed discussion of the City's water sources as well as the future water supply portfolio for the next 25 years.

Table 6-1: Retail: Water Supplies – Actual

DWR Submittal Table 6-8 Retail: Water Supplies — Actual			
Water Supply	Additional Detail on Water Supply	2020	
		Actual Volume (AF)	Water Quality
Groundwater (not desalinated)	La Habra Groundwater Basin	2,659	Drinking Water
Purchased or Imported Water	CDWC	5,831	Drinking Water
Purchased or Imported Water	MWDOC	101	Drinking Water
	Total	8,591	
NOTES: Source – MWDOC FY 2019-20 Water Use Report (MWDOC, 2020)			

Table 6-2: Retail: Water Supplies – Projected

DWR Submittal Table 6-9 Retail: Water Supplies — Projected						
Water Supply	Additional Detail on Water Supply	Projected Water Supply (AF)				
		2025	2030	2035	2040	2045
		Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume	Reasonably Available Volume
Groundwater (not desalinated)	La Habra Groundwater Basin	2,400	2,400	2,400	2,400	2,400
Purchased or Imported Water	CDWC	6,300	6,300	6,300	6,300	6,300
Purchased or Imported Water	MWDOC	151	110	125	140	165
	Total	8,851	8,810	8,825	8,840	8,865
NOTES: Source – Discussions with City Staff						

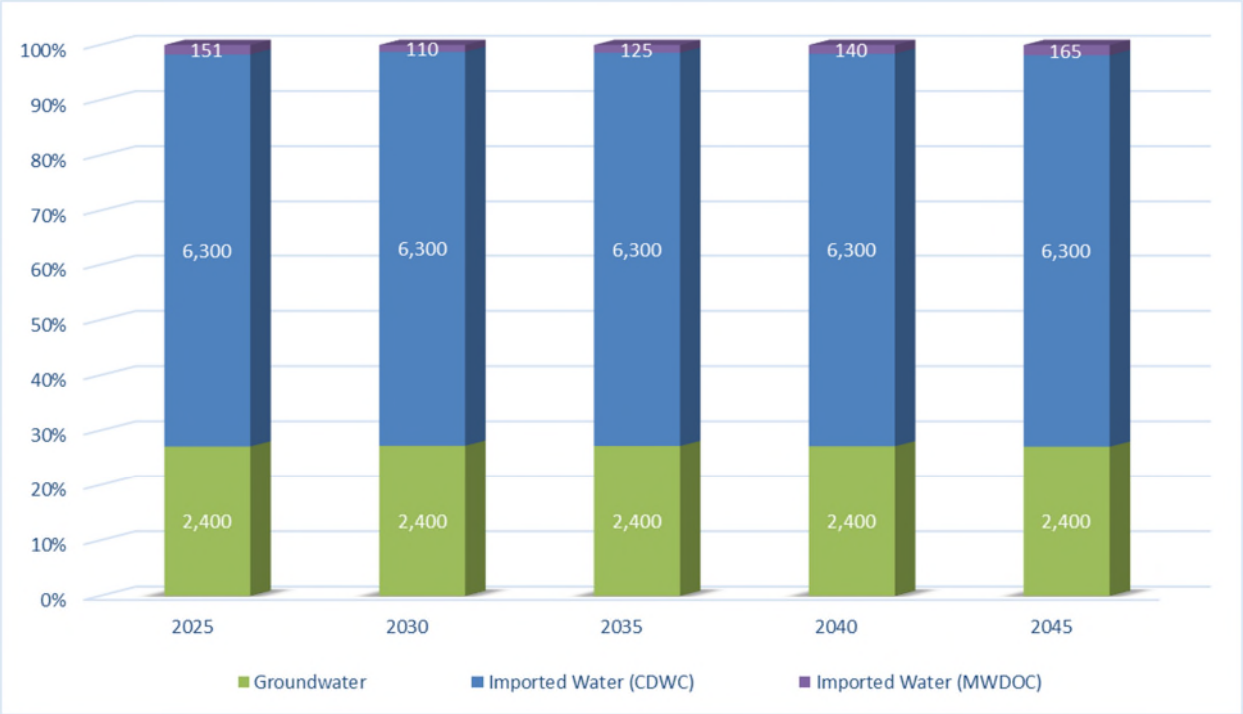

Figure 6-1: City's Projected Water Supplies (AF)

6.2 Imported Water

The City supplements its water supply with imported water purchased from CDWC and MET through MWDOC. In FY 2019-20, the City relied on approximately 5,831 AFY and 101 AFY of imported water from CDWC and MWDOC, making up 68% and 1%, respectively, of the City's water supply portfolio for FY 2019-20. Imported groundwater from CDWC is pumped from the Main San Gabriel Basin. MET's principal sources of water are the Colorado River via the CRA and the Lake Oroville watershed in Northern California through the SWP. The water obtained from these sources is treated at the Robert B. Diemer Filtration Plant located north of Yorba Linda. Typically, the Diemer Filtration Plant receives a blend of Colorado River water from Lake Mathews through the MET Lower Feeder and SWP water through the Yorba Linda Feeder.

The City has 16 interconnections with CDWC that supply water from two different hydraulic grade systems. Imported water from MET is obtained through two connections: OC-4 and OC-45. These connections have a combined capacity of 40 cubic feet per second (cfs) and feed the City's distribution system through flow control valves. The City adjusts the control valves to meet the City's system demands. With increased supply from groundwater and CDWC, the connections have become a backup source of supply which are typically not used under normal operating conditions.

6.2.1 Imported Groundwater Supply (CDWC)

The City obtains imported groundwater supply from CDWC, a mutual water company. CDWC provides groundwater from the Main San Gabriel Basin to each of its member agencies who own and/or lease stock in the company.

The City has 16 interconnections with CDWC. Most of the interconnections are regulated with pressure reducing control valves (PRV) that are set to maintain a set pressure in each pressure zone and adjusted as needed to meet required system demands or pressure requirements. CDWC supplies the City with water using two different hydraulic grade systems, Lift 1 and Lift 2. Lift 1 delivers water at a hydraulic grade higher than 625 feet mean sea level (MSL), and Lift 2 delivers water at a higher hydraulic grade of 625 feet MSL. Water from Lift 2 is fed directly into higher pressure zones located in the northern part of the City. The CDWC completed construction of a new Lift 1 transmission main that provides the City with the ability to take additional Lift 1 water, which has a lower cost than Lift 2 or MET water. However, the water must be pumped into the City's distribution system first as the hydraulic grade line of the transmission main is lower than required to provide adequate service to the City's pressure zones.

The City currently owns 2,332.25 shares of common stock and 912.85 shares (664 AFY in water rights) of preferred stock. The City is able to lease additional shares of CDWC stock from member agencies that do not use their maximum allotted amount. The City purchased on average 5,528 AFY of CDWC water over the last ten years from FY 2010-11 through 2019-20. The City is only able to take 7,200 AFY of water from CDWC. The amount of water the City can receive annually from CDWC is limited by the capacity of the facilities transmitting water from the CDWC system to the City system.

Each CDWC member agency receives a prescribed entitlement to water based upon the number of shares owned and the safe yield of the Main San Gabriel Basin. The member agency entitlement criterion per share varies year by year, based on CDWC's allotted percentage and the Basin Operating Safe Yield (OSY) of the Main San Gabriel Basin. As so, there is not a permanent limit or cap on the amount of water CDWC can produce from the Basin. CDWC owns approximately 12,363 AF of prescriptive pumping rights in the Main San Gabriel Basin. Prescriptive pumping rights are adjusted based on the determination of the OSY annually. Based on the FY 2020-21 OSY set at 150,000 AF, CDWC's prescriptive pumping rights total approximately 9,383 AF. Currently, this is the amount of groundwater CDWC can produce from the Basin before incurring replacement water assessments, further described in Section 6.2.1.1.1.

The OSY is determined annually by the Main San Gabriel Basin Watermaster, the agency created by the Main San Gabriel Judgment to manage the Main San Gabriel Basin. Agencies that use water beyond their share of entitlement must pay a surcharge levied by CDWC. The City procures three categories of CWDC water: entitlement (water rights), lease shares, and contract lease shares (Psomas, 2017).

6.2.1.1 Main San Gabriel Basin

CDWC has water rights, production, treatment, and conveyance facilities in the adjudicated Main San Gabriel Basin that serve customers overlying the basin within Suburban Water Systems as well as serving the City and the City of La Habra. Based on the ten-year average from FY 2010-11 through 2019-20, the City and the City of Brea purchase approximately 13,261 AFY of Main San Gabriel Groundwater Basin groundwater from CDWC, but this volume varies from year to year.

The Main San Gabriel Basin and its operations are described below.

Basin Characteristics

The Main San Gabriel Basin lies in eastern Los Angeles County and occupies most of San Gabriel Valley. The hydrologic basin or watershed coincides with a portion of the upper San Gabriel River watershed, and the aquifer or groundwater basin underlies most of the San Gabriel Valley. It is bounded on the north by the San Gabriel Mountains, on the northwest by Raymond Basin, on the southeast by Puente Basin, and on the south by Central Basin. The Main San Gabriel Basin encompasses approximately 107,000 acres and has a storage of 8.9 million acre-feet (MAF) when the groundwater elevation at the Baldwin Park Key Well is 316 feet. Generally speaking, one foot of groundwater elevation is equivalent to approximately 8,000 AF of storage.

The hydrogeological San Gabriel Basin is divided between three sub-basins: Main Basin, Puente Basin, and portions of Six Basins area. A portion of Six Basins area is tributary to the Main Basin. Each of the sub-basins are adjudicated and managed separately.

Major sources of recharge to the Main San Gabriel Basin are infiltration of rainfall on the valley floor and runoff from the nearby mountains. The Main San Gabriel Basin is the first of a series of basins to receive the water from mountain runoff. The Main San Gabriel Basin interacts hydrogeologically and institutionally with adjoining basins, including Puente Basin, Central Basin, and West Coast Basin (Main San Gabriel Basin Watermaster, 2020a). Figure 6-2 depicts the Main San Gabriel Basin.

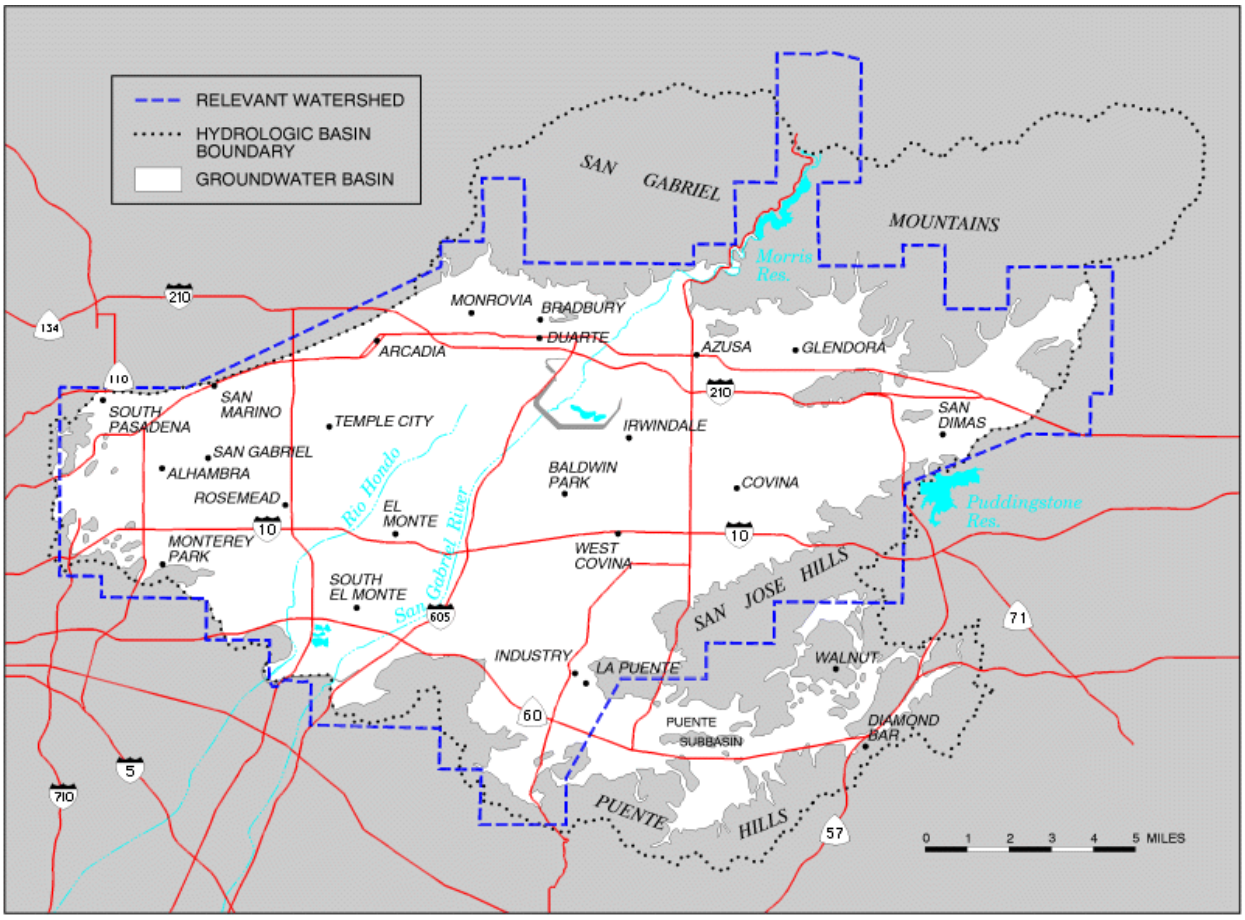

Figure 6-2: Main San Gabriel Groundwater Basin

6.2.1.1.1 Main San Gabriel Basin Judgment

Rapid urbanization in the San Gabriel Valley in the 1940s resulted in an increased demand for groundwater drawn from the Upper Area users in Main San Gabriel Basin. Consequently, the Main San Gabriel Basin was in a state of overdraft and the available water supply for the Lower Area and downstream users decreased. In 1968, at the request of producers, the Upper San Gabriel Municipal Water District filed a complaint that would adjudicate water rights in the Main San Gabriel Basin and would bring all Basin producers under control of one governing body. The final result was the entry of the Main San Gabriel Basin Judgment in 1973.

The Judgment defined the water rights of 190 original parties to the legal action. It created a new governing body, the Main San Gabriel Basin Watermaster, and described a program for management of water in the Main San Gabriel Basin. Under the terms of the Main San Gabriel Basin Judgment all rights to the diversion of surface water and production of groundwater within the Main Basin and its Relevant Watershed were adjudicated. The Main Basin Judgment does not restrict the quantity of water agencies may extract from the Main Basin. Rather, it provides a means for replacing with Supplemental Water all annual extractions in excess of an agency's annual right to extract water. The Main Basin Watermaster annually establishes an OSY for the Main Basin that is then used to allocate to each agency its portion of

the OSY that can be produced free of a Replacement Water Assessment. If a producer extracts water in excess of his right under the annual OSY, it must pay an assessment for Replacement Water that is sufficient to purchase one AF of Supplemental Water to be spread in the Main San Gabriel Basin for each AF of excess production. All water production is metered and is reported quarterly to the Main Basin Watermaster. The OSY is set at 150,000 AF for FY 2020-21.

In addition to Replacement Water Assessments, the Main Basin Watermaster levies an Administration Assessment to fund the administration of the Main Basin management program under the Main Basin Judgment and a Make-up Obligation Assessment in order to fulfill the requirements for any Make-Up Obligation under the Long Beach Judgment and to supply 50% of the administration costs of the River Watermaster service. The Main Basin Watermaster levies an In-lieu Assessment and may levy special Administration Assessments.

Water rights under the Main Basin Judgment are transferable by lease or purchase so long as such transfers meet the requirements of the Judgment. There is also provision for Cyclic Storage Agreements that allow Parties and non-parties to store imported supplemental water in the Main Basin under such agreements with the Main Basin Watermaster pursuant to uniform rules and conditions and Court approval (Main San Gabriel Basin Watermaster, 2020a).

The Main Basin Watermaster has entered into a Cyclic Storage Agreement with three municipal water districts: MET, Three Valleys Municipal Water District (TVMWD), and upper San Gabriel Valley Municipal Water District (SGVMWD). The first agreement with MET and USGVMWD permits MET to deliver, and store, imported water in the Main Basin in an amount not to exceed 100,000 AF for future Replacement Water use. The second Cyclic Storage Agreement is with TVMWD and permits MET to deliver and store 40,000 AF for future Replacement Water use. The third is with SGVMWD. The Main San Gabriel Basin adjudication decree contains more detailed information on the agreements and management of water rights to the basin (Appendix G1).

The Main San Gabriel Basin is currently in an extended period of drought-like conditions, with 18 out of the most recent 25 years having below-average rainfall, as well as minimal runoff and limited recharge. As a result, Basin recovery is dependent on the Main Basin Watermaster's management actions. Long-term water demand has fallen steadily over the last decade, and in FY 2019-20, the demand was approximately 30% below the peak in 2006. Groundwater levels in wells rose in FY 2019-20 due to increases in Cyclic Storage and local and Resource Development Assessment (RDA) water.

6.2.2 MET

The following sections discuss the water supplies MET relies on to ensure water to its member agencies, such as MWDOC and in effect, the City.

6.2.2.1 Colorado River Supplies

Background

The Colorado River was MET's original source of water after MET's establishment in 1928. The CRA, which is owned and operated by MET, transports water from the Colorado River to its terminus Lake Mathews, in Riverside County. The actual amount of water per year that may be conveyed through the CRA to MET's member agencies is subject to the availability of Colorado River water. Approximately

40 million people rely on the Colorado River and its tributaries for water with 5.5 million acres of land using Colorado River water for irrigation. The CRA includes supplies from the implementation of the Quantification Settlement Agreement and its related agreements to transfer water from agricultural agencies to urban uses. The 2003 Quantification Settlement Agreement enabled California to implement major Colorado River water conservation and transfer programs, in order to stabilize water supplies and reduce the state's demand on the river to its 4.4 MAF entitlement. Colorado River transactions are potentially available to supply additional water up to the CRA capacity of 1.25 MAF on an as-needed basis. Water from the Colorado River or its tributaries is available to users in California, Arizona, Colorado, Nevada, New Mexico, Utah, Wyoming, and Mexico. California is apportioned the use of 4.4 MAF of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California, and Nevada. In addition, California has historically been allowed to use Colorado River water apportioned to, but not used by, Arizona or Nevada. MET has a basic entitlement of 550,000 AFY of Colorado River water, plus surplus water up to an additional 662,000 AFY when the following conditions exists (MET, 2021):

- Water is unused by the California holders of priorities 1 through 3
- Water is saved by the Palo Verde land management, crop rotation, and water supply program
- When the U.S. Secretary of the Interior makes available either one or both of the following:
    - Surplus water
    - Colorado River water that is apportioned to but unused by Arizona and/or Nevada.

Current Conditions and Supply

MET has not received surplus water for a number of years. The Colorado River supply faces current and future imbalances between water supply and demand in the Colorado River Basin due to long-term drought conditions. Analysis of historical records suggests a potential change in the relationship between precipitation and runoff in the Colorado River Basin. The past 21 years (1999-2020) have seen an overall drying trend, even though the period included several wet or average years. The river basin has substantial storage capacity, but the significant reduction in system reservoir storage in the last two decades is great enough to consider the period a drought (DWR, 2020a). At the close of 2020, system storage was at or near its lowest since 2000, so there is very little buffer to avoid a shortage from any future period of reduced precipitation and runoff (MET, 2021). Looking ahead, the long-term imbalance in the Colorado River Basin's future supply and demand is projected to be approximately 3.2 MAF by the year 2060 (USBR, 2012).

Over the years, MET has helped fund and implement various programs to improve Colorado River supply reliability and help resolve the imbalance between supply and demand. Implementation of such programs have contributed to achievements like achieving a record low diversion of the Colorado River in 2019, a level not seen since the 1950s. Colorado River water management programs include:

- **Imperial Irrigation District / MET Conservation Program** – Under agreements executed in 1988 and 1989, this program allows MET to fund water efficiency improvements within Imperial Irrigation District's service area in return for the right to divert the water conserved by those investments. An average of 105,000 AFY of water has been conserved since the program's implementation.

- **Palo Verde Land Management, Crop Rotation, and Water Supply Program** – Authorized in 2004, this 35-year program allows MET to pay participating farmers to reduce their water use, and for MET to receive the saved water. Over the life of the program, an average of 84,500 AFY has been saved and made available to MET.
- **Bard Seasonal Fallowing Program** – Authorized in 2019, this program allows MET to pay participating farmers in Bard to reduce their water use between the late spring and summer months of selected years, which provides up to 6,000 AF of water to be available to MET in certain years.
- **Management of MET-Owned Land in Palo Verde** – Since 2001, MET has acquired approximately 21,000 acres of irrigable farmland that are leased to growers, with incentives to grow low water-using crops and experiment with low water-consumption practices. If long-term water savings are realized, MET may explore ways to formally account them for Colorado River supplies.
- **Southern Nevada Water Authority (SNWA) and MET Storage and Interstate Release Agreement** – Entered in 2004, this agreement allows SNWA to store its unused, conserved water with MET, in exchange for MET to receive additional Colorado River water supply. MET has relied on the additional water during dry years, especially during the 2011-2016 California drought, and SNWA is not expected to call upon MET to return water until after 2026.
- **Lower Colorado Water Supply Projects** – Authorized in 1980s, this project provides up to 10,000 AFY of water to certain entities that do not have or have insufficient rights to use Colorado River water. A contract executed in 2007 allowed MET to receive project water left unused by the project contractors along the River – nearly 10,000 AF was received by MET in 2019 and is estimated for 2020.
- **Exchange Programs** – MET is involved in separate exchange programs with the United States Bureau of Reclamation, which takes place at the Colorado River Intake and with San Diego County Water Authority (SDCWA), which exchanges conserved Colorado River water.
- **Lake Mead Storage Program** – Executed in 2006, this program allows MET to leave excessively conserved water in Lake Mead, for exclusive use by MET in later years.
- **Quagga Mussel Control Program** – Developed in 2007, this program introduced surveillance activities and control measures to combat quagga mussels, an invasive species that impact the Colorado River's water quality.
- **Lower Basin Drought Contingency Plan** – Signed in 2019, this agreement incentivizes storage in Lake Mead through 2026 and overall, it increases MET's flexibility to fill the CRA as needed (MET, 2021).

Future Programs / Plans

The Colorado River faces long-term challenges of water demands exceeding available supply with additional uncertainties due to climate change. Climate change impacts expected in the Colorado River Basin include the following:

- More frequent, more intense, and longer lasting droughts, which will result in water deficits

- Continued dryness in the Colorado River Basin, which will increase the likelihood of triggering a first-ever shortage in the Lower Basin
- Increased temperatures, which will affect the percentage of precipitation that falls as rain or snow, as well as the amount and timing of mountain snowpack (DWR, 2020b).

Acknowledging the various uncertainties regarding reliability, MET plans to continue ongoing programs, such as those listed earlier in this section. Additionally, MET supports increasing water recycling in the Colorado River Basin and is in the process of developing additional transfer programs for the future (MET, 2021).

6.2.2.2 State Water Project Supplies

Background

The SWP consists of a series of pump stations, reservoirs, aqueducts, tunnels, and power plants operated by DWR and is an integral part of the effort to ensure that business and industry, urban and suburban residents, and farmers throughout much of California have sufficient water. Water from the SWP originates at Lake Oroville, which is located on the Feather River in Northern California. Much of the SWP water supply passes through the Delta. The SWP is the largest state-built, multipurpose, user-financed water project in the United States. Nearly two-thirds of residents in California receive at least part of their water from the SWP, with approximately 70% of SWP's contracted water supply going to urban users and 30% to agricultural users. The primary purpose of the SWP is to divert and store water during wet periods in Northern and Central California and distribute it to areas of need in Northern California, the San Francisco Bay area, the San Joaquin Valley, the Central Coast, and Southern California (MET, 2021).

The Delta is key to the SWP's ability to deliver water to its agricultural and urban contractors. All but five of the 29 SWP contractors receive water deliveries below the Delta (pumped via the Harvey O. Banks or Barker Slough pumping plants). However, the Delta faces many challenges concerning its long-term sustainability such as climate change posing a threat of increased variability in floods and droughts. Sea level rise complicates efforts in managing salinity levels and preserving water quality in the Delta to ensure a suitable water supply for urban and agricultural use. Furthermore, other challenges include continued subsidence of Delta islands, many of which are below sea level, and the related threat of a catastrophic levee failure as the water pressure increases, or as a result of a major seismic event.

Current Conditions and Supply

"Table A" water is the maximum entitlement of SWP water for each water contracting agency. Currently, the combined maximum Table A amount is 4.17 million acre-feet per year (AFY). Of this amount, 4.13 million AFY is the maximum Table A water available for delivery from the Delta. On average, deliveries are approximately 60% of the maximum Table A amount (DWR, 2020b).

SWP contractors may receive Article 21 water on a short-term basis in addition to Table A water if requested. Article 21 of SWP contracts allows contractors to receive additional water deliveries only under specific conditions, generally during wet months of the year (December through March). Because a SWP contractor must have an immediate use for Article 21 supply or a place to store it outside of the SWP, there are few contractors like MET that can access such supplies.

Carryover water is SWP water allocated to an SWP contractor and approved for delivery to the contractor in a given year, but not used by the end of the year. The unused water is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year.

Turnback pool water is Table A water that has been allocated to SWP contractors that has exceeded their demands. This water can then be purchased by another contractor depending on its availability.

SWP Delta exports are the water supplies that are transferred directly to SWP contractors or to San Luis Reservoir storage south of the Delta via the Harvey O. Banks pumping plant. Estimated average annual Delta exports and SWP Table A water deliveries have generally decreased since 2005, when Delta export regulations affecting SWP pumping operations became more restrictive due to federal biological opinions (Biops). The Biops protect species listed as threatened or endangered under the federal and state Endangered Species Acts (ESAs) and affect the SWP's water delivery capability because they restrict SWP exports in the Delta and include Delta outflow requirements during certain times of the year, thus reducing the available supply for export or storage.

Before being updated by the 2019 Long-Term Operations Plan, the prior 2008 and 2009 Biops resulted in an estimated reduction in SWP deliveries of 0.3 MAF during critically dry years to 1.3 MAF in above normal water years as compared to the previous baseline. However, the 2019 Long-Term Operations Plan and Biops are expected to increase SWP deliveries by an annual average of 20,000 AF as compared to the previous Biops (MET, 2021). Average Table A deliveries decreased in the 2019 SWP Final Delivery Capability Report compared to 2017, mainly due to the 2018 Coordinated Operation Agreement (COA) Addendum and the increase in the end of September storage target for Lake Oroville. Other factors that also affected deliveries included changes in regulations associated with the Incidental Take Permit (ITP) and the Reinitiation of Consultation for Long-Term Operations (RoC on LTO), a shift in Table A to Article 21 deliveries which occurred due to higher storage in SWP San Luis, and other operational updates to the SWP and federal Central Valley Project (CVP) (DWR, 2020b). Since 2005, there are similar decreasing trends for both the average annual Delta exports and the average annual Table A deliveries (Table 6-3).

Table 6-3: MET SWP Program Capabilities

Year	Average Annual Delta Exports (MAF)	Average Annual Table A Deliveries (MAF)
2005	2.96	2.82
2013	2.61	2.55
2019	2.52	2.41
Percent Change*	-14.8%	-14.3%

*Percent change is between the years 2019 and 2005.

Ongoing regulatory restrictions, such as those imposed by the Biops on the effects of SWP and the CVP operations on certain marine life, also contribute to the challenge of determining the SWP's water delivery reliability. In dry, below-normal conditions, MET has increased the supplies delivered through the

California Aqueduct by developing flexible CVP/SWP storage and transfer programs. The goal of the storage/transfer programs is to develop additional dry-year supplies that can be conveyed through the available Harvey O. Banks pumping plant capacity to maximize deliveries through the California Aqueduct during dry hydrologic conditions and regulatory restrictions. In addition, the California State Water Resources Control Board (SWRCB) has set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level.

The following factors affect the ability to estimate existing and future water delivery reliability:

- **Water availability at the source:** Availability can be highly variable and depends on the amount and timing of rain and snow that fall in any given year. Generally, during a single-dry year or two, surface and groundwater storage can supply most water deliveries, but multiple-dry years can result in critically low water reserves. Fisheries issues can also restrict the operations of the export pumps even when water supplies are available.
- **Water rights with priority over the SWP:** Water users with prior water rights are assigned higher priority in DWR's modeling of the SWP's water delivery reliability, even ahead of SWP Table A water.
- **Climate change:** Mean temperatures are predicted to vary more significantly than previously expected. This change in climate is anticipated to bring warmer winter storms that result in less snowfall at lower elevations, reducing total snowpack. From historical data, DWR projects that by 2050, the Sierra snowpack will be reduced from its historical average by 25 to 40%. Increased precipitation as rain could result in a larger number of "rain-on-snow" events, causing snow to melt earlier in the year and over fewer days than historically, affecting the availability of water for pumping by the SWP during summer. Furthermore, water quality may be adversely affected due to the anticipated increase in wildfires. Rising sea levels may results in potential pumping cutbacks on the SWP and CVP.
- **Regulatory restrictions on SWP Delta exports:** The Biops protect special-status species such as delta smelt and spring- and winter-run Chinook salmon and imposed substantial constraints on Delta water supply operations through requirements for Delta inflow and outflow and export pumping restrictions. Restrictions on SWP operations imposed by state and federal agencies contribute substantially to the challenge of accurately determining the SWP's water delivery reliability in any given year (DWR, 2020b).
- **Ongoing environmental and policy planning efforts:** Governor Gavin Newsom ended California WaterFix in May 2019 and announced a new approach to modernize Delta Conveyance through a single tunnel alternative. The EcoRestore Program aims to restore at least 30,000 acres of Delta habitat, with the near-term goal of making significant strides toward that objective by 2020 (DWR, 2020b).
- **Delta levee failure:** The levees are vulnerable to failure because most original levees were simply built with soils dredged from nearby channels and were not engineered. A breach of one or more levees and island flooding could affect Delta water quality and SWP operations for several months. When islands are flooded, DWR may need to drastically decrease or even cease SWP Delta exports to evaluate damage caused by salinity in the Delta.

Operational constraints likely will continue until a long-term solution to the problems in the Bay-Delta is identified and implemented. New Biops for listed species under the Federal ESA or by the California Department of Fish and Game's issuance of incidental take authorizations under the Federal ESA and California ESA might further adversely affect SWP and CVP operations. Additionally, new litigation, listings of additional species or new regulatory requirements could further adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage or other operational changes impacting water supply operations.

Future Programs / Plans

MET's Board approved a Delta Action Plan in June 2007 that provides a framework for staff to pursue actions with other agencies and stakeholders to build a sustainable Delta and reduce conflicts between water supply conveyance and the environment. The Delta Action Plan aims to prioritize immediate short-term actions to stabilize the Delta while an ultimate solution is selected, and mid-term steps to maintain the Delta while a long-term solution is implemented. Currently, MET is working towards addressing four elements: Delta ecosystem restoration, water supply conveyance, flood control protection, and storage development.

In May 2019, Governor Newsom ended California WaterFix, announced a new approach to modernize Delta Conveyance through a single tunnel alternative, and released Executive Order 10-19 that directed state agencies to inventory and assess new planning for the project. DWR then withdrew all project approvals and permit applications for California WaterFix, effectively ending the project. The purpose of the Delta Conveyance Project (DCP) gives rise to several project objectives (MET, 2021). In proposing to make physical improvements to the SWP Delta conveyance system, the project objectives are:

- To address anticipated rising sea levels and other reasonably foreseeable consequences of climate change and extreme weather events.
- To minimize the potential for public health and safety impacts from reduced quantity and quality of SWP water deliveries, and potentially CVP water deliveries, south of the Delta resulting from a major earthquake that causes breaching of Delta levees and the inundation of brackish water into the areas in which existing pumping plants operate.
- To protect the ability of the SWP, and potentially the CVP, to deliver water when hydrologic conditions result in the availability of sufficient amounts, consistent with the requirements of state and federal law.
- To provide operational flexibility to improve aquatic conditions in the Delta and better manage risks of further regulatory constraints on project operations.

6.2.2.3 Storage

Storage is a major component of MET's dry year resource management strategy. MET's likelihood of having adequate supply capability to meet projected demands, without implementing its Water Supply Allocation Plan (WSAP), is dependent on its storage resources. Due to the pattern of generally drier hydrology, the groundwater basins and local reservoirs have dropped to low operating levels and remain below healthy storage levels. For example, the Colorado River Basin's system storage at the close of

2020, was at or near its lowest since 2000, so there is very little buffer to avoid a shortage from any future period of reduced precipitation and runoff (MET, 2021).

MET stores water in both DWR and MET surface water reservoirs. MET's surface water reservoirs are Lake Mathews, Lake Skinner, and Diamond Valley Lake (DVL), which have a combined storage capacity of over 1 MAF. Approximately 650,000 AF are stored for seasonal, regulatory, and drought use, while approximately 370,000 AF are stored for emergency use.

MET also has contractual rights to DWR surface Reservoirs, such as 65 thousand acre-feet (TAF) of flexible storage at Lake Perris (East Branch terminal reservoir) and 154 TAF of flexible storage at Castaic Lake (West Branch terminal reservoir) that provides MET with additional options for managing SWP deliveries to maximize the yield from the project. This storage can provide MET with up to 44 TAF of additional supply over multiple dry years, or up to 219 TAF to Southern California in a single dry year (MET, 2021).

MET endeavors to increase the reliability of water supplies through the development of flexible storage and transfer programs including groundwater storage (MET, 2021). These include:

- **Lake Mead Storage Program:** Executed in 2006, this program allows MET to leave excessively conserved water in Lake Mead, for exclusive use by MET in later years. MET created "Intentionally Created Surplus" (ICS) water in 2006-2007, 2009-2012, and 2016-2019, and withdrew ICS water in 2008 and 2013-2015. As of January 1, 2021, MET had a total of 1.3 MAF of Extraordinary Conservation ICS water.
- **Semitropic Storage Program:** The maximum storage capacity of the program is 350 TAF, and the minimum and maximum annual yields available to MET are 34.7 TAF and 236.2 TAF, respectively. The specific amount of water MET can expect to store in and subsequently receive from the program depends on hydrologic conditions, any regulatory requirements restricting MET's ability to export water for storage and demands placed by other program participants. During wet years, MET has the discretion to use the program to store portions of its SWP supplies which are in excess, and during dry years, the Semitropic Water Storage District returns MET's previously stored water to MET by direct groundwater pump-in or by exchange of surface water supplies.
- **Arvin-Edison Storage Program:** The storage program is estimated to deliver 75 TAF, and the specific amount of water MET can expect to store in and subsequently receive from the program depends on hydrologic conditions and any regulatory requirements restricting MET's ability to export water for storage. During wet years, MET has the discretion to use to program to store portions of its SWP supplies which are in excess, and during dry years, the Arvin-Edison Water Storage District returns MET's previously stored water to MET by direct groundwater pump-in or by exchange of surface water supplies.
- **Antelope Valley-East Kern (AVEK) Water Agency Exchange and Storage Program:** Under the exchange program, for every two AF MET receives, MET returns 1 AF back to AVEK, and MET will also be able to store up to 30 TAF in the AVEK's groundwater basin, with a dry-year return capability of 10 TAF.
- **High Desert Water Bank Program:** Under this program, MET will have the ability to store up to 280 TAF of its SWP Table A or other supplies in the Antelope Valley groundwater basin, and in exchange will provide funding for the construction of monitoring and production wells, turnouts

from the California Aqueduct, pipelines, recharge basins, water storage, and booster pump facilities. The project is anticipated to be in operation by 2025.

- **Kern-Delta Water District Storage Program:** This groundwater storage program has 250 TAF of storage capacity, and water for storage can either be directly recharged into the groundwater basin or delivered to Kern-Delta Water District farmers in lieu of pumping groundwater. During dry years, the Kern-Delta Water District returns MET's previously stored water to MET by direct groundwater pump-in return or by exchange of surface water supplies.
- **Mojave Storage Program:** MET entered into a groundwater banking and exchange transfer agreement with Mojave Water Agency that allows for the cumulative storage of up to 390 TAF. The agreement allows for MET to store water in an exchange account for later return.

6.2.3 Planned Future Sources

Imported Groundwater Supply

Involvement in MET's Regional Recycled Water Project – The Main San Gabriel Basin is listed in Phase I of this project, which is expected to deliver approximately 40,000 AF of recharge water to the basin for spreading and groundwater replenishment. The Main San Gabriel Basin Watermaster Board of Directors authorized a letter of intent that was provided to MET expressing the basin's intent to continue cooperating and working with MET on the project.

MET

Beyond the programs highlighted in Sections 6.2.1 through 6.2.3, MET continues to invest in efforts to meet its goal of long-term regional water supply reliability, focusing on the following:

- Continuing water conservation
- Developing water supply management programs outside of the region
- Developing storage programs related to the Colorado River and the SWP
- Developing storage and groundwater management programs within the Southern California region
- Increasing water recycling, groundwater recovery, stormwater and seawater desalination
- Pursuing long-term solutions for the ecosystem, regulatory and water supply issues in the California Bay-Delta (MET, 2021).

6.3 Groundwater

In FY 2019-20, the City relied on approximately 2,659 AFY – approximately 31% of the City's water supply portfolio for FY 2019-20 – from the La Habra Basin to meet its demands.

Local groundwater is pumped from three production wells within the Basin: the Idaho Street Well, the La Bonita Well, and the Portola Well. The Idaho Street Well has a capacity of 4.45 cfs but is regulated at 3.34 cfs. Water pumped from the Idaho Street Well requires treatment before entering into the distribution system. Treatment of this raw groundwater consists of chlorination, air-stripping to remove ammonia and hydrogen sulfide, and addition of sodium hexametaphosphate to sequester iron and manganese. The capacity of La Bonita Well and Portola Well is 1.89 cfs and 2.67 cfs respectively. Water from both these wells is chlorinated and blended with water purchased from the CDWC in a 250,000 gallon forebay to

reduce the concentration of minerals prior to entering into the City's distribution system (City of La Habra, 2014).

This section describes the La Habra Groundwater Basin and the measures taken by the City, who is the Basin Groundwater Sustainability Agency (GSA), to sustainably manage the Basin. This section also provides information on historical groundwater production as well as a 25-year projection of the City's groundwater supply.

6.3.1 La Habra Groundwater Basin

The unadjudicated La Habra Groundwater Basin covers parts of Los Angeles County and Orange County and is part of both the Central Basin, and the OC Basin, which are both medium-priority basins. The Basin lies entirely within the Coyote Creek Watershed and the La Habra Basin area is shown on Figure 6-3. A portion of the La Habra Basin is located within Central Basin as well as the northern tip of the OC Basin.

The City has been deemed the exclusive GSA under SGMA for the La Habra-Brea management area. This management area is part of Basin 8-1 but is hydrogeologically distinct from the OCWD Management Area and is not under the jurisdiction of OCWD. The City adopted a resolution to establish the La Habra Basin as a separate basin from Basin 8-1. OCWD adopted a resolution to support the City's request to DWR for an internal jurisdictional boundary modification in the OC Basin that follows the city limits of La Habra and Brea as it is outside of the OCWD's jurisdictional boundary (City of La Habra et al., 2017).

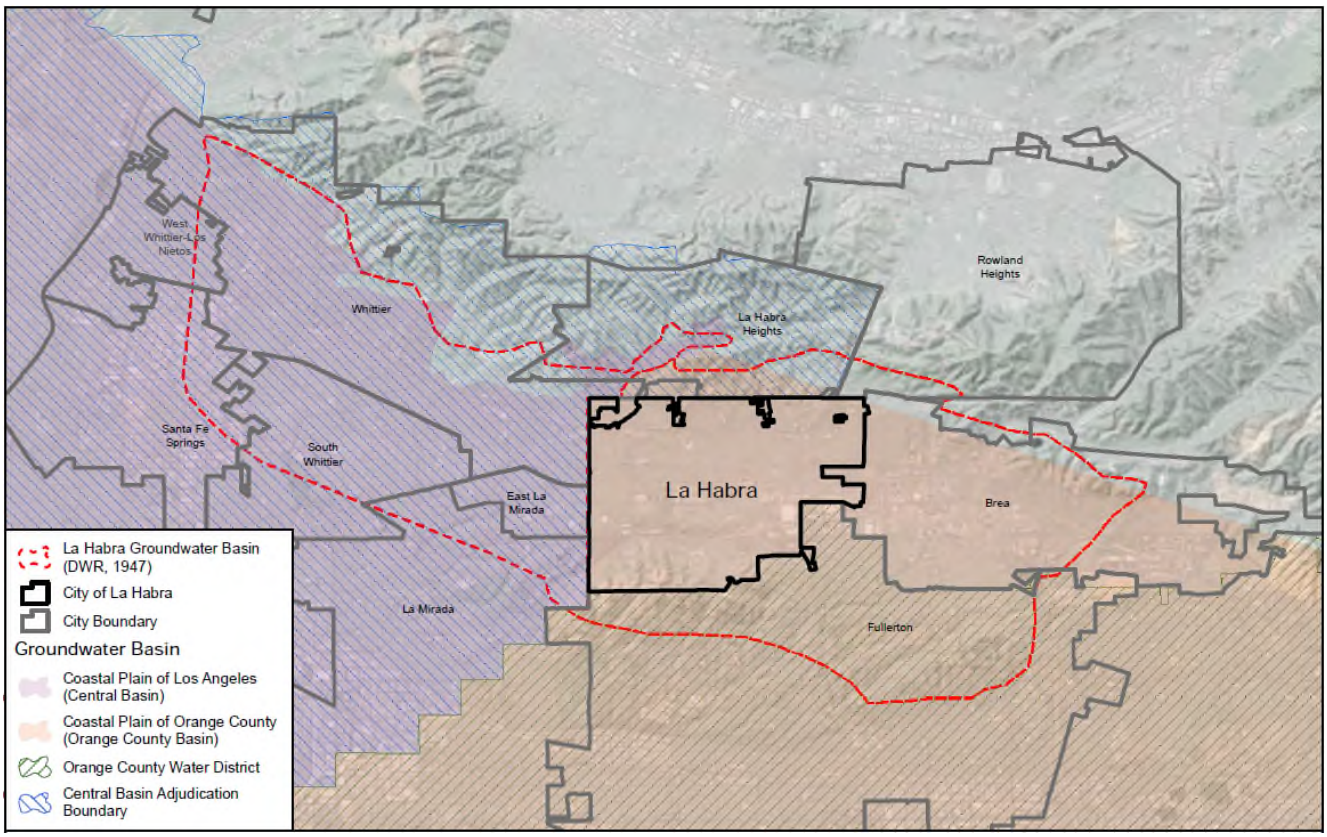

Figure 6-3: La Habra Groundwater Basin

From a structural geology standpoint, the Basin area is dominated by the northwest trending La Habra Syncline (a U–shaped down–fold) which is bounded on the north by the Puente Hills and on the south by the Coyote Hills. The fold is a naturally occurring trough, or valley, where significant quantities of groundwater have accumulated over the past 150,000 years. The Basin consists of three water-bearing zones: 1) the Alluvium, 2) the La Habra Formation (including the Coyote Hills Formation), and 3) the San Pedro Formation.

The Alluvium is comprised of young and old alluvium. The deposits are found along the surface stream courses and is composed of unconsolidated silt, clay, sand, and gravel. Alluvium thickness ranges from a few feet to over 100 feet. Generally, the La Habra Formation lies below the Alluvium, consisting of the La Habra and Coyote Hills Formations. However, in the Coyote Hill and Puente Hills, the Alluvium is uplifted and exposed. The La Habra Formation consists of non-marine mudstone, siltstone, sandstone, and conglomerate. It ranges in thickness from 300 to nearly 1,200 feet. Water levels of wells in the La Habra Formation have been measured between 100 and 200 feet below ground surface across the Basin.

Underneath the La Habra Formation lies the San Pedro Formation. As the deepest water bearing unit, the San Pedro Formation is comprised of sand, gravel, sandstone, conglomerate, and shale. The San Pedro Formation ranges between 200 and 400 feet in thickness and produces the best quality groundwater of all the water bearing zones. Pressure levels of confined groundwater in wells of the San Pedro aquifer zone range from about 100 to 200 feet below ground surface (La Habra, 2014).

6.3.1.1 Sustainable Groundwater Management Act

In 2014, the State of California adopted the Sustainable Groundwater Management Act (SGMA) to help manage its groundwater sustainably, and limit adverse effects such as significant groundwater-level declines, land subsidence, and water quality degradation. SGMA requires all high- and medium-priority basins, as designated by DWR, be sustainably managed. DWR designated the non-adjudicated Coastal Plain of OC Basin as a medium-priority basin, primarily due to heavy reliance on the groundwater as a source of water supply. Compliance with SGMA can be achieved in one of two ways (City of La Habra et al., 2017):

1. A GSA is formed and a GSP is adopted, or
2. Special Act Districts created by statute, such as OCWD, and other agencies may prepare and submit an Alternative to a GSP

Led by OCWD, the agencies within Basin 8-1, collaborated to submit an Alternative to a GSP in 2017, titled the “Basin 8-1 Alternative” to meet SGMA compliance. This document supersedes the La Habra Basin Groundwater Management Plan from 2014 and will be updated every five years. The current (2017) version is included in Appendix G2.

6.3.1.2 Basin Safe Yield

The Basin is not adjudicated. Instead, the City follows a “safe yield,” which is used for the management and future planning of the Basin for sustained beneficial use. The safe yield is the volume of groundwater that can be pumped without depleting the aquifer to a point where it cannot recover through natural recharge over a reasonable period of time.

The safe yield for the La Habra Basin was estimated to be approximately 4,500 AFY. This safe yield was determined through an average from two separate studies that took into account natural groundwater recharge and natural groundwater discharge. The Basin continues to be managed sustainably by maintaining and coordinating groundwater production within the estimated safe yield. The City is also evaluating its existing monitoring program with the intent to develop a more robust groundwater elevation and water quality monitoring program (La Habra, 2020).

6.3.2 Basin Management Objectives

The Basin Management Objectives (BMO) are locally developed flexible guidelines for groundwater development of a particular basin. The City has four proposed BMOs:

BMO No. 1 is to reduce the City’s dependence on imported water. Currently, approximately 70% of the City’s demand is met with imported water. This BMO intends for the City to use more local groundwater to meet its demands in order to increase reliability. The City’s compliance with the 20x2020 program will help meet this BMO as its total water demand will decrease.

BMO No. 2 is to maintain groundwater sustainability within the Basin. The City can meet this objective through the coordination of groundwater production within the estimated safe yield of the Basin.

BMO No. 3 is to protect and enhance the water quality of the Basin. The City may meet this objective through continuing and supplementing its existing water quality monitoring program.

BMO No. 4 is to improve the understanding of the Basin's hydrogeology, groundwater elevations, and basin yields. The City can use and supplement its existing groundwater elevation monitoring program to review general trends in groundwater elevations in the Basin. The City will also evaluate the need for additional monitoring.

6.3.3 Historical Groundwater Production

From 1922 to the early 1940's water levels in the Basin declined markedly because of increased water extraction and deficient rainfall. Water levels rose in the mid 1940's and then declined again in the late 1940's reaching the lowest recorded levels in the middle to late 1950's. From 1960 to 1977, water levels increased in elevation because of a significant decrease in water extraction. Based upon recorded stream runoff yields, it is estimated that approximately 2,100 AF of water would percolate during the average year. For direct percolation of rainfall and resulting runoff within the valley itself, it is estimated that an average of 1,600 AFY would percolate. Thus, the groundwater recharge is estimated at approximately 3,700 AFY. Subsurface flow estimates are about 5,500 AFY. Therefore, it is estimated that the average long–term supply that can be extracted without severe or sustained changes in the amount of groundwater in storage, is approximately 4,500 AFY (an average of the two values).

The City pumps groundwater through its three wells, the Idaho Street Well, the La Bonita Well, and the Portola Well. In the last five years, the City has experienced a decreased reliance on groundwater, with the exception of a slight increase in groundwater volume pumped in FY 2019-20 (Table 6-4).

Table 6-4: Retail: Groundwater Volume Pumped

DWR Submittal Table 6-1 Retail: Groundwater Volume Pumped						
☐	Supplier does not pump groundwater. The supplier will not complete the table below.					
☐	All or part of the groundwater described below is desalinated.					
Groundwater Type	Location or Basin Name	2016	2017	2018	2019	2020
Alluvial Basin	La Habra Groundwater Basin	3,393	3,201	2,815	2,089	2,659
	TOTAL	3,393	3,201	2,815	2,089	2,659
NOTES: Source – MWDOC FY 2019-20 Water Use Report (MWDOC, 2020)						

6.3.4 Groundwater Overdraft

Groundwater elevations within the Basin have risen approximately 100 feet from the 1940s through 2014 with an overall rising trend of 50 to 60 feet between 1970 and 2007. This increase in groundwater elevations demonstrates the Basin is not currently in an overdraft condition. However, the City will

continue monitoring groundwater elevation trends of the Basin and will review its groundwater operations should groundwater elevations show any signs of decline (La Habra, 2020).

6.3.5 Planned Future Sources

At the time of this writing, there are no planned future sources of groundwater in the City's service area.

6.4 Surface Water

6.4.1 Existing Sources

There are, currently, no direct surface water uses in the City's service area.

6.4.2 Planned Future Sources

At the time of this writing, there are no planned direct uses of surface water in the City's service area.

6.5 Stormwater

6.5.1 Existing Sources

There are, currently, no direct stormwater uses in the City's Service area.

6.5.2 Planned Future Sources

At the time of this writing, there are no planned stormwater uses in the City's service area.

6.6 Wastewater and Recycled Water

The City is directly involved in wastewater services through its ownership and operation of the wastewater collection system in its service area. However, the City does not own or operate wastewater treatment facilities. The sewer system service area that includes approximately 125 miles of gravity sewer main. The wastewater system serves a population of approximately 60,000 residents. For additional details on Fountain Valley's wastewater services, refer to the 2005 La Habra Sewer Master Plan.

Recycled water is wastewater that is treated through primary, secondary, and tertiary processes and is acceptable for most non-potable water purposes such as irrigation, and commercial and industrial process water per Title 22 requirements. Recycled water opportunities have continued to grow in Southern California as public acceptance and the need to expand local water resources continues to be a priority. Recycled water also provides a degree of flexibility and added reliability during drought conditions when imported water supplies are restricted. The following sections expand on the existing agency collaboration involved in these efforts as well as the City's projected recycled water use over the next 25 years.

6.6.1 Agency Coordination

The City does not own or operate wastewater treatment facilities and sends all collected wastewater to Orange County Sanitation District (OC San) for treatment and disposal. OC San provides treated water to OCWD, the manager of the Orange County Groundwater Basin. OCWD strives to maintain and increase the reliability of the Orange County Groundwater Basin through replenishment with imported water, stormwater, and advanced treated wastewater. A full description of the Orange County Groundwater Basin is available in Section 6.3.2. OCWD and OC San have jointly constructed and expanded two water recycling projects to meet this goal including: 1) OCWD Green Acres Project (GAP), and 2) OCWD Groundwater Replenishment System (GWRS).

6.6.1.1 OCWD Green Acres Project

OCWD owns and operates the GAP, a water recycling system that provides up to 8,400 AFY of recycled water for irrigation and industrial uses. GAP provides an alternate source of water that is mainly delivered to parks, golf courses, greenbelts, cemeteries, and nurseries in the cities of Costa Mesa, Fountain Valley, Newport Beach, and Santa Ana. Approximately 100 sites use GAP water, current recycled water users include Mile Square Park and Golf Courses in Fountain Valley, Costa Mesa Country Club, Chroma Systems carpet dyeing, Kaiser Permanente, and Caltrans. The City does not receive any GAP water.

6.6.1.2 OCWD Groundwater Replenishment System

OCWD's GWRS allows Southern California to decrease its dependency on imported water and creates a local and reliable source of water. OCWD's GWRS purifies secondary treated wastewater from OC San to levels that meet and exceed all state and federal drinking water standards. The GWRS Phase 1 plant has been operational since January 2008 and uses a three-step advanced treatment process consisting of microfiltration (MF), reverse osmosis (RO), and ultraviolet (UV) light with hydrogen peroxide (H_2O_2). A portion of the treated water is injected into the seawater barrier to prevent seawater intrusion into the groundwater basin. The other portion of the water is pumped to ponds where the water percolates into deep aquifers and becomes part of Orange County's water supply. The treatment process described on OCWD's website is provided below (OCWD, GWRS, 2015).

The GWRS first began operating in 2008 producing 70 million gallons of water per day (MGD) and in 2015, it underwent a 30 MGD expansion. Approximately 39,200 AFY of the highly purified water is pumped into the injection wells and 72,900 AFY is pumped to the percolation ponds in the City of Anaheim where the water is naturally filtered through sand and gravel to deep aquifers of the groundwater basin. The Orange County Groundwater Basin provides approximately 72% of the potable water supply for north and central Orange County. The design and construction of the first phase (78,500 AFY) of the GWRS project was jointly funded by OCWD and OC San; Phase 2 expansion (33,600 AFY) was funded solely by OCWD.

The Final Expansion of the GWRS is currently underway and is the third and final phase of the project. When the Final Expansion is completed in 2023, the plant will produce 130 MGD. To produce 130 MGD, additional treated wastewater from OC San is required. This additional water will come from OC San's Treatment Plant 2, which is in the City of Huntington Beach approximately 3.5 miles south of the GWRS.

The Final Expansion project will include expanding the existing GWRS treatment facilities, constructing new conveyance facilities at OC San Plant 2 and rehabilitating an existing pipeline between OC San Plant 2 and the GWRS. Once completed, the GWRS plant will recycle 100% of OC San's reclaimable sources and produce enough water to meet the needs of over one million people. The City does not receive OCWD water.

6.6.2 Wastewater Description and Disposal

The City operates and maintains the local sewer collection pipes that feed into the OC San's trunk sewer system to convey wastewater to OC San's treatment plants. The City's sewer system includes approximately 125 miles of gravity sewers ranging from 6 inches to 24 inches in diameter and 2,680 manholes and cleanouts. The wastewater collected in the City's system is conveyed to OC San's extensive system of gravity flow sewers, pump stations, and pressurized sewers. Ultimately, the wastewater is treated at OC San treatment plants in Fountain Valley (Plant No. 1) and Huntington Beach (Plant No. 2). Plant No. 1 has a total rated primary capacity of 108 MGD and a secondary treatment capacity of 80 MGD. Plant No. 2 has a rated primary capacity of 168 MGD and secondary treatment capacity of 90 MGD. Both plants share a common ocean outfall, but Plant No. 1 currently provides all its secondary treated wastewater to OCWD's GWRS for beneficial reuse. The 120-inch diameter ocean outfall extends 4 miles off the coast of Huntington Beach. A 78-inch diameter emergency outfall also extends 1.3 miles off the coast. Table 6-5 summarizes the wastewater collected by the City and transported to OC San's system in 2020.

Table 6-5: Retail: Wastewater Collected Within Service Area in 2020

DWR Submittal Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
☐	There is no wastewater collection system. The supplier will not complete the table below.					
	Percentage of 2020 service area covered by wastewater collection system					
	Percentage of 2020 service area population covered by wastewater collection system					
Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020	Name of Wastewater Treatment Agency Receiving Collected Wastewater	Treatment Plant Name	Is WWTP Located Within UWMP Area?	Is WWTP Operation Contracted to a Third Party?
City of La Habra	Estimated	5,584	OC San	Plant No. 1 / Plant No. 2	No	No
Total Wastewater Collected from Service Area in 2020:		5,584				
NOTES: Assumed a return rate of 65% (City of La Habra, 2015)						

6.6.3 Current Recycled Water Uses

There are currently no recycled water uses within the City's service area.

6.6.4 Projected Recycled Water Uses

The City does not have any direct non-potable uses within their service area and does not currently have the potential for non-potable reuse because of nonexistent or planned recycled water infrastructure.

6.6.5 Potential Recycled Water Uses

While the City recognizes the potential for beneficial reuse in their service area, there is no source of recycled water supply in proximity to the City. The City's wastewater is conveyed to OC San's regional treatment facilities where the wastewater is treated, recycled, or discharged to the ocean. Recycled water analyses performed over the years have shown that local treatment and reuse facilities are not feasible.

6.6.6 Optimization Plan

Studies of water recycling opportunities within Southern California provide a context for promoting the development of water recycling plans. It is recognized that broad public acceptance of recycled water requires continued education and public involvement. Currently, most of the recycled water available is being directed toward replenishment of the groundwater basin and improvements in groundwater quality.

Public Education

The City participates in the MWDOC public education and school education programs, which include extensive sections on water recycling. MWDOC's water use efficiency public information programs are a partnership with agencies throughout the county.

Through a variety of public information programs, MWDOC reaches the public, including those in the City, with information regarding present and future water supplies, the demands for a suitable quantity and quality of water, including recycled water, and the importance of implementing water efficiency techniques and behaviors. Through MWDOC, water education programs have reached thousands of students in the City with grade-specific programs that include information on recycled water.

Financial Incentives

The implementation of recycled water projects involves a substantial upfront capital investment for planning studies, Environmental Impact Reports (EIRs), engineering design and construction before there recycled water is available to the market. In order to determine if additional projects are feasible, studies must be performed to determine if the project should be pursed. Feasibility studies should include evaluation of alternatives with a present worth analysis consisting of capital costs (design, environmental reviews, construction, etc.) and operations and maintenance costs (electrical costs for pumps and equipment and maintenance required for the system).

Analyses have indicated that present worth costs to incorporate recycled water within the City are not cost effective as compared to purchasing imported water from MWDOC. The establishment of new supplemental funding sources through federal, state, and regional programs now provides significant financial incentives for water agencies to develop and make use of recycled water locally. Potential

sources of funding include federal, state, and local funding opportunities. These funding sources include the United States Department of Interior Bureau of Reclamation (USBR), California Proposition 13 Water Bond, Proposition 84 and MET Local Resources Program (LRP). These funding opportunities may be sought by the City or possibly more appropriately by regional agencies. The City will continue to support seeking funding for regional water recycling projects and programs.

Optimizing Recycled Water Use

The City does not use recycled water, therefore, there is no need for a recycled water optimization plan. In Orange County, the majority of recycled water is used for irrigating golf courses, parks, schools, businesses, and communal landscaping. Future recycled water use can be increased by requiring dual piping in new developments, retrofitting existing landscaped areas and constructing recycled water pump stations and transmission pipelines to reach areas that are farther from treatment plants. The City will continue to conduct feasibility studies for recycled water and seek out creative solutions such as funding, regulatory requirements, institutional arrangement and public acceptance for recycled water use with MET and other cooperative agencies.

6.7 Desalination Opportunities

In 2001, MET developed a Seawater Desalination Program (SDP) to provide incentives for developing new seawater desalination projects in MET's service area. In 2014, MET modified the provisions of their LRP to include incentives for locally produced seawater desalination projects that reduce the need for imported supplies. To qualify for the incentive, proposed projects must replace an existing demand or prevent new demand on MET's imported water supplies. In return, MET offers three incentive formulas under the program:

- Sliding scale incentive up to $340 per AF for a 25-year agreement term, depending on the unit cost of seawater produced compared to the cost of MET supplies.
- Sliding scale incentive up to $475 per AF for a 15-year agreement term, depending on the unit cost of seawater produced compared to the cost of MET supplies.
- Fixed incentive up to $305 per AF for a 25-year agreement term.

Developing local supplies within MET's service area is part of their IRP goal of improving water supply reliability in the region. Creating new local supplies reduce pressure on imported supplies from the SWP and Colorado River.

On May 6th, 2015, the SWRCB approved an amendment to the state's Water Quality Control Plan for the Ocean Waters of California (California Ocean Plan) to address effects associated with the construction and operation of seawater desalination facilities (Desalination Amendment). The amendment supports the use of ocean water as a reliable supplement to traditional water supplies while protecting marine life and water quality. The California Ocean Plan now formally acknowledges seawater desalination as a beneficial use of the Pacific Ocean and the Desalination Amendment provides a uniform, consistent process for permitting seawater desalination facilities statewide.

If the following projects are developed, MET's imported water deliveries to Orange County could be reduced. These projects include the Huntington Beach Seawater Desalination Project and the Doheny Desalination Project.

As for City-led initiatives, the City has not investigated seawater desalination as a result of economic and physical impediments.

Brackish groundwater is groundwater with a salinity higher than freshwater, but lower than seawater. Brackish groundwater typically requires treatment using desalters.

6.7.1 Ocean Water Desalination

Huntington Beach Seawater Desalination Project – Poseidon Resources LLC (Poseidon), a private company, is developing the Huntington Beach Seawater Desalination Project to be co-located at the AES Power Plant in the City of Huntington Beach along Pacific Coast Highway and Newland Street. The proposed project would produce up to 50 MGD (56,000 AFY) of drinking water to provide approximately 10% of Orange County's water supply needs.

Over the past several years, Poseidon has been working with OCWD on the general terms and conditions for selling the water to OCWD. OCWD and MWDOC have proposed a few distribution options to agencies in Orange County. The northern option proposes the water be distributed to the northern agencies closer to the plant within OCWD's service area with the possibility of recharging/injecting a portion of the product water into the OC Basin. The southern option builds on the northern option by delivering a portion of the product water through the existing OC-44 pipeline for conveyance to the South Orange County water agencies. A third option is also being explored, which includes all of the product water to be recharged into the OC Basin. Currently, a combination of these options could be pursued.

The Huntington Beach Seawater Desalination project plant capacity of 56,000 AFY would be the single largest source of new, local drinking water available to the region. In addition to offsetting imported demand, water from this project could provide OCWD with management flexibility in the OC Basin by augmenting supplies into the Talbert Seawater Barrier to prevent seawater intrusion.

In May 2015, OCWD and Poseidon entered into a non-binding Term Sheet that provided the overall partner structure in order to advance the project. Based on the initial Term Sheet, which was updated in 2018, Poseidon would be responsible for permitting, financing, design, construction, and operations of the treatment plant while OCWD would purchase the production volume, assuming the product water quality and quantity meet specific contract parameters and criteria. Furthermore, OCWD would then distribute the water in Orange County using one of the proposed distribution options described above.

Currently, the project is in the regulatory permit approval process with the Regional Water Quality Control Board and the California Coastal Commission. Once all of the required permits are approved, Poseidon will then work with OCWD and interested member agencies in developing a plan to distribute the water. Subsequent to the regulatory permit approval process, and agreement with interested parties, Poseidon estimates that the project could be online as early as 2027.

Under guidance provided by DWR, the Huntington Beach Seawater Desalination Plant's projected water supplies are not included in the supply projections due to its current status within the criteria established by State guidelines (DWR, 2020c).

Doheny Desalination Project – South Coast Water District (SCWD) is proposing to develop an ocean water desalination facility in Dana Point. SCWD intends to construct a facility with an initial capacity of up to 5 million gallons per day (MGD). The initial up to 5 MGD capacity would be available for SCWD and potential partnering water agencies to provide a high quality, locally-controlled, drought-proof water supply. The desalination facility would also provide emergency backup water supplies, should an earthquake, system shutdown, or other event disrupt the delivery of imported water to the area. The Project would consist of a subsurface slant well intake system (constructed within Doheny Beach State Park), raw (sea) water conveyance to the desalination facility site (located on SCWD owned property), a seawater reverse osmosis (SWRO) desalination facility, brine disposal through an existing wastewater ocean outfall, solids handling facilities, storage, and potable water conveyance interties to adjacent local and regional distribution infrastructure.

The Doheny Ocean Desalination Project has been determined as the best water supply option to meet reliability needs of SCWD and south Orange County. SCWD is pursuing the Project to ensure it meets the water use needs of its customers and the region by providing a drought-proof potable water supply, which diversifies SCWD's supply portfolio and protects against long-term imported water emergency outages and supply shortfalls that could have significant impact to our coastal communities, public health, and local economy. Phase I of the Project (aka, the "Local" Project) will provide SCWD and the region with up to 5 MGD of critical potable water supply that, together with recycled water, groundwater, and conservation, will provide the majority of SCWD's water supply through local reliable sources. An up to 15 MGD capacity project has been identified as a potential future "regional" project that could be phased incrementally, depending on regional needs.

On June 27, 2019, SCWD certified the final EIR and approved the Project. The Final EIR included considerable additional information provided at the request of the Coastal Commission and the Regional Board, including an updated coastal hazard analysis, updated brine discharge modeling, and updated groundwater modeling, updated hydrology analysis. The approval of the Project also included a commitment to 100 percent carbon neutrality through a 100 percent offset of emissions through the expansion of Project mitigation and use of renewable energy sources. SCWD is currently in the permitting process and finalizing additional due diligence studies. If implemented, SCWD anticipates an online date of 2025.

Under guidance provided by DWR, the Doheny Seawater Desalination Project's projected water supplies are not included in the supply projections due to its current status within the criteria established by State guidelines (DWR, 2020c).

6.7.2 Groundwater Desalination

There are currently no brackish groundwater opportunities within the City's service area.

6.8 Water Exchanges and Transfers

Interconnections with other agencies result in the ability to share water supplies during short term emergency situations or planned shutdowns of major imported water systems. However, beyond short term outages, transfers can also be involved with longer term water exchanges to deal with droughts or

water allocation situations. The following subsections describe the City's existing and planned exchanges and transfers.

6.8.1 Existing Exchanges and Transfers

The City has five emergency interconnections with the City of Brea, the City of Fullerton, and Suburban Water Systems (SWS). The City has two emergency interconnections with the City of Brea that are export-only connections. These emergency interconnections take water from the City's 20-inch transmission main that is connected to the MET OC-4 imported water connection. The emergency interconnection with the City of Fullerton is an import-only connection that is metered and consists of a small booster pump to boost water into the City's Zone 1. The first interconnection with SWS is a two-way connection, while the second is an export-only connection (Psomas, 2017).

6.8.2 Planned and Potential Exchanges and Transfers

MWDOC continues to help its retail agencies develop transfer and exchange opportunities that promote reliability within their systems. Therefore, MWDOC will look to help its retail agencies navigate the operational and administrative issues of transfers within the MET distribution system. Currently, there are no additional transfer or exchange opportunities.

On a regional scale, the Santa Ana River Conservation and Conjunctive Use Project (SARCCUP) is a joint project established by five regional water agencies within the Santa Ana River Watershed (Eastern Municipal Water District, Inland Empire Utilities Agency, Western Municipal Water District, OCWD, and San Bernardino Valley Municipal Water District). Although the City does not produce water from the OC Basin, the City could indirectly benefit through MWDOC's involvement in the project.

In 2016, SARCCUP was successful in receiving $55 million in grant funds from Proposition 84 through DWR. The overall SARCCUP program awarded by Proposition 84, consists of three main program elements:

- Watershed-Scale Cooperative Water Banking Program
- Water Use Efficiency: Landscape Design and Irrigation Improvements and Water Budget Assistance for Agencies
- Habitat Creation and *Arundo Donax* Removal from the Santa Ana River

The Watershed-Scale Cooperative Water Banking Program is the largest component of SARCCUP and since 2016, Valley, MET, and the four SARCCUP-MWD Member Agencies, with MWDOC representing OCWD, have been discussing terms and conditions for the ability to purchase surplus water from Valley to be stored in the Santa Ana River watershed. With the Valley and MET surplus water purchase agreement due for renewal, it was the desire of Valley to establish a new agreement with MET that allows a portion of its surplus water to be stored within the Santa Ana River watershed.

An agreement between MET and four SARCCUP-MWD Member Agencies was approved earlier this year that gives the SARCCUP agencies the ability to purchase a portion (up to 50%) of the surplus water that San Bernardino Valley Municipal Water District (Valley), a SWP Contractor, sells to MET. Such water will be stored in local groundwater basins throughout the Santa Ana River watershed and extract during dry years to reduce the impacts from multiyear droughts. In Orange County, 36,000 AF can be stored in the

OC Basin for use during dry years. More importantly, this stored SARCCUP water can be categorized as "extraordinary supplies", if used during a MET allocation, and can enhance a participating agencies' reliability during a drought. Moreover, if excess water is available MWDOC can purchase additional water for its service area.

6.9 Summary of Future Water Projects

The City continually reviews practices that will provide its customers with adequate and reliable supplies. Trained staff continue to ensure the water quality is safe and the water supply will meet present and future needs in an environmentally and economically responsible manner.

Although the City has various projects planned to maintain and improve the water system, there are currently no City-specific planned projects that have both a concrete timeline and a quantifiable increase in supply.

6.9.1 City Initiatives

The City anticipates water demand in the City to remain consistent over the next 25 years. The projects that have been identified by the City to improve the City's water supply reliability and enhance the operations of the City include the annual water valve replacement, cast iron replacement valve, and water meter replacement programs, as well as rehabilitation of the OC-45 connection to MET, SCADA system upgrades, and well reverse osmosis systems. Projects identified in the City's Nine Year Capital Improvement Program include the below. For the full list of projects, refer to the City's 2017 Water Master Plan (Psomas, 2017).

Foothill Zone Consolidation Project – This is a pressure zone consolidation project that will create one or two pressure zones from multiple pressure zones in the northern foothill portions of the City. The project will improve fire flows, water circulation and quality, and reduce the number of pressure reducing stations. The conceptual design report has been completed and detailed design and construction are in progress.

Interconnection from Zone 20 to Zone 18 at Riviera Court – Zone 20 has only one source of flow and an interconnection with Zone 18 would allow two sources of influent water to Zone 20.

Well Reverse Osmosis Systems – These systems will be implemented at the La Bonita and Portola Wells to improve water quality and increase withdrawal from the Basin.

6.9.2 Regional Initiatives

Beyond City-specific projects, the City consistently coordinates its long-term water shortage planning with MWDOC and OCWD. MWDOC has identified the following future regional projects, some of which can indirectly benefit the City to further increase local supplies and offset imported supplies (CDM Smith, 2019):

Poseidon Huntington Beach Ocean Desalination Project – Poseidon proposes to construct and operate the Huntington Beach Ocean Desalination Plant on a 12-acre parcel adjacent to the AES Huntington Beach Generating Station. The facility would have a capacity of 50 MGD and 56,000 AFY, with its main components consisting of a water intake system, a desalination facility, a

concentrate disposal system, and a product water storage tank. This project would provide both system and supply reliability benefits to South Orange County (SOC), the OC Basin, and Huntington Beach. The capital cost in the initial year for the plant is $1.22 billion.

Doheny Ocean Desalination Project – SCWD is proposing to construct an ocean water desalination facility in Dana Point at Doheny State Beach. The facility would have an initial up to 5 MGD capacity, with the potential for future expansions up to 15 MGD. The project's main components are a subsurface water intake system, a raw ocean water conveyance pipeline, a desalination facility, a seawater reverse osmosis (SWRO) desalination facility, a brine disposal system, and a product water storage tank.

San Juan Watershed Project – Santa Margarita Water District (SMWD) and other project partners have proposed a multi-phased project within the San Juan Creek Watershed to capture local stormwater and develop, convey, and recharge recycled water into the San Juan Groundwater Basin and treat the water upon pumping it out of the basin. The first phase includes the installation of three rubber dams within San Juan Creek to promote in-stream recharge of the basin, with an anticipated production of 700 AFY on average. The second phase would develop additional surface water and groundwater management practices by using stormwater and introducing recycled water for infiltration into the basin and has an anticipated production of 2,660 to 4,920 AFY. The third phase will introduce recycled water directly into San Juan Creek through live stream recharge, with an anticipated production of up to 2,660 AFY (SMWD, 2021).

Cadiz Water Bank – SMWD and Cadiz, Inc. are developing this project to create a new water supply by conserving groundwater that is currently being lost to evaporation and recovering the conserved water by pumping it out of the Fenner Valley Groundwater Basin to convey to MET's CRA. The project consists of a groundwater pumping component that includes an average of 50 TAFY of groundwater that can be pumped from the basin over a 50-year period, and a water storage component that allows participants to send surplus water supplies to be recharged in spreading basins and held in storage.

South Orange County Emergency Interconnection Expansion – MWDOC has been working with the SOC agencies on improvements for system reliability primarily due to the risk of earthquakes causing outages of the MET imported water system as well as extended grid outages. Existing regional interconnection agreements between IRWD and SOC agencies provides for the delivery of water through the IRWWD system to participating SOC agencies in times of emergency. MWDOC and IRWD are currently studying an expansion of the program, including the potential East Orange County Feeder No. 2 pipeline and an expanded and scalable emergency groundwater program, with a capital cost of $867,451.

SARCCUP – SARCCUP is a joint project established between MET, MWDOC, Eastern MWD, Western MWD, Inland Empire Utilities Agency, and OCWD that can provide significant benefits in the form of additional supplies during dry years for Orange County. Surplus SWP water from San Bernardino Valley Water District (SBVMWD) can be purchased and stored for use during dry years. This water can even be considered an extraordinary supply under MET allocation Plan, if qualified under MET's extraordinary supply guidelines. OCWD has the ability to store 36,000 AF of SARCCUP water and if excess water is available MWDOC has the ability to purchase additional water. Further details remain to be developed between OCWD, retail agencies, and MWDOC in how the water will be distributed in Orange County and who participates.

Moulton Niguel Water District (MNWD) / OCWD Pilot Storage Program - OCWD entered into an agreement with MNWD to develop a pilot program to explore the opportunity to store water in the OC Basin. The purpose of such a storage account would provide MNWD water during emergencies and/or provide additional water during dry periods. As part of the agreement, OCWD hired consultants to evaluate where and how to extract groundwater from the OC Basin with several options to pump the water to MNWD via the East Orange County Feeder No. 2; as well as a review of existing banking/exchange programs in California to determine what compensation methodologies could OCWD assess for a storage/banking program.

6.10 Energy Intensity

A new requirement for this 2020 UWMP is an energy intensity analysis of the Supplier's water, wastewater, and recycled water systems, where applicable for a 12-month period. The City owns and operates a water distribution system and a wastewater collection system. This section reports the energy intensity for each system using data from CY 2019.

Water and energy resources are inextricably connected. Known as the "water-energy nexus", the California Energy Commission estimates the transport and treatment of water, treatment and disposal of wastewater, and the energy used to heat and consume water account for nearly 20% of the total electricity and 30% of non-power plant related natural gas consumed in California. In 2015, California issued new rules requiring 50% of its power to come from renewables, along with a reduction in greenhouse gas (GHG) emissions to 40% below 1990 levels by 2030. Consistent with energy and water conservation, renewable energy production, and GHG mitigation initiatives, the City reports the energy intensity of its water and wastewater operations.

The methodology for calculating water energy intensity outlined in Appendix O of the UWMP Guidebook was adapted from the California Institute for Energy Efficiency exploratory research study titled "Methodology for Analysis of the Energy Intensity of California's Water Systems" (Wilkinson 2000). The study defines water energy intensity as the total amount of energy, calculated on a whole-system basis, required for the use of a given amount of water in a specific location.

UWMP reporting is limited to available energy intensity information associated with water processes occurring within an urban water supplier's direct operational control. Operational control is defined as authority over normal business operations at the operational level. Any energy embedded in water supplies imparted by an upstream water supplier (e.g., water wholesaler) or consequently by a downstream water purveyor (e.g., retail water provider) is not included in the UWMP energy intensity tables. The City's calculations conform to methodologies outlined in the UWMP Guidebook and Wilkinson study.

6.10.1 Water Supply Energy Intensity

In CY 2019, the City consumed 440 kilowatt-hours (KWh) per AF for water extraction and distribution (Table 6-6). The basis for calculations is provided in more detail in the following subsections.

Table 6-6: Recommended Energy Intensity – Multiple Water Delivery Products

Urban Water Supplier: *La Habra*

Water Delivery Product (If delivering more than one type of product use Table O-1C)

Retail Potable Deliveries

Table O-1A: Recommended Energy Reporting - Water Supply Process Approach

Enter Start Date for Reporting Period: 1/1/2019

End Date: 12/31/2019

☐ Is upstream embedded in the values reported?

		Urban Water Supplier Operational Control							
		Water Management Process						Non-Consequential Hydropower (if applicable)	
	Water Volume Units Used	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Volume of Water Entering Process	AF	*2326*	*0*	*0*	*0*	*7724.8*	*7724.8*	*0*	*7724.8*
Energy Consumed (kWh)	*N/A*	*1396878*	*0*	*0*	*0*	*2001742*	*3398620*	*0*	*3398620*
Energy Intensity (kWh/vol.)	*N/A*	*600.6*	*0.0*	*0.0*	*0.0*	*259.1*	*440.0*	*0.0*	*440.0*

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:

Volume of Water Entering Process: Extraction data based MWDOC Compiled Water Audits "Volume From Own Sources" and Distribution data based on MWDOC Compiled Water Audits "Authorized Consumption." Non-Revenue Water is not considered in this calculation – the energy efficiency is based on water delivered to customers.
Energy Consumed: Based on metered data.

Narrative:

La Habra relies on imported water and local groundwater to meet their customers' water needs. Operational control is limited to groundwater wells and potable water booster stations. This table does not include upstream embedded energy consumed prior to La Habra taking control. Distribution is based on the authorized consumption for 2019.

6.10.1.1 Operational Control and Reporting Period

As described throughout the report, the City is a retail agency that relies on groundwater and imported water.

Water supply energy intensity was calculated for the 2019 calendar year. This is a standard for energy and GHG reporting to the Climate Registry, California Air Resources Board, and the United States Environmental Protection Agency. Calendar year reporting provides consistency when assessing direct and indirect energy consumption within a larger geographical context, as fiscal year starting dates can vary between utilities and organizations.

6.10.1.2 Volume of Water Entering Processes

According to MWDOC's Compiled Water Audits, the City extracted 2326 AF of groundwater from the La Habra Basin and distributed 7725 AF of both groundwater and imported water. Water volume is based on metered data.

6.10.1.3 Energy Consumption and Generation

According to Southern California Edison (SCE) Electricity Bills, groundwater wells consumed 1,396,878 kWh of electricity and pump stations along the distribution system consumed 2,001,742 kWh of electricity. Currently, the City does not generate renewable energy. Energy consumption is based on metered data.

6.10.2 Wastewater and Recycled Water Energy Intensity

In CY2019, the City consumed no energy for wastewater services. Sewers within the City are all entirely gravity based. The City does not own or operate any lift stations or wastewater treatment. In 2019, an estimated 5584 AF of wastewater was collected and conveyed to OCSD for treatment.

6.10.3 Key Findings and Next Steps

Calculating and disclosing direct operationally-controlled energy intensities is another step towards understanding the water-energy nexus. However, much work is still needed to better understand upstream and downstream (indirect) water-energy impacts. When assessing water supply energy intensities or comparing intensities between providers, it is important to consider reporting boundaries as they do not convey the upstream embedded energy or impacts energy intensity has on downstream users. Engaging one's upstream and downstream supply chain can guide more informed decisions that holistically benefit the environment and are mutually beneficial to engaged parties. Suggestions for further study include:

- Supply-chain engagement – The City relies on a variety of water sources for their customers. While some studies have used life cycle assessment tools to estimate energy intensities, there is a need to confirm this data. The 2020 UWMP requirement for all agencies to calculate energy intensity will help the City and neighboring agencies make more informed decisions that would

benefit the region as a whole regarding the energy and water nexus. A similar analysis could be performed with upstream supply chain energy, for example, with State Project Water.

- Internal benchmarking and goal setting – With a focus on energy conservation and a projected increase in water demand despite energy conservation efforts, the City's energy intensities will likely decrease with time. Conceivably, in a case where water demand decreases, energy intensities may rise as the energy required to pump or treat is not always proportional to water delivered. In the course of exploring the water-energy nexus and pursuing renewable energy goals, there is a need to assess whether energy intensity is a meaningful indicator or if it makes sense to use a different indicator to reflect the City's commitment to energy and water conservation.
- Regional sustainability – Water and energy efficiency are two components of a sustainable future. Efforts to conserve water and energy, however, may impact the social, environmental, and economic livelihood of the region. In addition to the relationship between water and energy, over time, it may also be important to consider and assess the connection these resources have on other aspects of a sustainable future.

7 WATER SERVICE RELIABILITY AND DROUGHT RISK ASSESSMENT

Building upon the water supply identified and projected in Section 6, this key section of the UWMP examines the City's projected water supplies, water demand, and the resulting water supply reliability. Water service reliability reflects the City's ability to meet the water needs of its customers under varying conditions. For the UWMP, water supply reliability is evaluated in two assessments: 1) the Water Service Reliability Assessment and 2) the DRA. The Water Service reliability assessment compares projected supply to projected demand in 2025 through 2045 for three hydrological conditions: a normal year, a single dry year, and a drought period lasting five consecutive years. The DRA, a new UWMP requirement, assesses near-term water supply reliability. It compares projected water supply and demand assuming the City experiences a drought period for the next five consecutive years. Factors affecting reliability, such as climate change and regulatory impacts, are accounted for in the assessment.

7.1 Water Service Reliability Overview

Every urban water supplier is required to assess the reliability of their water service to their customers under normal, single-dry, and multiple dry water years. The City depends on a combination of imported and local supplies to meet its water demands and has taken numerous steps to ensure it has adequate supplies. Development of local supplies augments the reliability of the water system. There are various factors that may impact reliability of supplies such as legal, environmental, water quality and climatic which are discussed below. MET and MWDOC's 2020 UWMPs conclude that they can meet full-service demands of their member agencies starting 2025 through 2045 during normal years, a single-dry year, and multiple-dry years. Consequently, the City is projected to meet full-service demands through 2045 for the same scenarios.

MET's 2020 IRP update describes the core water resources that will be used to meet full-service demands at the retail level under all foreseeable hydrologic conditions from 2025 through 2045. The foundation of MET's resource strategy for achieving regional water supply reliability has been to develop and implement water resources programs and activities through its IRP preferred resource mix. This preferred resource mix includes conservation, local resources such as water recycling and groundwater recovery, Colorado River supplies and transfers, SWP supplies and transfers, in-region surface reservoir storage, in-region groundwater storage, out-of-region banking, treatment, conveyance, and infrastructure improvements.

Table 7-1 shows the basis of water year data used to predict drought supply availability. The average (normal) hydrologic condition for the MWDOC service area, which the City is a part of, is represented by FY 2017-18 and FY 2018-19 and the single-dry year hydrologic condition by FY 2013-14. The five consecutive years of FY 2011-12 to FY 2015-16 represent the driest five-consecutive year historic sequence for MWDOC's service area. Locally, Orange County rainfall for the five-year period totaled 36 inches, the driest on record.

Table 7-1: Retail: Basis of Water Year Data (Reliability Assessment)

DWR Submittal Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)			
Year Type	**Base Year**	**Available Supplies if Year Type Repeats**	
		☐	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP. Location _____
		☑	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available	**% of Average Supply**
Average Year	2018-2019	-	100%
Single-Dry Year	2014	-	106%
Consecutive Dry Years 1st Year	2012	-	106%
Consecutive Dry Years 2nd Year	2013	-	106%
Consecutive Dry Years 3rd Year	2014	-	106%
Consecutive Dry Years 4th Year	2015	-	106%
Consecutive Dry Years 5th Year	2016	-	106%
Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.			
NOTES: Assumes an increase of 6% above average year demands in dry and multiple dry years based on the Demand Forecast TM (CDM Smith, 2021). 106% represents the percent of average supply needed to meet demands of a single-dry and multiple-dry years. Since the City is able to meet all of its demand with imported water from MWDOC/MET (on top of local groundwater and purchases from CDWC), the percent of average supply value reported is equivalent to the percent of average demand under the corresponding hydrologic condition.			

The following sections provide a detailed discussion of the City's water source reliability. Additionally, the following sections compare the City's projected supply and demand under various hydrological conditions, to determine the City's supply reliability for the 25-year planning horizon.

7.2 Factors Affecting Reliability

In order to prepare realistic water supply reliability assessments, various factors affecting reliability were considered. These include climate change and environmental requirements, regulatory changes, water quality impacts, and locally applicable criteria.

7.2.1 Climate Change and the Environment

Changing climate patterns are expected to shift precipitation patterns and affect water supply availability. Unpredictable weather patterns will make water supply planning more challenging. Although climate change impacts are associated with exact timing, magnitude, and regional impacts of these temperature and precipitation changes, researchers have identified several areas of concern for California water planners (MET, 2021). These areas include:

- A reduction in Sierra Nevada Mountain snowpack.
- Increased intensity and frequency of extreme weather events.
- Prolonged drought periods.
- Water quality issues associated with increase in wildfires.
- Changes in runoff pattern and amount.
- Rising sea levels resulting in:
    - Impacts to coastal groundwater basins due to seawater intrusion.
    - Increased risk of damage from storms, high-tide events, and the erosion of levees.
    - Potential pumping cutbacks to the SWP and CVP.

Other important issues of concern due to global climate change include:

- Effects on local supplies such as groundwater.
- Changes in urban and agricultural demand levels and patterns.
- Increased evapotranspiration from higher temperatures.
- Impacts to human health from water-borne pathogens and water quality degradation.
- Declines in ecosystem health and function.
- Alterations to power generation and pumping regime.
- Increases in ocean algal blooms affected seawater desalination supplies.

The major impact in California is that without additional surface storage, the earlier and heavier runoff (rather than snowpack retaining water in storage in the mountains), will result in more water being lost to the oceans. A heavy emphasis on storage is needed in California.

In addition, the Colorado River Basin supplies have been inconsistent since about the year 2000, with precipitation near normal while runoff has been less than average in two out of every three years. Climate models are predicting a continuation of this pattern whereby hotter and drier weather conditions will result in continuing lower runoff, pushing the system toward a drying trend that is often characterized as long term drought.

Dramatic swings in annual hydrologic conditions have impacted water supplies available from the SWP over the last decade. The declining ecosystem in the Delta has also led to a reduction in water supply deliveries, and operational constraints, which will likely continue until a long-term solution to these problems is identified and implemented (MET, 2021).

Legal, environmental, and water quality issues may have impacts on MET supplies. It is felt, however, that climatic factors would have more of an impact than legal, water quality, and environmental factors. Climatic conditions have been projected based on historical patterns, but severe pattern changes are still a possibility in the future (MET, 2021).

7.2.2 Regulatory and Legal

Ongoing regulatory restrictions, such as those imposed by the Biops on the effects of SWP and the federal CVP operations on certain marine life, also contributes to the challenge of determining water delivery reliability. Endangered species protection and conveyance needs in the Delta have resulted in operational constraints that are particularly important because pumping restrictions impact many water resources programs – SWP supplies and additional voluntary transfers, Central Valley storage and transfers, and in-region groundwater and surface water storage. Biops protect special-status species listed as threatened or endangered under the ESAs and imposed substantial constraints on Delta water supply operations through requirements for Delta inflow and outflow and export pumping restrictions.

In addition, the SWRCB has set water quality objectives that must be met by the SWP including minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity level. SWRCB plans to fully implement the new Lower San Joaquin River (LSJR) flow objectives from the Phase 1 Delta Plan amendments through adjudicatory (water rights) and regulatory (water quality) processes by 2022. These LSJR flow objectives are estimated to reduce water available for human consumptive use. New litigation, listings of additional species under the ESAs, or regulatory requirements imposed by the SWRCB could further adversely affect SWP operations in the future by requiring additional export reductions, releases of additional water from storage, or other operational changes impacting water supply operations.

The difficulty and implications of environmental review, documentation, and permitting pose challenges for multi-year transfer agreements, recycled water projects, and seawater desalination plants. The timeline and roadmap for getting a permit for recycled water projects are challenging and inconsistently implemented in different regions of the state. Indirect potable reuse projects face regulatory restraints such as treatment, blend water, retention time, and Basin Plan Objectives, which may limit how much recycled water can feasibly be recharged into the groundwater basins. New regulations and permitting uncertainty are also barriers to seawater desalination supplies, including updated Ocean Plan Regulations, Marine Life Protected Areas, and Once-Through Cooling Regulations (MET, 2021).

7.2.3 Water Quality

The following sub-sections include narratives on water quality issues experienced in various water supplies, if any, and the measures being taken to improve the water quality of these sources.

7.2.3.1 Imported Groundwater (CDWC)

VOCs and nitrates are the most prevalent contaminants found in the Main San Gabriel Basin. As a result, the location and treatment methods are generally well understood. During FY 2019-20, 30 treatment plants treated approximately 75,000 AF of VOC-contaminated water from the Main San Gabriel Basin. Although VOC contamination is substantial, it is centered in just a few areas, leaving a large portion of the Main San Gabriel Basin unaffected.

The California State Department of Drinking Water (DDW) lowered the notification level of perchlorate from 18 to 4 parts per billion (ppb) in January 2002. Subsequently, a total of 22 wells from the Main San Gabriel Basin were removed from service due to unacceptable levels of perchlorate. In October 2007, the DDW established an maximum contaminant level (MCL) of 6 ppb. Efforts to treat perchlorate by the

Watermaster resulted in ion-exchange technology treatment facilities at five sites in the Baldwin Park Operable Unit (BPOU) and at two facilities in other parts of the Main San Gabriel Basin during FY 2019-20. In April 2020, DDW issued a Notice of Proposed Rulemaking to consider lowering the perchlorate Detection Limit for Purposes of Reporting (DLR) to 2 ppb, and in anticipation of this possible revision, Watermaster coordinated with Producers to conduct “low-level” detection sampling at a level of 0.1 ppb.

During 1998, eight local wells within the Main San Gabriel Basin had levels of NDMA above the notification level of 2 parts per trillion (ppt) at the time. Five of the wells with measurable levels of NDMA had already been taken out of service for other reasons, and the other three were taken offline as a direct result of NDMA levels above notification level. The Watermaster played a key role in the construction of NDMA treatment facilities within the Main San Gabriel Basin. Five facilities were operational during FY 2019-20.

1,2,3-TCP is a degreasing agent that has been detected in the BPOU during the winter of 2006. Its presence delayed the use of one treatment facility for potable purposes. The DDW determined 1,2,3-TCP is best treated through liquid phase GAC. Facilities to treat 1,2,3-TCP were operational during FY 2019-20.

The DDW required specific water systems to conduct water quality tests for PFAS and PFOS during 2019 and established the notification level at 5.1 ppt and 6.5 ppt for PFOA and PFOS, respectively. Watermaster is conducting PFAS sampling and monitoring as required by the SWRCB and working with the DDW to characterize the extent of PFAS in the Main San Gabriel Basin (Main San Gabriel Basin Watermaster, 2020b).

7.2.3.2 Imported Water (MET)

MET is responsible for providing high quality potable water throughout its service area. Over 300,000 water quality tests are performed per year on MET’s water to test for regulated contaminants and additional contaminants of concern to ensure the safety of its waters. MET’s supplies originate primarily from the CRA and from the SWP. A blend of these two sources, proportional to each year’s availability of the source, is then delivered throughout MET’s service area.

MET’s primary water sources face individual water quality issues of concern. The CRA water source contains higher total dissolved solids (TDS) and the SWP contains higher levels of organic matter, lending to the formation of disinfection byproducts. To remediate the CRA’s high level of salinity and the SWP’s high level of organic matter, MET blends CRA and SWP supplies and has upgraded all of its treatment facilities to include ozone treatment processes. In addition, MET has been engaged in efforts to protect its Colorado River supplies from threats of uranium, perchlorate, and chromium VI while also investigating the potential water quality impact of the following emerging contaminants: N-nitrosodimethylamine (NDMA), pharmaceuticals and personal care products (PPCP), microplastics, per- and polyfluoroalkyl substances (PFAS), and 1,4-dioxane (MET, 2021). While unforeseeable water quality issues could alter reliability, MET’s current strategies ensure the delivery of high-quality water.

The presence of quagga mussels in water sources is a water quality concern. Quagga mussels are an invasive species that was first discovered in 2007 at Lake Mead, on the Colorado River. This species of mussels forms massive colonies in short periods of time, disrupting ecosystems and blocking water

intakes. They can cause significant disruption and damage to water distribution systems. MET has had success in controlling the spread and impacts of the quagga mussels within the CRA, however the future could require more extensive maintenance and reduced operational flexibility than current operations allow. It also resulted in MET eliminating deliveries of CRA water into DVL to keep the reservoir free from quagga mussels (MET, 2021).

7.2.3.3 Groundwater

TDS, hydrogen sulfide, iron, and manganese impair La Habra Groundwater Basin's water supply. Investigations of water quality within the La Habra Basin have determined that the quality is extremely variable. Shallow regions within the central portion of the basin and areas recharged by surface water along the basin boundary are of a bicarbonate and chloride character. Historically, TDS concentrations have remained relatively stable, and in 2017, TDS concentration in La Habra wells was approximately 960 mg/L (City of La Habra et al., 2017).

The La Habra Basin has water quality concerns that require treatment or blending with higher quality water to meet the State's health standards. The quality of Idaho Street Well raw water requires treatment before entering the City of La Habra's distribution system. The treatment system includes chlorination, air-stripping to remove hydrogen sulfide and ammonia that may be present, and the addition of sodium hexametaphosphate to sequester iron and manganese. Water from the La Bonita Well and the Portola Well is chlorinated and then blended with CDWC purchased water in a 250,000-gallon forebay to reduce mineral concentration (La Habra, Groundwater Study, 2014).

7.2.4 Locally Applicable Criteria

Within Orange County, there are no significant local applicable criteria that directly affect reliability. Through the years, the water agencies in Orange County have made tremendous efforts to integrate their systems to provide flexibility to interchange with different sources of supplies. There are emergency agreements in place to ensure all parts of the County have an adequate supply of water. In the northern part of the County, agencies are able to meet a majority of their demands through groundwater with very little limitation, except for the OCWD BPP. For the agencies in southern Orange County, most of their demands are met with imported water where their limitation is based on the capacity of their system, which is very robust.

However, if a major earthquake on the San Andreas Fault occurs, it will be damaging to all three key regional water aqueducts and disrupt imported supplies for up to six months. The region would likely impose a water use reduction ranging from 10-25% until the system is repaired. However, MET has taken proactive steps to handle such disruption, such as constructing DVL, which mitigates potential impacts. DVL, along with other local reservoirs, can store a six to twelve-month supply of emergency water (MET, 2021).

7.3 Water Service Reliability Assessment

This Section assesses the City's reliability to provide water services to its customers under various hydrological conditions. This is completed by comparing the projected long-term water demand

(Section 4), to the projected water supply sources available to the City (Section 6) in five-year increments, for a normal water year, a single dry water year, and a drought lasting five consecutive water years.

7.3.1 Normal Year Reliability

The water demand forecasting model developed for the Demand Forecast TM (described in Section 4.3), to project the 25-year demand for Orange County water agencies, also isolated the impacts that weather and future climate can have on water demand through the use of a statistical model. The explanatory variables of population, temperature, precipitation, unemployment rate, drought restrictions, and conservation measures were used to create the statistical model. The impacts of hot/dry weather condition are reflected as a percentage increase in water demands from the average condition. The average (normal) demand is represented by the average water demand of FY 2017-18 and FY 2018-19 (CDM Smith, 2021).

The City is 100% reliable for normal year demands from 2025 through 2045 (Table 7-2) due to diversified supply and conservation measures. For simplicity, the table shows supply to balance demand in the table. However, the City can purchase more MET water through MWDOC, should the need arise. The City has entitlements to receive imported water from MET through MWDOC via connections to MET's regional distribution system. All imported water supplies are assumed available to the City from existing water transmission facilities, as per MET and MWDOC's 2020 UWMPs. The demand and supplies listed in Table 7-2 also include local groundwater supplies that are available to the City from the OSY of the La Habra Basin.

Table 7-2: Retail: Normal Year Supply and Demand Comparison

DWR Submittal Table 7-2 Retail: Normal Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045
Supply totals (AF)	8,851	8,810	8,825	8,840	8,865
Demand totals (AF)	8,851	8,810	8,825	8,840	8,865
Difference (AF)	0	0	0	0	0
NOTES: This table compares the projected demand and supply volumes determined in Sections 4.3.2 and 6.1, respectively.					

7.3.2 Single Dry Year Reliability

A single dry year is defined as a single year of minimal to no rainfall within a period where average precipitation is expected to occur. The water demand forecasting model developed for the Demand Forecast TM (described in Section 4.3) isolated the impacts that weather and future climate can have on

water demand through the use of a statistical model. The impacts of hot/dry weather conditions are reflected as a percentage increase in water demands from the normal year condition (average of FY 2017-18 and FY 2018-19). For a single dry year condition (FY 2013-14), the model projects a 6% increase in demand for the OC Basin area where the City's service area is located (CDM Smith, 2021). Detailed information of the model is included in Appendix E.

The City has documented that it is 100% reliable for single dry year demands from 2025 through 2045 with a demand increase of 6% from normal demand with significant reserves held by MET, local groundwater supplies, and conservation. A comparison between the supply and the demand in a single dry year is shown in Table 7-3. For simplicity, the table shows supply to balance demand in the table. However, the City can purchase more MET water through MWDOC, should the need arise.

Table 7-3: Retail: Single Dry Year Supply and Demand Comparison

DWR Submittal Table 7-3 Retail: Single Dry Year Supply and Demand Comparison					
	2025	2030	2035	2040	2045
Supply totals (AF)	9,382	9,339	9,673	9,370	9,397
Demand totals (AF)	9,382	9,339	9,673	9,370	9,397
Difference (AF)	0	0	0	0	0
NOTES: It is conservatively assumed that a single dry year demand is 6% greater than each respective year's normally projected demand. Groundwater is sustainably managed through management measures described in the SGMA-compliant "Basin 8-1 Alternative" (Appendix G2). Based on MET's and MWDOC's UWMPs, imported water is available to close any local water supply gap (Section 7.5.1).					

7.3.3 Multiple Dry Year Reliability

Assessing the reliability to meet demand for five consecutive dry years is a new requirement for the 2020 UWMP, as compared to the previous requirement of assessing three or more consecutive dry years. Multiple dry years are defined as five or more consecutive dry years with minimal rainfall within a period of average precipitation. The water demand forecasting model developed for the Demand Forecast TM (described in Section 4.3) isolated the impacts that weather and future climate can have on water demand through the use of a statistical model. The impacts of hot/dry weather condition are reflected as a percentage increase in water demands from the normal year condition (average of FY 2017-18 and FY 2018-19). For a single dry year condition (FY 2013-14), the model projects a 6% increase in demand for the OC Basin area where the City's service area is located (CDM Smith, 2021). It is conservatively assumed that a five consecutive dry year scenario is a repeat of the single dry year over five consecutive years.

Even with a conservative demand increase of 6% each year for five consecutive years, the City is capable of meeting all customers' demands from 2025 through 2045 (Table 7-4), with significant reserves held by MET, local groundwater supplies, and conservation. For simplicity, the table shows supply to balance demand in the table. However, the City can purchase more MET water through MWDOC, should the need arise.

Table 7-4: Retail: Multiple Dry Years Supply and Demand Comparison

DWR Submittal Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison (AF)						
		2025	2030	2035	2040	2045
First year	Supply totals	9,162	9,373	9,342	9,358	9,376
	Demand totals	9,162	9,373	9,342	9,358	9,376
	Difference	0	0	0	0	0
Second year	Supply totals	9,217	9,365	9,345	9,361	9,381
	Demand totals	9,217	9,365	9,345	9,361	9,381
	Difference	0	0	0	0	0
Third year	Supply totals	9,272	9,356	9,348	9,364	9,386
	Demand totals	9,272	9,356	9,348	9,364	9,386
	Difference	0	0	0	0	0
Fourth year	Supply totals	9,327	9,347	9,351	9,367	9,392
	Demand totals	9,327	9,347	9,351	9,367	9,392
	Difference	0	0	0	0	0
Fifth year	Supply totals	9,382	9,339	9,355	9,370	9,397
	Demand totals	9,382	9,339	9,355	9,370	9,397
	Difference	0	0	0	0	0

NOTES:
It is conservatively assumed that a five consecutive dry year scenario is a repeat of the single dry year (106% of projected values) over five consecutive years. The 2025 column assesses supply and demand for FY 2020-21 through FY 2024-25; the 2030 column assesses FY 2025-26 through FY 2029-30 and so forth, in order to end the water service reliability assessment in FY 2044-45.

Groundwater is sustainably managed through management measures described in the SGMA-compliant “Basin 8-1 Alternative” (Appendix G2). Based on MET’s and MWDOC's UWMPs, imported water is available to close any local water supply gap (Section 7.5.1).

7.4 Management Tools and Options

Existing and planned water management tools and options for the City and MWDOC's service area that seek to maximize local resources and result in minimizing the need to import water are described below.

- **Reduced Delta Reliance:** MET has demonstrated consistency with Reduced Reliance on the Delta Through Improved Regional Water Self-Reliance (Delta Plan policy WR P1) by reporting the expected outcomes for measurable reductions in supplies from the Delta. MET has improved its self-reliance through methods including water use efficiency, water recycling, stormwater capture and reuse, advanced water technologies, conjunctive use projects, local and regional water supply and storage programs, and other programs and projects. In 2020, MET had a 602,000 AF change in supplies contributing to regional-self-reliance, corresponding to a 15.3% change, and this amount is projected to increase through 2045 (MET, 2021). For detailed information on the Delta Plan Policy WR P1, refer to Appendix C.

- **The continued and planned use of groundwater:** The water supply resources within MWDOC's service area are enhanced by the existence of groundwater basins that account for the majority of local supplies available and are used as reservoirs to store water during wet years and draw from storage during dry years, subsequently minimizing MWDOC's reliance on imported water. Groundwater basins are managed within a safe basin operating range so that groundwater wells are only pumped as needed to meet water use. Although MWDOC does not produce or manage recycled water, MWDOC supports and partners in recycled water efforts, including groundwater recharge.

- **Groundwater storage and transfer programs:** MWDOC and OCWD's involvement in SARCCUP includes participation in a conjunctive use program (CUP) that improves water supply resiliency and increases available dry-year yield from local groundwater basins. The groundwater bank has 137,000 AF of storage (OCWD, 2020b). Additionally, MET has numerous groundwater storage and transfer programs in which MET endeavors to increase the reliability of water supplies, including the AVEK Waster Agency Exchange and Storage Program and the High Desert Water Bank Program. The IRWD Strand Ranch Water Banking Program has approximately 23,000 AF stored for IRWD's benefit, and by agreement, the water is defined to be an "Extraordinary Supply" by MET and counts essentially 1:1 during a drought/water shortage condition under MET's Water Supply Allocation Plan. In addition, MET has encouraged storage through its cyclic storage programs and CUPs that allow MET to deliver water into a groundwater basin in advance of agency demands, such as the Cyclic Storage Agreements under the Main San Gabriel Basin Judgement.

- **Water Loss Program:** The water loss audit program reduces MWDOC's dependency on imported water from the Delta by implementing water loss control technologies after assessing audit data and leak detection.

- **Increased use of recycled water:** MWDOC partners with local agencies in recycled water efforts, including OCWD to identify opportunities for the use of recycled water for irrigation purposes, groundwater recharge and some non-irrigation applications. OCWD's GWRS and

GAP allow Southern California to decrease its dependency on imported water and create a local and reliable source of water that meet or exceed all federal and state drinking level standards. Expansion of the GWRS is currently underway to increase the plant's production to 130 MGD, and further reduce reliance on imported water.

- **Implementation of demand management measures during dry periods:** During dry periods, water reduction methods to be applied to the public through the retail agencies, will in turn reduce MWDOC's overall demands on MET and reliance on imported water. MWDOC is assisting its retail agencies by leading the coordination of Orange County Regional Alliance for all of the retail agencies in Orange County. MWDOC assists each retail water supplier in Orange County in analyzing the requirements of and establishing their baseline and target water use, as guided by DWR. The City's specific demand management measures are further discussed in Section 9.

7.5 Drought Risk Assessment

Water Code Section 10635(b) requires every urban water supplier include, as part of its UWMP, a DRA for its water service as part of information considered in developing its DMMs and water supply projects and programs. The DRA is a specific planning action that assumes the City is experiencing a drought over the next five years and addresses the City's water supply reliability in the context of presumed drought conditions. Together, the water service reliability assessment (Sections 7.1 through 7.3) DRA, and WSCP (Section 8 and Appendix H) allow the City to have a comprehensive picture of its short-term and long-term water service reliability and to identify the tools to address any perceived or actual shortage conditions.

Water Code Section 10612 requires the DRA to be based on the driest five-year historic sequence of the City's water supply. However, Water Code Section 10635 also requires that the analysis consider plausible changes on projected supplies and demands due to climate change, anticipated regulatory changes, and other locally applicable criteria.

The following sections describe the City's methodology and results of its DRA.

7.5.1 DRA Methodology

The water demand forecasting model developed for the Demand Forecast TM (described in Section 4.3 isolated the impacts that weather and future climate can have on water demand through the use of a statistical model. The impacts of hot/dry weather condition are reflected as a percentage increase in water demands from the average condition (average of FY 2017-18 and FY 2018-19). For a single dry year condition (FY 2013-14), the model projects a 6% increase in demand for the region encompassing the City's service area (CDM Smith, 2021).

Locally, the five-consecutive years of FY 2011-12 through FY 2015-16 represent the driest five consecutive year historic sequence for the City's water supply. This period that spanned water years 2012 through 2016 included the driest four-year statewide precipitation on record (2012-2015) and the smallest Sierra-Cascades snowpack on record (2015, with 5% of average). It was marked by extraordinary heat: 2014, 2015 and 2016 were California's first, second and third warmest year in terms

of statewide average temperatures. Locally, Orange County rainfall for the five-year period totaled 36 inches, the driest on record.

As explained in Section 6, the City currently relies on, and will continue to rely on, three main water sources: local groundwater imported water supply from CDWC, and imported water from MWDOC / MET. The City maximizes local groundwater and imported water from CDWC before the purchase of imported water from MET / MWDOC. The difference between total forecasted potable demands and local supply projections is the demand on MWDOC's imported water supplies, which are supplied by MET. Local groundwater supply (irrigation only) for the City comes from the La Habra Basin and imported water quantity from CDWC is dictated by the OSY, which is evaluated yearly. Therefore, the City's DRA focuses on the assessment of imported water from MWDOC / MET, which will be used to close any local water supply gap. This assessment aligns with the DRA presented in MWDOC's 2020 UWMP.

Water Demand Characterization

All of MWDOC's water supplies are purchased from MET, regardless of hydrologic conditions. As described in Section 6.2, MET's supplies are from the Colorado River, SWP, and in-region storage. In its 2020 UWMP, MET's DRA concluded that even without activating WSCP actions, MET can reliably provide water to all of their member agencies, including MWDOC, and in effect the City, assuming a five-year drought from FY 2020-21 through FY 2024-25. Beyond this, MET's DRA indicated a surplus of supplies that would be available to all of its member agencies, including MWDOC, should the need arise. Therefore, any increase in demand that is experienced in MWDOC's service area, which includes the City, will be met by MET's water supplies.

Based on the Demand Forecast TM, in a single dry year, demand is expected to increase by 6% above a normal year. Both MWDOC and the City's DRA conservatively assumes a drought from FY 2020-21 through FY 2024-25 is a repeat of the single dry year over five consecutive years.

The City's demand projections were developed as part of the Demand Forecast TM, led by MWDOC. As part of the study, MWDOC first estimated total retail demands for its service area. This was based on estimated future demands using historical water use trends, future expected water use efficiency measures, additional projected land-use development, and changes in population. The City's projected water use, linearly interpolated per the demand forecast, is presented annually for the next five years in Table 4-2. Next, MWDOC estimated the projections of local supplies derived from current and expected local supply programs from their member agencies. Finally, the demand model calculated the difference between total forecasted demands and local supply projections. The resulting difference between total demands net of savings from conservation and local supplies is the expected regional demands on MWDOC from their member agencies, such as the City.

Water Supply Characterization

MWDOC's assumptions for its supply capabilities are discussed and presented in 5-year increments under its 2020 UWMP water reliability assessment. For MWDOC's DRA, these supply capabilities are further refined and presented annually for the years 2021 to 2025 by assuming a repeat of historic conditions from FY 2011-12 to FY 2015-16. For its DRA, MWDOC assessed the reliability of supplies available to MWDOC through MET using historical supply availability under dry-year conditions. MET's supply sources under the Colorado River, SWP, and in-region supply categories are individually listed and discussed in detail in MET's UWMP. Future supply capabilities for each of these supply

sources are also individually tabulated in Appendix 3 of MET's UWMP, with consideration for plausible changes on projected supplies under climate change conditions, anticipated regulatory changes, and other factors. MWDOC's supplies are used to meet consumptive use, surface water and groundwater recharge needs that are in excess of locally available supplies. In addition, MWDOC has access to supply augmentation actions through MET. MET may exercise these actions based on regional need, and in accordance with their WSCP, and may include the use of supplies and storage programs within the Colorado River, SWP, and in-region storage.

7.5.2 Total Water Supply and Use Comparison

The City's DRA reveals that its supply capabilities are expected to balance anticipated total water use and supply, assuming a five-year consecutive drought from FY 2020-21 through FY 2024-25 (Table 7-5). For simplicity, the table shows supply to balance the modeled demand in the table. However, the City can purchase more MET water from MWDOC, should the need arise.

Table 7-5: Five-Year Drought Risk Assessment Tables to Address Water Code Section 10635(b)

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2021	**Total**
Total Water Use	9,162
Total Supplies	9,162
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2022	**Total**
Total Water Use	9,217
Total Supplies	9,217
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

Submittal Table 7-5: Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)	
2023	**Total**
Total Water Use	9,272
Total Supplies	9,272
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	9,327
Total Supplies	9,327
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	9,382
Total Supplies	9,382
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	0
WSCP - use reduction savings benefit	0
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

Note: Groundwater is sustainably managed through the OSY and robust management measures (Section 6.3.2 and Appendices G1 & G2), and based on MET's and MWDOC's UWMP, imported water is available to close any potable water supply gap that local sources cannot meet (Section 7.5.1).

7.5.3 Water Source Reliability

The City is the GSA of the local La Habra Basin and has numerous management measures that can be taken, to ensure the reliability of the Basin. Examples include maintaining and coordinating groundwater production within the estimated safe yield and developing a robust groundwater elevation and water quality monitoring program. For more information on the Basin's management efforts, refer to Section 6.3.

Regarding water imported from CDWC, reliability is achieved in a few manners. First, CDWC has prescriptive pumping rights to the Main San Gabriel Basin, which is the water source, and the City has entitlements to the CDWC groundwater based on the City's ownership and lease of stock in CDWC. Second, the groundwater source, itself, is reliable because of the management actions taken by the Watermaster. For example, the OSY is reevaluated annually, and financial penalties are imposed to those who pump beyond their allotted rights, to prevent overproduction and maintain sustainable management of the Main San Gabriel Basin

Moreover, although not normally considered part of the City's water portfolio, interconnections the City has with the Cities of Brea, Fullerton, and SWS can also help mitigate any water supply shortages, though shortages are not expected.

The City's DRA concludes that its water supplies meet total water demand, assuming a five-year consecutive drought from FY 2020-21 through FY 2024-25 (Table 7-5). For simplicity, the table shows supply to balance the modeled demand in the table. However, MET's DRA shows a surplus of supplies that would be available to all of its Member Agencies, including MWDOC, and in effect, the City, should the need for additional supplies arise.

As detailed in Section 8, the City has in place a robust WSCP and comprehensive shortage response planning efforts that include demand reduction measures and supply augmentation actions. However, since the City's DRA shows a balance between water supply and demand, no water service reliability concern is anticipated, and no shortfall mitigation measures are expected to be exercised over the next five years. The City and its wholesale supplier, MWDOC, will periodically revisit its representation of the supply sources and of the gross water use estimated for each year, and will revise its DRA if needed.

8 WATER SHORTAGE CONTINGENCY PLANNING

8.1 Layperson Description

Water shortage contingency planning is a strategic planning process that the City engages to prepare for and respond to water shortages. A water shortage, when water supply available is insufficient to meet the normally expected customer water use at a given point in time, may occur due to a number of reasons, such as water supply quality changes, climate change, drought, and catastrophic events (e.g., earthquake). The City's WSCP provides real-time water supply availability assessment and structured steps designed to respond to actual conditions. This level of detailed planning and preparation will help maintain reliable supplies and reduce the impacts of supply interruptions.

The Water Code Section 10632 requires that every urban water supplier that serves more than 3,000 AFY or have more than 3,000 connections prepared and adopt a standalone WSCP as part of its UWMP. The WSCP is required to plan for a greater than 50% supply shortage. This WSCP due to be updated based on new requirements every five years and will be adopted as a current update for submission to DWR by July 1, 2021.

8.2 Overview of the WSCP

The WSCP serves as the operating manual that the City will use to prevent catastrophic service disruptions through proactive, rather than reactive, mitigation of water shortages. The WSCP contains processes and procedures documented in the WSCP, which are given legal authority through the WSCP Response Ordinance. This way, when shortage conditions arise, the City's governing body, its staff, and the public can easily identify and efficiently implement pre-determined steps to mitigate a water shortage to the level appropriate to the degree of water shortfall anticipated. Figure 8-1 illustrates the interdependent relationship between the three procedural documents related to planning for and responding to water shortages.

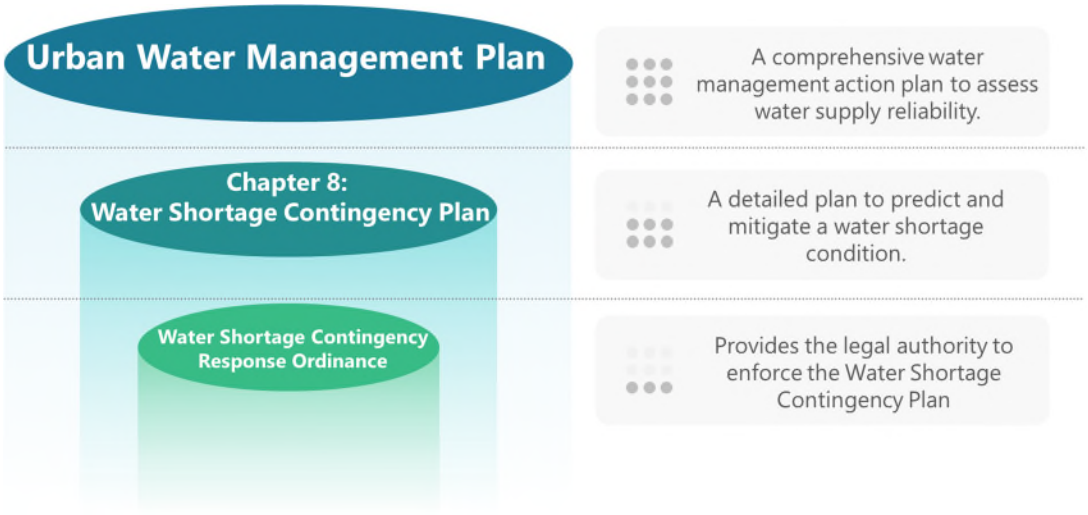

Figure 8-1: UWMP Overview

A copy of the City's WSCP is provided in Appendix H and includes the steps to assess if a water shortage is occurring, and what level of shortage drought actions to trigger the best response as appropriate to the water shortage conditions. WSCP has prescriptive elements, including an analysis of water supply reliability; the drought shortage actions for each of the six standard water shortage levels, that correspond to water shortage percentages ranging from 10% to greater than 50%; an estimate of potential to close supply gap for each measure; protocols and procedures to communicate identified actions for any current or predicted water shortage conditions; procedures for an annual water supply and demand assessment; monitoring and reporting requirements to determine customer compliance; and reevaluation and improvement procedures for evaluating the WSCP.

8.3 Summary of Water Shortage Response Strategy and Required DWR Tables

This WSCP is organized into three main sections, with Section 3 aligned with the Water Code Section 16032 requirements.

Section 1 Introduction and WSCP Overview gives an overview of the WSCP fundamentals.

Section 2 Background provides a background on the City's water service area.

Section 3.1 Water Supply Reliability Analysis provides a summary of the water supply analysis and water reliability findings from the 2020 UWMP.

Section 3.2 Annual Water Supply and Demand Assessment Procedures provide a description of procedures to conduct and approve the Annual Assessment.

Section 3.3 Six Standard Water Shortage Stages explains the WSCP's six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, 50, and more than 50% shortages.

Section 3.4 Shortage Response Actions describes the WSCP's shortage response actions that align with the defined shortage levels.

Section 3.5 Communication Protocols addresses communication protocols and procedures to inform customers, the public, interested parties, and local, regional, and state governments, regarding any current or predicted shortages and any resulting shortage response actions.

Section 3.6 Compliance and Enforcement describes customer compliance, enforcement, appeal, and exemption procedures for triggered shortage response actions.

Section 3.7 Legal Authorities is a description of the legal authorities that enable the City to implement and enforce its shortage response actions.

Section 3.8 Financial Consequences of the WSCP provides a description of the financial consequences of and responses for drought conditions.

Section 3.9 Monitoring and Reporting describes monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance and to meet state reporting requirements**.**

Section 3.10 WSCP Refinement Procedures addresses reevaluation and improvement procedures for monitoring and evaluating the functionality of the WSCP.

Section 3.11 Special Water Feature Distinction is a required definition for inclusion in a WSCP per the Water Code.

Section 3.12 Plan Adoption, Submittal, and Implementation provides a record of the process the City followed to adopt and implement its WSCP.

The WSCP is based on adequate details of demand reduction and supply augmentation measures that are structured to match varying degrees of shortage will ensure the relevant stakeholders understand what to expect during a water shortage situation. The City has adopted water shortage levels consistent with the requirements identified in Water Code Section 10632 (a)(3)(A) (Table 8-1).

The supply augmentation actions that align with each shortage level are described in DWR Table 8-3 (Appendix B). These augmentations represent short-term management objectives triggered by the WSCP and do not overlap with the long-term new water supply development or supply reliability enhancement projects.

The demand reduction measures that align with each shortage level are described in DWR Table 8-2 (Appendix B). This table also estimates the extent to which that action will reduce the gap between supplies and demands to demonstrate to the that choose suite of shortage response actions can be expected to deliver the expected outcomes necessary to meet the requirements of a given shortage level.

Table 8-1: Water Shortage Contingency Plan Levels

Submittal Table 8-1 Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Shortage Range**	**Shortage Response Actions**
0	0% (Normal)	A Level 0 Water Supply Shortage –Condition exists when the City notifies its water users that no supply reductions are anticipated in this year. The City proceeds with planned water efficiency best practices to support consumer demand reduction in line with state mandated requirements and local City goals for water supply reliability. Permanent water waste prohibitions are in place as stipulated in the City's Water Shortage Response Ordinance.
1	Up to 10%	A Level 1 Water Supply Shortage – Condition exists when the City notifies its water users that due to drought or other supply reductions, a consumer demand reduction of up to 10% is necessary to make more efficient use of water and respond to existing water conditions. Upon the declaration of a Water Aware condition, the City shall implement the mandatory Level 1 conservation measures identified in this WSCP. The type of event that may prompt the City to declare a Level 1 Water Supply Shortage may include, among other factors, a finding that its wholesale water provider calls for extraordinary water conservation.
2	11% to 20%	A Level 2 Water Supply Shortage – Condition exists when the City notifies its water users that due to drought or other supply reductions, a consumer demand reduction of up to 20% is necessary to make more efficient use of water and respond to existing water conditions. Upon declaration of a Level 2 Water Supply Shortage condition, the City shall implement the mandatory Level 2 conservation measures identified in this WSCP.
3	21% to 30%	A Level 3 Water Supply Shortage – Condition exists when the City declares a water shortage emergency condition pursuant to Water Code Section 350 and notifies its residents and businesses that up to 30% consumer demand reduction is required to ensure sufficient supplies for human consumption, sanitation and fire protection. The City must declare a Water Supply Shortage Emergency in the manner and on the grounds provided in Water Code Section 350.

Submittal Table 8-1 Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Shortage Range**	**Shortage Response Actions**
4	31% to 40%	A Level 4 Water Supply Shortage - Condition exists when the City declares a water shortage emergency condition pursuant to California Water Code Section 350 and notifies its residents and businesses that up to 40% consumer demand reduction is required to ensure sufficient supplies for human consumption, sanitation and fire protection. The City must declare a Water Supply Shortage Emergency in the manner and on the grounds provided in Water Code Section 350.
5	41% to 50%	A Level 5 Water Supply Shortage - Condition exists when the City declares a water shortage emergency condition pursuant to Water Code section 350 and notifies its residents and businesses that up to 50% or more consumer demand reduction is required to ensure sufficient supplies for human consumption, sanitation and fire protection. The City must declare a Water Supply Shortage Emergency in the manner and on the grounds provided in Water Code Section 350.
6	>50%	A Level 6 Water Supply Shortage – Condition exists when the City declares a water shortage emergency condition pursuant to Water Code section 350 and notifies its residents and businesses that greater than 50% or more consumer demand reduction is required to ensure sufficient supplies for human consumption, sanitation and fire protection. The City must declare a Water Supply Shortage Emergency in the manner and on the grounds provided in Water Code Section 350.
NOTES:		

Water shortage contingency planning is a strategic planning process to prepare for and respond to water shortages. Detailed planning and preparation can help maintain reliable supplies and reduce the impacts of supply interruptions. This chapter provides a structured plan for dealing with water shortages, incorporating prescriptive information and standardized action levels, along with implementation actions in the event of a catastrophic supply interruption.

A well-structured WSCP allows real-time water supply availability assessment and structured steps designed to respond to actual conditions, to allow for efficient management of any shortage with predictability and accountability. A water shortage, when water supply available is insufficient to meet the normally expected customer water use at a given point in time, may occur due to a number of reasons, such as population growth, climate change, drought, and catastrophic events. The WSCP is the City's operating manual that is used to prevent catastrophic service disruptions through proactive, rather than

reactive, management. This way, if and when shortage conditions arise, the City's governing body, its staff, and the public can easily identify and efficiently implement pre-determined steps to manage a water shortage.

9 DEMAND MANAGEMENT MEASURES

The City, along with other Retail water agencies throughout Orange County, recognizes the need to use existing water supplies efficiently. This ethic of efficient use of water has evolved as a result of the development and implementation of water use efficiency programs that make good economic sense and reflect responsible stewardship of the region's water resources. The City works closely with MWDOC to promote regional efficiency by participating in the regional water savings programs, leveraging MWDOC local program assistance, and applying the findings of MWDOCs research and evaluation efforts. This chapter communicates the City's efforts to promote conservation and to reduce demand on water supplies. A detailed description of demand management measures is available in Appendix J.

9.1 Demand Management Measures for Retail Suppliers

The goal of the DMM section is to provide a comprehensive description of the water conservation programs that a supplier has implemented, is currently implementing, and plans to implement in order to meet its urban water use reduction targets. The reporting requirements for DMM has been significantly modified and streamlined in 2014 by Assembly Bill 2067. Additionally, this section of the UWMP will report on the role of MWDOC's programs in meeting new state regulations for complying with the SWRCB's new Conservation Framework. These categories of demand management measures are as follows:

- Water waste prevention ordinances;
- Metering;
- Conservation pricing;
- Public education and outreach;
- Programs to assess and manage distribution system real loss;
- Water conservation program coordination and staffing support;
- Other DMMs that have a significant impact on water use as measured in GPCD, including innovative measures, if implemented;
- Programs to assist retailers with Conservation Framework Compliance.

9.1.1 Water Waste Prevention Ordinances

The City passed Ordinance No. 1384 on May 1, 1990, entitled "Emergency Water Management Program". This ordinance identifies water waste prohibitions, as well as stages of action to conserve water and penalties for non–compliance. More recently in September 2008, the City adopted a Water Conservation and Water Supply Shortage Program Ordinance (Ordinance no.1703) under the City Municipal Code 13.40.070. The ordinance establishes permanent water conservation requirements and prohibition against waste that are effective at all times and is not dependent upon a water shortage for implementation, as follows:

- Limits on watering hours
- Limit on watering duration
- No excessive water flow or runoff

- No washing down hard or paved surfaces
- Obligation to fix leaks, break, or malfunctions
- Re-circulating water required for water fountains and decorative water features
- Limits on washing vehicles
- Drinking water served upon request only
- Commercial lodging establishments must provide guests option to decline daily linen services
- No installation of single pass cooling systems
- No installation of non-recirculating water systems in commercial car wash and laundry systems
- Restaurants required to use water conserving dish wash spray valves

In an event of a water supply shortage, the ordinance further establishes four levels of water supply shortage response actions to be implemented during times of declared water shortage or declared water shortage emergency, with increasing restrictions on water use in response to worsening drought or emergency conditions and decreasing supplies. The provisions and water conservation measures to be implemented in response to each shortage level are described in the WSCP located in Appendix H of this 2020 UWMP. The City's water conservation ordinance is included in Appendix B of the WSCP. As of publication of this UWMP, this Ordinance is scheduled to be replaced with an updated Ordinance in 2021.

In August 2014, the City declared and implemented a Stage 2 Water Supply Shortage Condition with an emphasis on reducing/eliminating water waste relating to irrigation systems. Staff and contract service providers inspect neighborhoods, speak with residents, issue notices of violation, and provide follow up to the notices. Greater emphasis has been placed on public awareness and implemented with informational booths at local community events, message boards, and median signs. Utility bills and the City's annual consumer confidence reports are used to convey conservation messaging. The City website has been updated to provide information for current watering restrictions and provide a means for residents to anonymously report violators. The website also provides useful links for water rebates and conservation methods.

9.1.2 Metering

Metering with commodity rates by wholesale and retail agencies has been an industry standard throughout Orange County for many years, including in the City. Meters are required for all new connections. Landscape accounts are required to have dedicated landscape meters and are used within the City at irrigation systems for commercial, industrial, institutional, and multi-family complexes.

As of 2021, the City is in Phase 5 of an 8-Phase meter replacement program updating meters to an Advanced Metering Infrastructure (AMI) fixed network meter reading system. The City has installed more than 7,500 meters. The meter replacement is based on meter reading route and includes all meter sizes on the route. The City has replaced more than 7,500 meters so far.

9.1.3 Conservation Pricing

The City provides water and sewer service. The City began metering with commodity rates in 1950, with the inception of the water system. There are two parts to the water service charge: A fixed service charge and a variable use charge based on usage tiers. The fixed charge is based on the connection's meter size. The most common meter sizes for residential properties are 5/8" or 1". The variable use charge is

determined by the amount of water served to the property and is measured in hundred cubic feet (ccf). One (1) ccf equals 748 gallons. The City bills on a monthly basis.

Table 9-1: City of La Habra Water Rates

City of La Habra Water Rates	Effective 1/1/2021
Residential Tier 1: 0-8 ccf	$2.54
Residential Tier 2: 9-16 ccf	$4.14
Residential Tier 3: 16+ ccf	$6.01
Multifamily – Uniform Tier	$3.71
Commercial – Uniform Tier	$3.77
Municipal – Uniform Tier	$4.59
Irrigation – Unform Tier	$5.40

9.1.4 Public Education and Outreach

The City's public education and outreach program is administered by its wholesaler, MWDOC. MWDOC has established an extensive public education and outreach program to assist its retail agencies in promoting water use efficiency awareness within their service areas. MWDOC's public education and outreach programs consist of five primary activities as described below.

In addition to the primary programs it administers, MWDOC also maintains a vibrant public website (www.mwdoc.com) as well as a social media presence on Facebook, Twitter, and Instagram. MWDOC's Facebook page has more than 1,200 followers. The social media channels are used to educate the public about water-efficiency, rates, and other water-related issues.

MWDOC's public education and outreach programs are described below:

School Education Programs

- MWDOC school education programs reach more than 100,000 students per year. The program is broken into elementary and high school components.
- Elementary School Program reaches 60,000 students throughout Orange County through assemblies hosted by the Discovery Science Center. MWDOC holds a $220,000 contract with the Discovery Science Center, funded proportionally by the participating MWDOC retail agencies.

High School Program is new in 2015-16 and will reach students in 20 high schools in Orange County. The program is administered by MWDOC and operated by two contractors, the Orange County Department of Education and the Ecology Center. Through the three-year contract, those agencies will train more than 100 county teachers on water education on topics such as, water sources, water conservation, water recycling, watersheds, and ecological solutions for the benefit of their current and future students. Teachers will learn a variety of water conservation methods, such as irrigation

technology, rainwater harvesting, water recycling, and water foot printing through a tour at the Ecology Center facility. These trainings allow teachers to support student -led conservation efforts. The program will reach a minimum of 25,000 students by providing in-classroom water education and helping students plan and implement campus wide “Water Expos” that will allow peer-to-peer instruction on water issues. The $80,000 program is funded by participating agencies.

Value of Water Communication Program

MWDOC administers this program on behalf of 14 agencies. The $190,000 program involves the water agencies developing 30 full news pages that will appear weekly in the Orange County Register, the largest newspaper in the county, with a Sunday readership of 798,000. The campaign will educate Orange County residents and business leaders on water infrastructure issues and water efficiency measures, as well as advertise water related events and other pertinent information.

The City utilizes water billing inserts multiple times per year to keep patrons abreast of water use restrictions in accordance with the La Habra Municipal Code. The Water Division hosts an information booth at several of the City’s social events such as the Citrus Fair, and the Tamale Festival. At these events, staff distribute water conservation literature, and paraphernalia (low-flow nozzles, dye tablets, ground moisture sensors, etc.). The City’s website promotes efficient use with water conservation tips, links to rebates, and other useful information. The City of La Habra’s Children’s Museum hosts a water conservation display to further enhance visitors understanding of the water cycle, and the importance of identifying leaks and repairing them in a timely manner. Annual water quality reports, which are sent to every residence/business in the City promote the efficient use of water and provide links to additional information. The City is in the process of installing automated water meters for each water service account. Through five years, the Water Division has automated more than 8,500 water meters. For those with automated meters, a portal has been established so that those customers may evaluate their water use, establish water budgets, and set up leak notifications. City staff routinely monitors for leak alerts generated by the automated system and sends notices to those with potential leaks.

Quarterly Water Policy Dinners

The Water Policy Dinner events attract 225 to 300 water and civic leaders every quarter. The programs host speakers topical to the Orange County water industry, with recent addresses from Felicia Marcus of the state water board and Dr. Lucy Jones, a noted expert on earthquakes and their potential impact on infrastructure.

Annual Water Summit

The annual Water Summit brings together 300 Orange County water and civic leaders with state and national experts on water infrastructure and governance issues. The half-day event has a budget of $80,000 per year. Portions of the cost are covered by attendance and sponsorships, while MWDOC splits a portion with its event partner, the Orange County Water District.

Water Inspection Trips

Water Inspection trips take stakeholders on tours of the CRA, California Delta and other key water infrastructure sites. The public trips are required under MET’s regulations. While MET covers the cost of

the trips, MWDOC has two members of the public affairs staff that work diligently on identifying Orange County residents and leaders to attend. MWDOC staff also attends each trip. In the past year, MWDOC participated in a dozen trips, each taking an average of 30 residents. MWDOC also works with MET on special trips to educate County Grand Jurors the key water infrastructure.

The City's public education and outreach program is administered by MWDOC, its wholesale supplier. MWDOC develops, coordinates, and delivers a substantial number of public information, education, and outreach programs aimed at elevating water agency and consumer awareness and understanding of current water issues as well as efficient water use and water-saving practices, sound policy, and water reliability investments that are in the best interest of the region. These efforts encourage good water stewardship that benefit all City residents, businesses, and industries across all demographics. Several examples are included below:

Print and Electronic Materials

MWDOC offers a variety of print and electronic materials that are designed to assist City water users of all ages in discovering where their water comes from, what the MWDOC and other water industry professionals are doing to address water challenges, how to use water most efficiently, and more. Through the MWDOC's robust social media presence, award-winning website, eCurrents newsletter, media tool kits, public service announcements (PSAs), flyers, brochures, and other outreach materials, MWDOC ensures that stakeholders are equipped with sufficient information and subject knowledge to assist them in making good behavioral and civic choices that ultimately affect the quality and quantity of the region's water supply.

Public Events

Each year, MWDOC hosts an array of public events intended to engage a diverse range of water users in targeted discussions and actions that homes in on their specific interests or needs. Some of these public events include:

- **MWDOC Water Policy Forums and Orange County Water Summit** are innovative and interactive symposiums that bring together hundreds of business professionals, elected officials, water industry stakeholders, and community leaders from throughout the state for a discussion on new and ongoing water supply challenges, water policy issues, and other important topics that impact our water supply, economy, and public health.
- **Inspection Trips** of the state's water supply systems are sponsored each year by MWDOC and MET. Orange County elected officials, residents, business owners, and community leaders are invited to tour key water facilities throughout the state and learn more about the critical planning, procurement, and management of Southern California's water supply, as well as the issues surrounding delivery and management of our most precious natural resource – water.
- **Community Events and Events Featuring MWDOC Mascot Ricky the Rambunctious Raindrop** provide opportunities to interact with Orange County water users in a fun and friendly way, offer useful water-related information or education, and engage them in important discussions about the value of water and how their decisions at home, at work, and as tax- or ratepayers may impact Orange County's quality and quantity of water for generations to come.

Education Programs and Initiatives

Over the past several years, MWDOC has amplified its efforts in water education programs and activities for Orange County's youngest water users. This is accomplished by continuing to grow professional networks and partnerships that consist of leading education groups, advisors, and teachers, and by leading the way for the MWDOC and its 28 member agencies to be key contributors of both Southern California and Orange County water-centric learning. Several key water education programs and initiatives include:

- **Environmental Literacy** is an individual's awareness of the interconnectedness and interdependency between people and natural systems, being able to identify patterns and systems within their communities, while also gathering evidence to argue points and solve problems. By using the environment as the context for learning, K-12 students gain real-world knowledge by asking questions and solving problems that directly affect them, their families, and their communities. This approach to K-12 education builds critical thinking skills and promotes inquiry, and is the foundation for all MWDOC education programs, initiatives, and activities.
- **MWDOC Choice School Programs** have provided Orange County K-12 students water-focused learning experiences for nearly five (5) decades. Interactive, grade-specific lessons invite students to connect with, and learn from, their local ecosystems, guiding them to identify and solve local water-related environmental challenges affecting their communities. Choice School Programs are aligned with state standards, and participation includes a dynamic in-class or virtual presentation, and pre- and post-activities that encourage and support Science Technology Engineering Arts and Mathematics (STEAM)-based learning and good water stewardship.
- **Water Energy Education Alliance (WEEA)** is a coalition of education and water and energy industry professionals led by MWDOC that works together to build and bolster Career Technical Education programs (CTE) for Southern California high school students. These CTEs focus on workforce pathways in the Energy, Environment, and Utility Sectors, and connections established through this powerful Southern California alliance assist stakeholders as they thoughtfully step up their investment in the education and career success of California's future workforce.
- **MWDOC Water Awareness Poster Contest** is an annual activity developed to encourage Orange County's K-12 students to investigate and explore their relationship to water, connect the importance of good water stewardship to their daily lives, and express their conclusions creatively through art. Each year, MWDOC receives hundreds of entries, and 40 winners from across Orange County are invited to attend a special awards ceremony with their parents and teachers, and Ricky the Rambunctious Raindrop.
- **Boy Scouts Soil and Water Conservation Merit Badge and Girl Scouts Water Resources and Conservation Patch Programs** guide Orange County Scouts on a learning adventure of where their water comes from, the importance of Orange County water resources, and how to be water efficient. These STEAM-based clinics are hosted by MWDOC and include interactive learning stations, hands-on activities, and a guided tour of an Orange County water source, water treatment facility, or ecological reserve
- **Partnerships** are an integral part of achieving water-related goals that impact all Orange County water users. MWDOC's partner list is extensive, and acts as a collective catalyst for all those

involved to grow and prosper. Some of the MWDOC's most recognized partners include local, regional, state, and federal legislators, educators, water and energy industry leaders, environmental groups, media, and business associations all focused on the common goals of water education, water use efficiency, and advocacy on behalf of the region.

9.1.5 Programs to Assess and Manage Distribution System Real Loss

Senate Bill 1420 signed into law in September 2014 requires urban water suppliers that submit UWMPs to calculate annual system water losses using the water audit methodology developed by the AWWA. SB 1420 requires the water loss audit be submitted to DWR every five years as part of the urban water supplier's UWMP. Water auditing is the basis for effective water loss control.
DWR's UWMP Guidebook include a water audit manual intended to help water utilities complete the AWWA Water Audit on an annual basis. A Water Loss Audit was completed for the City which identified areas for improvement and quantified total loss. Based on the data presented, the three priority areas identified were volume from own sources, water imported, and customer meter inaccuracies.
Multiple criteria are a part of each validity score and a system wide approach will need to be implemented for the City's improvement. Expressing water loss audit results in terms of Real Losses per Service Connection per Day allows for standardized comparison across MWDOC retailer agencies and is a metric consistent with the Water Board's forthcoming economic model. The Real Losses per Service Connection per Day for CY2019 was 34.71 gal/connection/day.

The City is currently conducting a water system audit with results pending. Further action may be needed dependent on preliminary results. Due to the City's commitment to repairing detected leaks in a timely manner, it is projected that the average unaccounted water will remain around 5 to 6%. If the value for unaccounted water losses falls outside of this range, the City will look into implementing a formal water audit leak detection and repair program.

In 2019, MWDOC was awarded a USBR grant to conduct leak survey. Working with the City, MWDOC checked one half of the City's valves, water services, and fire hydrants and calculated leaks associated with each point in the survey. City was able to optimize leak repair by prioritizing repairs based on the magnitude of leak compared to the cost of repair. The City is now monitoring pressure in each pressure zone – so if a main break occurs, the City an identify the problem more accurately. In addition, approximately two miles of pipe are replaced or repaired each year saving the City $20,000 in water losses annually.

9.1.6 Water Conservation Program Coordination and Staffing Support

The City employs a Water/Sewer Manager and a Management Analyst that take an active role in promoting conservation and are responsible for coordinating all conservation program activities and act as a liaison with MWDOC, MET, CUWCC, and others. Approximately, 5% of the Water/Sewer Manager's time and 25% of the Management Analyst's time is devoted to water conservation coordination work. Additionally, MWDOC employs Water Conservation Coordinators to direct conservation for all of its member agencies. Water conservation programs are supported through water rates.

9.1.7 Other Demand Management Measures

9.1.7.1 Residential Program

MWDOC assists the City with the implementation of residential DMMs by making available the following programs aimed at increasing landscape and indoor water use efficiency for residential customers.

High Efficiency Clothes Washer Rebate Program

The High Efficiency Clothes Washer (HECW) Rebate Program provides residential customers with rebates for purchasing and installing HECWs that. Approximately 15% of home water use goes towards laundry, and HECWs use 35-50% less water than standard washer models, with savings of approximately 10,500 gallons per year, per device. Devices must meet or exceed the Consortium for Energy Efficiency (CEE) Tier 1 Standard, and a listing of qualified products can be found at ocwatersmart.com. There is a maximum of one rebate per home.

Premium High Efficiency Toilet Rebate Program

The largest amount of water used inside a home, 30%, goes toward flushing the toilet. The Premium High Efficiency Toilet (HET) Rebate Program offers incentives to residential customers for replacing their toilets using 1.6 gallons per flush (gpf) or more. Premium HETs use just 1.1 gpf, which is 20% less water than WaterSense standard toilets. In addition, Premium HETs save an average of 9 gallons of water per day while maintaining high performance standards.

9.1.7.2 CII Programs

MWDOC provides a variety of financial incentives to help City businesses, restaurants, institutions, hotels, hospitals, industrial facilities, and public sector sites achieve their efficiency goals. Water users in these sectors have options to choose from a standardized list of water efficient equipment/devices or may complete customized projects through a pay-for-performance where the incentive is proportional to the amount of water saved. Such projects include high efficiency commercial equipment installation and manufacturing process improvements.

Water Savings Incentive Program

The Water Savings Incentive Program (WSIP) is designed for non-residential customers to improve their water efficiency through upgraded equipment or services that do not qualify for standard rebates. WSIP is unique because it provides an incentive based on the amount of water customers actually save. This “pay-for-performance” design lets customers implement custom projects for their sites.

Projects must save at least 10 million gallons MG of water to qualify for the Program and are offered from $195 to $390 per acre foot of water saved. Examples of successfully projects include but are not limited to changing industrial process system water, capturing condensation, and using it to supplement cooling tower supply, and replacing water-using equipment with more efficient products.

On-site Retrofit Program

The On-site Retrofit Program (ORP) provides another pay-for-performance financial incentive to commercial, industrial and institutional property owners, including Homeowner Associations (HOAs), who convert potable water irrigation or industrial water systems to recycled water use.

Projects commonly include the conversion of mixed or dedicated irrigation meters using potable water to irrigate with reclaimed water, or convert industrial processes use to recycled water, such as a cooling towers. Financial incentives of up to $1,300 per AF of potable water saved are available for customer-side on the meter retrofits. Funding is provided by MET, USBR, and DWR.

Multi-Family Premium High Efficiency Toilet Incentive Program

MWDOC makes an effort to reach all water-users in Orange County. For the Multi-Family Premium HET Rebate Program, MWDOC targets multi-family buildings in both disadvantaged communities (DAC) and non-DAC communities, in addition to targeting all commercial buildings, and SF residential homes through Premium HET device rebates.

MWDOC offers the DAC Multi-Family HET Program, a special version of the HET Program, to ensure regardless of economic status all water-users in Orange County can benefit from the rebate. This Program targets 3.5 gallon per flush (gpf) or greater toilets to replace them with WaterSense Labeled 1.1 gpf or less. For this purpose, DAC are referenced as communities facing economic hardship. This is defined using criteria established by DWR and the County of Orange, which includes communities where the MHI is less than 85% of the Orange County MHI.

The DAC Multi-Family Program is contractor-driven, where a contractor works with building owners to replace all of the toilets in the building(s). To avoid any cost to tenants, the rebate is $200 per toilet paid to the contractor, essentially covering the contractor's cost; therefore, there is little to no charge to the building owners that may be passed through to tenants. This process was formed after consulting contractors and multi-family building owners in Orange County. To serve those in multi-family buildings outside of designated DAC locations, MWDOC offers $75 per toilet through the same contractor-driven format. An additional option is available through SoCalWater$mart, which offers up to $250 per toilet to multi-family buildings that were built before 1994, therefore targeting buildings built before legislation required low-flow plumbing fixtures in new construction.

Device Retrofits

MWDOC offers additional financial incentives under the Socal Water$mart Rebate Program which offers rebates for various water efficient devices to CII customers. Core funding is provided by MET and supplemental funding is sourced from MWDOC via grant funds and/or retail water agencies.

9.1.7.3 Landscape Programs

One of the most active and exciting water use efficiency sectors MWDOC provides services for are those programs that target the reduction of outdoor water use. With close to 60% of water consumed outdoors, this sector has been and will continue to be a focus for MWDOC and the City.

Turf Removal Program

The Orange County Turf Removal Program offers incentives to remove turf grass from residential, commercial, and public properties throughout the County. This program is a partnership between MWDOC, MET, and local retail water agencies. The goals of this program are to increase water use efficiency through sustainable landscaping practices that result in multi-benefit projects across Orange County. Participants replace their turf grass with drought-tolerant, CA Friendly, or CA Native landscaping, and retrofit their irrigation systems to high efficiency equipment, such as drip, or remove it entirely, and are encouraged to utilize smart irrigation timers. Furthermore, projects are required to include a stormwater capture feature, such as a rain garden or dry stream bed, and have a minimum of three plants per 100 square feet to increase plant density and promote healthy soils. These projects save water and also reduce dry and wet weather runoff, increase urban biomass, and sequester more carbon than turf landscapes.

Landscape Design and Maintenance Plan Assistance Programs

To maximize the water efficiency and quality of Orange County's Turf Removal Program Projects, MWDOC offers free landscape designs and free landscape maintenance plans to participating residential customers. The Landscape Design Assistance Program is offered at the beginning stages of their turf removal project so that customers may receive a customized, professionally designed landscape to replace their turf. Landscape designs include plant selection, layout, irrigation plans, and a stormwater capture feature. These designs help ensure climate appropriate plants are chosen and planted by hydrozone, that appropriate high efficiency irrigation is properly utilized, that water savings are maximized as a result of the transformation. Landscape maintenance plans are offered after a project is complete to ensure that the new landscape is cared for properly and water savings are maximized.

Smart Timer Rebate Program

Smart Timers are irrigation clocks that are either weather-based irrigation controllers (WBICs) or soil moisture sensor systems. WBICs adjust automatically to reflect changes in local weather and site-specific landscape needs, such as soil type, slopes, and plant material. When WBICs are programmed properly, turf and plants receive the proper amount of water throughout the year. During the fall months, when property owners and landscape professionals often overwater, Smart Timers can save significant amounts of water.

Rotating Nozzles Rebate Program

The Rotating Nozzle Rebate Program provides incentives to residential and commercial properties for the replacement of high-precipitation rate spray nozzles with low-precipitation rate multi-stream, multi-trajectory rotating nozzles. The rebate offered through this Program aims to offset the cost of the device and installation.

Spray-to-Drip Rebate Program

The Spray to Drip Rebate Program offers residential, commercial, and public agency customers rebates for converting areas irrigated by traditional high-precipitation rate spray heads to low-precipitation rate drip irrigation. Drip irrigation systems are extremely water-efficient. Rather than spraying wide areas subject to wind drift, overspray and runoff, drip systems use point emitters to deliver water to specific locations at or near plant root zones. Water drips slowly from the emitters either onto the soil surface or

below ground. As a result, less water is lost to wind, evaporation, and overspray, saving water and reducing irrigation runoff and non-point source pollution.

Socal Water$mart Rebate Program for Landscape

The City through MWDOC also offers financial incentives under the SoCal Water$mart Rebate Program for a variety of water efficient landscape devices, such as Central Computer Irrigation Controllers, large rotary nozzles, and in-stem flow regulators.

Landscape Training Classes

The California Friendly and Native Landscape Training and the Turf Removal and Garden Transformation Workshops provide education to residential homeowners, property managers, and professional landscape contractors on a variety of landscape water efficiency practices that they can employ and use to help design a beautiful garden using California Friendly and native plant landscaping principles. The California Friendly and Native Landscape Class demonstrates how to: implement storm water capture features in the landscape; create a living soil sponge that holds water; treat rainwater by a resource; select and arrange plants to maximize biodiversity and minimize water use; and control irrigation to minimize water waste, runoff, and non-point source pollution.

The Turf Removal and Garden Transformation Workshop teaches participants how to transform thirsty turfgrass into a beautiful, climate-appropriate water efficient garden. This class teaches how to: evaluate the landscape's potential; plan for garden transformation; identify the type of turfgrass in the yard; remove grass without chemicals; build healthy, living soils; select climate-appropriate plants that minimize water use and maximize beauty and biodiversity; and implement a maintenance schedule to maintain the garden.

Qualified Water Efficient Landscape Certification (Commercial)

Since 2018, MWDOC along with the City, has offered free Qualified Water Efficient Landscaper (QWEL) certification classes designed for landscape professionals. Classes are open to any city staff, professional landscaper, water district employee, or maintenance personnel that would like to become a Qualified Water Efficient Landscaper. The QWEL certification program provides 20 hours of instruction on water efficient areas of expertise such as local water supply, sustainable landscaping, soil types, irrigation systems and maintenance, as well as irrigation controller scheduling and programing. QWEL has received recognition from EPA WaterSense for continued promotion of water use efficiency. To earn the QWEL certification, class participants must demonstrate their ability to perform an irrigation audit as well as pass the QWEL exam. Successful graduates will be listed as a Certified Professional on the WaterSense website as well as on MWDOC's landscape resources page, to encourage Turf Removal participants or those making any landscape improvements to hire a QWEL certified professional.

Started in December 2020, a hybrid version of QWEL is available in conjunction with the California Landscape Contractors Association's Water Management Certification Program. This joint effort allows landscape industry an opportunity to obtain two nationally recognized EPA WaterSense Professional Certifications with one course and one written test. This option is offered through MET.

OC Water Smart Gardens Resource Page

MWDOC's OC Water Smart Gardens webpage provides a surplus of helpful guides and fact sheets, as well as an interactive photo gallery of water-saving landscape ideas. The purpose of this resource is to

help Orange County residents find a broad variety of solutions for their water efficient landscaping needs. This includes a detailed plant database with advanced to search features; photo and/or video-based garden tours; garden gallery with images organized into helpful landscape categories such as back yards, hillsides, full sun, and/or shade with detailed plant information; and the ability to select and store plants in a list that the user can print for use when shopping.

Additional technical resources are available such as a watering calculator calibrated for local evapotranspiration rates, and a garden resources section with fact sheets on sustainable landscape fundamentals, water and soil management, composting, solving run-off, and other appropriate topics. Web page is accessible through mwdoc.com and directly at www.ocwatersmartgardens.com.

9.2 Implementation over the Past Five Years

During the past five years, FY 2015-16 to 2020-21, the City, with the assistance of MWDOC, has continued water use efficiency programs for its residential, CII, and landscape customers as described below. Implementation data is provided in Appendix I. The City will continue to implement all applicable programs in the next five years.

Table 9-2: City of La Habra Water Conservation Efficiency Program Participation

Measure	Unit	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Central Computer Irrigation Controllers	computer controllers	-	-	-	-	-
Flow Restrictor	restrictors	-	-	-	-	-
HECWs	washers	67	59	50	49	45
HETs	toilets	84	1	-	-	-
Rain Barrels	barrels	46	4	1	-	2
Cisterns	cisterns	-	-	-	-	-
Premium HETs	toilets	685	7	1	-	-
Rotating Nozzles	nozzles	349	-	-	-	-
CII WBICs	clocks	1	7	-	1	-
Residential WBICs	clocks	4	12	8	22	25
Zero Water Urinals	urinals	-	-	-	-	-
Plumbing Flow Control	valves	-	-	-	-	-

Measure	Unit	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
Soil Moisture Sensor	controllers	-	-	-	-	-
Ice-Making Machine	machines	-	-	-	-	-
Turf Removal	sf	1,572	-	3,003	1,504	6,102
Spray-to-Drip	sf	-	-	-	-	-
Landscape Design Assistance		-	-	-	-	1
WSIP	projects	1	-	-	-	-
ORP		-	-	-	-	-

9.3 Water Use Objectives (Future Requirements)

To support Orange County retailers with SB 606 and AB 1668 compliance (Conservation Framework), MWDOC is providing multi-level support to members agencies to ensure they meet the primary goals of the legislation including to Use Water More Wisely and to Eliminate Water Waste. Beginning in 2023, Urban water suppliers are required to calculate and report their annual urban water use objective (WUO), submit validated water audits annually, and to implement and report best management practice (BMP) CII performance measures.

Urban Water Use Objective

An Urban Water Supplier's urban WUO is based on efficient water use of the following:

- Aggregate estimated efficient **indoor residential** water use;
- Aggregate estimated efficient **outdoor residential** water use;
- Aggregate estimated efficient **outdoor** irrigation landscape areas with dedicated irrigation meters or equivalent technology in connection with **CII** water use;
- Aggregate estimated efficient **water losses;**
- Aggregate estimated water use for variances approved the State Water Board;
- Allowable **potable reuse water** bonus incentive adjustments.

MWDOC offers a large suite of programs, described in detail throughout section 1.3.6, that will assist Orange County retailers in meeting and calculating their WUO.

Table 9-2 describes MWDOC's programs that will assist agencies in meeting their WUO through both direct measures: programs/activities that result in directly quantifiable water savings; and indirectly: programs that provide resources promoting water efficiencies to the public that are impactful but not directly measurable.

Table 9-3: MWDOC Programs to Assist in Meeting WUO

WUO Component	Calculation	Program	Impact
Indoor Residential	Population and GPCD standard	**Direct Impact** • HECW • HET • Multi-Family HET (DAC/ non-DAC)	**Direct Impact** Increase of indoor residential efficiencies and reductions of GPCD use
Outdoor Residential	Irrigated/irrigable area measurement and a percent factor of local ETo	**Direct Impact** • Turf Removal • Spray-to-Dip • Smart Timer • High Efficiency Nozzle (HEN) • Rain Barrels/Cisterns **Indirect Impact** • Landscape Design and Maintenance Assistance • Orange County Friendly Gardens Webpage • CA Friendly/Turf Removal Classes • QWEL	**Direct Impact** Increase outdoor residential efficiencies and reductions of gallons per ft^2 of irrigated/ irrigable area used **Indirect Impact** Provide information, resources, and education to promote efficiencies in the landscape
Outdoor Dedicated Irrigation Meters	Irrigated/irrigable area measurement and a percent factor of local ETo	**Direct Impact** • Turf Removal • Spray-to-Dip • Smart Timer • HEN • Central Computer Irrigation Controllers • Large Rotary Nozzles	**Direct Impact** Increase outdoor residential efficiencies and reductions of gallons per ft^2 of irrigated/ irrigable area used

WUO Component	Calculation	Program	Impact
		• In-Stem Flow Regulators **Indirect Impact** • Orange County Friendly Gardens Webpage • CA Friendly/Turf Removal Classes • QWEL	**Indirect Impact** Provide information, resources, and education to promote efficiencies in the landscape
Water Loss	Following the AWWA M36 Water Audits and Water Loss Control Program, Fourth Edition and AWWA Water Audit Software V5	**Direct Impact** • Water Balance Validation • Customer Meter Accuracy Testing • Distribution System Pressure Surveys • Distribution System Leak Detection • No-Discharge Distribution System Flushing • Water Audit Compilation • Component Analysis	**Direct Impact** Identify areas of the distribution system that need repair, replacement or other action
Bonus Incentives	One of the following: • Volume of potable reuse water from existing facilities, not to exceed 15% of WUO	**Direct Impact** • GWRS	**Direct Impact** The GWRS (ran by OCWD) significantly increases the availability of potable reuse water

WUO Component	Calculation	Program	Impact
	• Volume of potable reuse water from new facilities, not to exceed 10% of WUO		

In addition, MWDOC is providing support to agencies to assist with the calculation of WUOs. DWR will provide residential outdoor landscape measurements; however, Urban Water Suppliers are responsible for measuring landscape that is irrigated/irrigable by dedicated irrigation meters. MWDOC is contracting for consultant services to assist agencies in obtaining these measurements. Services may include but are not limited to:

- Accounting/database clean up (e.g., data mining billing software to determine dedicated irrigation customers);
- Geolocation of dedicated irrigation meters;
- In-field measurements;
- GIS/Aerial imagery measurements;
- Transformation of static/paper maps to digital/GIS maps.

These services will help agencies organize and/or update their databases to determine which accounts are dedicated irrigation meters and provide landscape area measurements for those accounts. These data points are integral when calculating the WUO. MWDOC is also exploring funding options to help reduce retail agencies' costs of obtaining landscape area measurements for dedicated irrigation meters.

CII Performance Measures

Urban water supplies are expected to report BMPs and more for CII customers. MWDOC offers a broad variety of programs and incentives to help CII customers implement BMPs and increase their water efficiencies.

Table 9-4: CII Performance Measure and Programs

Component	Program Offered	Impact
CII Performance Measures	• WSIP • ORP • HETs • HE Urinals • Plumbing Flow Control Valves • Connectionless Food Steamers • Air-cooled Ice Machines • Cooling Tower Conductivity controllers • Cooling Tower pH Controllers • Dry Vacuum Pumps • Laminar Flow Restrictors	WSIP incentivizes customized CII water efficiency projects that utilize BMPs. ORP incentivizes the conversion of potable to recycled water and is applicable to CII dedicated irrigation meters or CII mixed-use meters that may be split to utilize recycled water for irrigation. Additional CII rebates based on BMPs increase the economic feasibility of increasing water efficiencies.

These efforts to assist Orange County retail agencies are only just beginning. Our plan is to ensure that all agencies are fully ready to begin complying with the new water use efficiency standards framework called for in SB 606 and SB 1668 by the start date of 2023.

10 PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

The Water Code requires the UWMP to be adopted by the Supplier's governing body. Before the adoption of the UWMP, the Supplier has to notify the public and the cities and counties within its service area per the Water Code and hold a public hearing to receive input from the public on the UWMP. Post adoption, the Supplier submits the UWMP to DWR and the other key agencies and makes it available for public review.

This section provides a record of the process the City followed to adopt and implement its UWMP.

10.1 Overview

Recognizing that close coordination among other relevant public agencies is key to the success of its UWMP, the City worked closely with many other entities, including representation from diverse social, cultural, and economic elements of the population within the City's service area, to develop and update this planning document. The City also encouraged public involvement through its public hearing process, which provided residents with an opportunity to learn and ask questions about their water supply management and reliability. Through the public hearing, the public has an opportunity to comment and put forward any suggestions for revisions of the Plan.

Table 10-1 summarizes external coordination and outreach activities carried out by the City and their corresponding dates. The UWMP checklist to confirm compliance with the Water Code is provided in Appendix A.

Table 10-1: External Coordination and Outreach

External Coordination and Outreach	Date	Reference
Notified the cities and counties within the Supplier's service area that Supplier is preparing an updated UWMP (at least 60 days prior to public hearing)	3/3/2021	Appendix K
Public Hearing Notice	6/8/2021 & 6/15/2021	Appendix K
Held Public Hearing	6/21/2021	Appendix K
Adopted UWMP	6/21/2021	Appendix L
Submitted UWMP to DWR (no later than 30 days after adoption)	7/1/2021	-

External Coordination and Outreach	Date	Reference
Submitted UWMP to the California State Library (no later than 30 days after adoption)	7/1/2021	-
Submitted UWMP to the cities and counties within the Supplier's service area (no later than 30 days after adoption)	7/1/2021	-
Made UWMP available for public review (no later than 30 days after filing with DWR)	7/31/2021	-

This UWMP was adopted by the City Council on June 21, 2021. A copy of the adopted resolution is provided in Appendix L.

10.2 Agency Coordination

The Water Code requires the Suppliers preparing UWMPs to notify any city or county within their service area at least 60 days prior to the public hearing. As shown in Table 10-2, the City sent a Letter of Notification to the County of Orange on March 3, 2021 to state that it was in the process of preparing an updated UWMP (Appendix K).

Table 10-2: Retail: Notification to Cities and Counties

DWR Submittal Table 10-1 Retail: Notification to Cities and Counties		
County Name	60 Day Notice	Notice of Public Hearing
Orange County	☑	☑

The City's water supply planning relates to the policies, rules, and regulations of its regional and local water providers. The City is dependent on imported water from MET through MWDOC, its regional wholesaler. The City is also dependent on imported groundwater from CDWC, a mutual water company that owns rights to and supplies water from the Main San Gabriel Groundwater Basin, an adjudicated basin. As such, the City involved the relevant agencies in this 2020 UWMP at various levels of contribution as summarized in. As such, the City involved the relevant agencies in this 2020 UWMP at various levels of contribution as described below.

MWDOC provided assistance to the City's 2020 UWMP development by providing much of the data and analysis such as population projections from the California State University at Fullerton CDR and the information quantifying water availability to meet the City's projected demands for the next 25 years, in five-year increments. Additionally, MWDOC led the effort to develop a Model Water Shortage Ordinance that its retail suppliers can adopt as is or customize and adopt as part of developing their WSCPs.

This 2020 UWMP was developed in collaboration with MWDOC's 2020 UWMP to ensure consistency between the two documents.

The various planning documents of the key agencies that were used to develop this UWMP are listed in Section 2.2.1.

10.3 Public Participation

The City encouraged community and public interest involvement in the plan update through a public hearing and inspection of the draft document on June 21, 2021. As part of the public hearing, the City discussed adoption of the UWMP, SBx7-7 baseline values, compliance with the water use targets (Section 5), implementation, and economic impacts of the water use targets (Section 9).

Public hearing notifications were published in local newspapers. A copy of the published Notice of Public Hearing is included in Appendix K.

The hearing was conducted during a regularly scheduled meeting of the City Council.

10.4 UWMP Submittal

The City Council reviewed and approved the 2020 UWMP at its June 21, 2021meeting after the public hearing. See Appendix L for the resolution approving the Plan.

By July 1, 2021, the City's adopted 2020 UWMP was filed with DWR, California State Library, and the County of Orange. The submission to DWR was done electronically through the online submittal tool – WUE Data Portal. The City will make the Plan available for public review on its website no later than 30 days after filing with DWR.

10.5 Amending the Adopted UWMP or WSCP

Based on DWR's review of the UWMP, the City will make any amendments in its adopted UWMP, as required and directed by DWR and will follow each of the steps for notification, public hearing, adoption, and submittal for the amending the adopted UWMP.

If the City revises its WSCP after UWMP is approved by DWR, then an electronic copy of the revised WSCP will be submitted to DWR within 30 days of its adoption.

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APPENDICES

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