CITY OF OCEANSIDE

2020
Urban Water Management Plan

FINAL

June 2021

WOODARD
&CURRAN

Page intentionally blank.

City of Oceanside
2020 Urban Water Management Plan

Final

Prepared by:

WOODARD
&CURRAN

June 2021

Page intentionally blank.

TABLE OF CONTENTS

List of Tables

List of Figures

Appendices

Page intentionally blank.

LIST OF ABBREVIATIONS

2020 Guidebook	Guidebook for Urban Water Suppliers
2020 Plan	2020 Urban Water Management Plan
AB	Assembly Bill
AC	Asbestos cement
AF	Acre-feet
AFY	Acre-feet per year
AMI	Smart meters
AWWA	American Water Works Association
CII	Commercial, Industrial and Institutional
City	City of Oceanside
CMWD	Carlsbad Municipal Water District
Coalition	North San Diego Water Reuse Coalition
CWC	California Water Code
CY	Calendar Year
DAC	Disadvantaged Community
DIR	Demand-initiated regenerating
DMM	Demand management measures
DOF	California Department of Finance
DSS	Decision Support System
DWR	California Department of Water Resources
ETo	Evapotranspiration
FAT water	Fully advanced treated water
FCF	Flow control facility
FPUD	Fallbrook Public Utility District
GHG	Greenhouse gas
GIS	Geographic Information System
GPCD	Gallons per capita per day
HE	High efficiency
IID	Imperial Irrigation District
IPR	Indirect potable reuse
IRWM	Integrated Regional Water Management
MBGPF	Mission Basin Groundwater Purification Facility
Methodologies	Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use
MGD	Million gallons per day
MOU	Memorandum of Understanding
MWD	Metropolitan Water District of Southern California
NCDP	North County Distribution Pipeline
NOAA	National Oceanic and Atmospheric Administration
NSDWRC	North San Diego Water Reuse Coalition
OAWR	Oceanside Agricultural Water Rate
PEIR	Program Environmental Impact Report
PRS	Pressure reducing stations

PSAWR	Permanent Special Agricultural Water Rate
QSA	Quantification Settlement Agreement
RAC	Regional Advisory Committee
RMWD	Rainbow Municipal Water District
RWFP	Recycled Water Facilities Plan
RWMG	Regional Water Management Group
RWMP	Recycled Water Master Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SBx7-7	Senate Bill X7-7
SDAC	Severely Disadvantaged Community
SDCWA	San Diego County Water Authority
SLRWRF	San Luis Rey Water Reclamation Facility
SRTTP	Southern Regional Tertiary Treatment Plant
SWP	State Water Project
TCP	Trichloropropane
TSS	Total Suspended Solids
USMC	United States Marine Corps
UWMP	Urban Water Management Plan
UWMP Act	Urban Water Management Planning Act
VID	Vista Irrigation District
WCMP	Water Conservation Master Plan
WFP	Water Filtration Plant
WSCP	Water Shortage Contingency Plan
WRF	Water Reclamation Facility
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

ES.1 Purpose and Organization

Preparation of an Urban Water Management Plan (UWMP) is required by the California Department of Water Resources (DWR) for all urban water suppliers within the State of California. Urban water suppliers are defined as publicly or privately owned water suppliers that provide water for municipal purposes, either directly or indirectly, to more than 3,000 customers or supply more than 3,000 acre-feet (AF) of water annually. UWMPs must meet requirements established by the California Water Code (CWC) and the Urban Water Management Planning Act (Act).

This report constitutes the *2020 Urban Water Management Plan* (2020 Plan) for the City of Oceanside (City), which must be adopted by the Oceanside City Council and submitted to DWR by July 1, 2021. This 2020 Plan satisfies the requirements of the CWC, the Act, and subsequent amendments. In addition to satisfying regulatory requirements, this report is a resource document that includes an analysis of long-term water supply and demand planning for the City's service area. Pursuant to the requirements of the CWC 10630.5, this Executive Summary provides a simple lay description of the information needed to provide a general understanding of this 2020 UWMP and includes a description of the City's reliable water supplies, anticipated challenges, and strategies for managing system reliability risks. **Table ES-1** includes a summary of each section of this 2020 Plan.

Table ES-1: Organizational Overview of the 2020 UWMP

Section	Information Contained within Section
Section 1: Introduction and Overview	• General legal requirements for 2020 UWMPs • Local planning efforts • Plan organization
Section 2: Plan Preparation	• Plan preparation • Agency coordination and public outreach
Section 3: System Description	• Overview of City's service area and water system • Hydrologic and climate characteristics • Development within the City's service area • Current and projected population and demographic figures • Overview of potential impacts of climate change
Section 4: System Water Use	• Overview of the City's water use sectors • Information about existing and projected water use • System water losses • Water demands for lower income households • Wholesale demand projections • Climate change impacts on water use
Section 5: Baselines and Targets	• Overview of water conservation mandates • Baseline gross per capita water use • Target method • Urban water use target for 2020 • 2020 target compliance

Section	Information Contained within Section
Section 6: System Supplies	• Description of existing and projected supplies, including: o Purchased and imported water o Groundwater o Wastewater and recycled water • Description of planned future water projects • Climate change impacts to supplies
Section 7: Supply Reliability Assessment	• Constraints on each of the City's supplies • Projections for water supply and water demands under normal, single dry, and multiple dry year conditions • Regional supply reliability
Section 8: Water Shortage Contingency Planning	• Annual supply and demand reliability assessment procedures • Description of the City's drought ordinances • Overview of the City's water shortage levels and actions • Prohibitions and penalties enacted during water shortages • Methods for reducing water use • Catastrophic supply interruption plan • Communications protocol
Section 9: Demand Management Measures	• Summary of the City's demand management measures implemented over the past five years • Summary of future DMM implementation
Section 10: Plan Adoption, Submittal, and Implementation	• Summary of 2020 Plan noticing and adoption process • Plan submittal and amendment
Section 11: References	• Full citations for references used throughout the 2020 Plan

ES.2 Service Area Background and Water Supplies

The City of Oceanside is located in northern San Diego County, encompassing approximately 42 square miles. The City is bordered by the Pacific Ocean to the west, Camp Pendleton Marine Base to the north, the City of Carlsbad to the south, and the City of Vista and unincorporated San Diego County to the east.

The City is characterized by a mild, coastal climate. Temperatures range from 54ºF on average in December to 71ºF on average in August. Annual precipitation averages 10.3 inches, although recent years (2016-2020) have averaged 118% of normal. The majority of the rainfall received occurs between January and March.

The City's current water supplies include raw and treated water purchased from San Diego County Water Authority (SDCWA), desalinated local groundwater from the Mission Basin, and non-potable recycled water. Raw water purchased from SDCWA is treated at the City's Robert A. Weese Water Filtration Plant (WFP). Local groundwater is pumped from the Mission Basin and treated at the Mission Basin Groundwater Purification Facility (MBGPF). The primary MBGPF treatment process utilizes reverse osmosis membranes to reduce salt concentrations present in the groundwater. Recycled water is treated at the San Luis Rey Water Reclamation Facility (SLRWRF) and used for non-potable use to offset demands for potable water. The City is also actively developing indirect potable reuse as a future supply, anticipated to be available by 2022. Fully advanced treated (FAT) water will be produced at the City's Advanced Water Treatment (AWT) facility and injected into the Mission Basin for eventual extraction and treatment at the MBGPF for potable use.

SDCWA is the regional wholesale water agency in San Diego County, and serves 24 member agencies, including the City of Oceanside. SDCWA's supply mix includes Colorado River water, State Water Project (SWP) water, and desalinated seawater. SDCWA purchases supplies from the Metropolitan Water District of Southern California (MWD), which receives its supplies primarily from the SWP and the Colorado River. SDCWA also receives Colorado River water via transfers from Imperial Irrigation District (IID) and conservation savings from several canal-lining projects. Both of these sources have become increasingly unreliable since the early 1990s as a result of significant droughts, water rights issues, and environmental restrictions. SDCWA also purchases desalinated seawater and blends it into potable supplies sold to its member agencies.

The City continues to increase local supply reliability and offset demands for imported water by increasing groundwater production, expanding its non-potable recycled water distribution system, and developing indirect potable reuse through the Pure Water Oceanside project. The Pure Water Oceanside project will allow the City to expand the beneficial reuse of local wastewater and improve local supply reliability, and is expected to provide approximately 28% of the City's overall demands by 2030. **Table ES-2** provides a summary of the City's projected water supplies from 2025 – 2045.

Table ES-2: Summary of Projected Supplies (AFY)

Supply	2025	2030	2035	2040	2045
Purchased SDCWA Supply	14,881	9,578	9,750	9,808	9,980
Groundwater	2,800	2,800	2,800	2,800	2,800
Recycled Water (Non-Potable)	3,000	5,040	5,040	5,040	5,040
Advanced Treated Water (Potable Reuse)	3,360	6,720	6,720	6,720	6,720
Total	**24,041**	**24,138**	**24,310**	**24,368**	**24,540**

ES.3 Current and Projected Demands

The City's historical water demands have varied from year to year, which can be attributed to annual variations in weather, economic activity, and droughts. All urban water suppliers in California are mandated by the Water Conservation Act of 2009 (also referred to as SBx7-7) to reduce per capita potable water demands by 20% by the year 2020. For 2020, the City was required to have a per capita water use (measured in gallons per capita per day [GPCD]) of 137 GPCD. The City's actual potable water demands for 2020 were 116 GPCD, which is well below the 2020 target. Reduced demands in the City's service area are likely the result of ongoing conservation programs that have been implemented in response to the SBx7-7 legislation, as well as demand hardening from enhanced conservation implemented in response to the most recent multi-year drought and associated state-mandated emergency conservation requirements. The City has therefore met its 2020 water use target of 137 GPCD. **Table ES-3** provides a summary of the calculated baseline and water use targets for the 2020 Plan.

Table ES-3: Baselines and Targets Summary

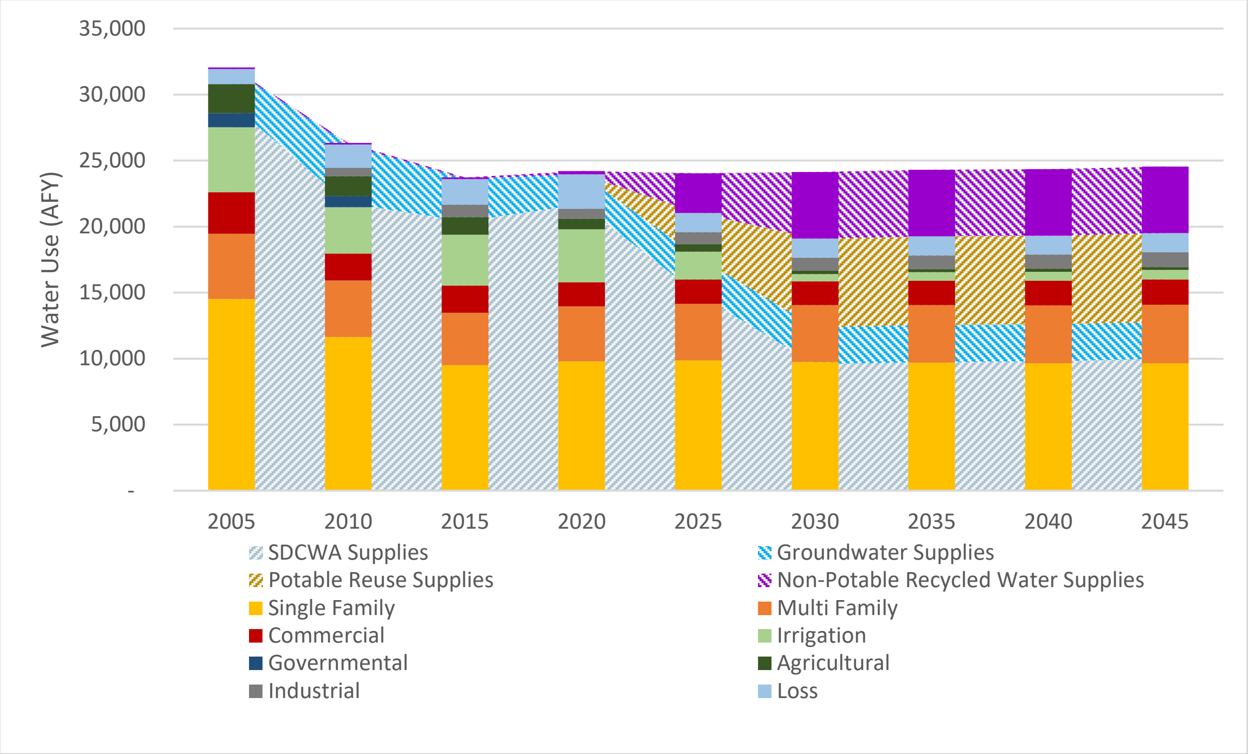
Baseline Period	Start Years	End Years	Average GPCD	2020 Target	2020 Actual GPCD
10-15 year	1999	2008	171	137	116

Concurrently with this 2020 Plan, the City developed the 2021 *Water Conservation Master Plan Update* (2021 WCMP Update). As part of this effort, the City projected water use, passive conservation, and active conservation into the future. Moving forward, the City assumes implementation of aggressive water conservation, smart meters, and further implementation of recycled water conversions; together, these were considered "Program B" in the WCMP Update. Water use projections, with and without conservation savings, are shown in **Table ES-4**. **Figure ES-1** shows historical and projected water use, by use sector.

Table ES-4: Summary of Projected Demands (AFY)

	2025	2030	2035	2040	2045
Baseline Demands	24,865	25,315	25,673	25,857	26,129
Demands with Passive Conservation (Plumbing Code)	24,325	24,567	24,785	24,878	25,070
Demands with Passive and Active Conservation (Plumbing Code and Program B)	24,041	24,138	24,310	24,368	24,540

Figure ES-1: Historical, Current, and Projected Water Use and Supply for City of Oceanside



ES.4 Water Supply Reliability

One of the key requirements of UWMPs is the inclusion of a long-term supply reliability analysis that demonstrates the supply-demand balance in normal, single dry year, and multiple dry year hydrologic conditions. Consistent with SDCWA's 2020 UWMP, the City projects increased demands (as weather conditions get hotter and drier) during single and multiple dry year scenarios.

The City anticipates no reduction of groundwater supplies for any hydrologic scenario. Groundwater is generally a drought-proof supply because the City's projected extraction and treatment capacity is well below the normal year safe yield. Both FAT potable reuse supplies and non-potable recycled water supplies are drought-proof supplies that would remain available during all scenarios. Non-potable recycled water deliveries would increase to meet increased demands in dry years because the SLRWRF has a tertiary treatment capacity of 3 MGD, sufficient to meet projected demands even during dry years. Because potable local supplies would not increase in availability, however, the City would need to purchase additional water from SDCWA to meet demands. For all years that SDCWA projects 100% supply reliability, the City assumes it will be able to purchase sufficient water from SDCWA to meet demands. Should SDCWA project potential supply deficits, the City would implement its Water Shortage Contingency Plan (WSCP). The City may also implement its WSCP if its annual supply and demand assessment projects anticipated shortages, or other directives from the State result in a need to reduce overall water use.

The City's water supply reliability analysis shows that with implementation of additional planned supplies and conservation measures, supplies will meet demands under all hydrologic scenarios, including the normal year, single dry year, and five consecutive dry years from 2025-2045.

ES.5 Water Shortages and Demand Management

The City has four ordinances in place that address water shortages and give the City the authority to prohibit water waste and encourage water use efficiency. Each ordinance is updated as-needed to stay current with State regulations, and the City adopted an amendment to its Drought Response Ordinance in June 2021.

- Water Conservation Program and Drought Response Conservation Measures for Mandatory Water Reductions (Ordinance No. 08-OR0439-1)
- Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)
- Water Efficient Landscaping (Ordinance No. 10-OR0412-1)
- Recycled Water (Ordinance No. 14-OR0565-1)

The City's WSCP establishes six levels of shortage actions to be implemented in times of shortage. Ordinance No. 15-OR0276-1 is in the process of being updated to align with the six shortage levels of the WSCP. When the City declares that a particular stage is in effect, City customers must comply with all regulations contained in the declared stage.

The City also engages in a variety of public education and outreach efforts to improve water use management, education, and efficiency. The City provides water conservation messaging to customers through www.SaveWaterOceanside.com and www.GreenOceanside.org, staffs a 'Green Oceanside' booth at community events, provides workshops on water-related themes, offers multiple school education programs, and offers various rebates in combination with SoCal WaterSmart Program.

Page intentionally blank.

SECTION 1: INTRODUCTION AND OVERVIEW

This *2020 Urban Water Management Plan* (2020 Plan) addresses the City of Oceanside (City) and includes descriptions of the water supply sources, projected water demands, and supply reliability. The 2020 Plan presents a comparison of projected water supplies to water demands during normal, single-dry, and multiple-dry years. This chapter provides an introduction to the purpose of the 2020 Plan, an overview of the Urban Water Management Planning Act (UWMP Act), and an explanation of the 2020 Plan organization.

1.1 Background and Purpose

Water planning has become increasingly critical as California prepares for expected long-term climate changes, including increased drought risks. Prior to the adoption of the UWMP Act, water suppliers were not required to conduct long-term water resources planning, which could leave agencies vulnerable to supply disruptions during periods of drought or other supply shortages. The UWMP Act was adopted to require a minimum level of resource assessment and planning by water suppliers in order to reduce susceptibility to supply shortages. Water resources planning at the local level also allows for local community involvement, as well as consideration of unique circumstances and local conditions of the individual agency. This 2020 Plan is an update to the City's *2015 Urban Water Management Plan*.

1.2 Urban Water Management Planning and the California Water Code

This 2020 Plan has been prepared in accordance with the UWMP Act, as amended, California Water Code (CWC) Division 6, Part 2.6, §10610 through 10657. The UWMP Act became part of the CWC with the passage of Assembly Bill 797 during the 1983–1984 regular session of the California legislature. The Act requires every urban water supplier that provides water for municipal purposes to more than 3,000 connections or supplying more than 3,000 acre-feet (AF) of water annually to adopt and submit a plan every five years to the California Department of Water Resources (DWR). The Act was amended in November 2009 with the adoption of Senate Bill x7-7 (SBx7-7), which set a goal of achieving a 20% reduction in urban per capita water use statewide by 2020. This 2020 Plan reports on the City's compliance with the water use reduction target established for SBx7-7 in the *2015 Urban Water Management Plan*. The Act was amended again in 2018 with the adoption of water conservation legislation via Senate Bill (SB) 606 and Assembly Bill (AB) 1668. SB 606 and AB 1668 lay out a new long-term water conservation framework and includes both urban and agricultural sectors. Among the new requirements related to Urban Water Management Plans (UWMP), this 2020 Plan incorporates additional in-depth dry year reliability and drought risk assessments, as well as new elements to the Water Shortage Contingency Plan (WSCP). The updated WSCP also addresses ways in which the City can meet future anticipated urban water use objectives to be established under SB 606 and AB 1668.

This 2020 Plan has been developed in accordance with DWR's *2020 Urban Water Management Plan Guidebook* (2020 Guidebook), which provides guidance to agencies on how to include the information required under the CWC, as amended. **Appendix A** includes the 2020 Guidebook's checklist indicated where each applicable section of the CWC has been addressed in this 2020 Plan. In accordance with the CWC, this 2020 Plan must be adopted and submitted to DWR by July 1, 2021. The UWMP Act states that urban water suppliers should make every effort to ensure the appropriate level of reliability in its water service, such that it is sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry years.

1.3 Urban Water Management Plans in Relation to Other Planning Efforts

UWMPs allow for integration of information from other planning documents, as well as regional planning efforts. This 2020 Plan synthesizes information from the City's current planning documents and compliments regional planning documents. Upon completion, the 2020 Plan will help to inform other planning decisions, such as updates to the City of Oceanside General Plan. Further, the information developed for this 2020 Plan will be used to inform and enhance the San Diego County Water Authority (SDCWA) *2020 Urban Water Management Plan*, which provides water reliability assessment for the region's water wholesaler. In addition, **Appendix K** demonstrates consistency with the Delta Plan's policy to reduce reliance on Sacramento-San Joaquin Delta (Delta), through the development of local supplies.

Relevant, related planning efforts include the following:

1. **City of Oceanside, *2015 Water Master Plan*:** The *Water Master Plan* aids the City of Oceanside in the planning, development, and financing of its water system and facilities, to provide reliable and enhanced service for existing customers, and to serve anticipated land use changes and growth. The Water Master Plan is undergoing an update, expected to be completed in 2022.
2. **City of Oceanside, *2015 Sewer Master Plan*:** The *Sewer Master Plan* is used to help the City plan, develop, and finance wastewater collection facilities for existing and planned future growth. It acts as a strategic planning guide for upgrading, improving, and expanding the City's wastewater collection system. The Sewer Master Plan is anticipated to be updated starting in in 2021 and completed in 2022.
3. **City of Oceanside, *2015 Recycled Water Facilities Plan*:** The *Recycled Water Facilities Plan* is used by the City to identify cost-effective recycled water projects and develop a CIP for expansion of the City's existing recycled water system. The Recycled Water Facilities Plan is anticipated to be updated starting in 2021 and completed in 2022.
4. **City of Oceanside, *2018 Upper and Lower San Luis Rey Water Reclamation Facility (SLRWRF) Recycled Water Conveyance System Planning Study.*** The *Planning Study* was developed to summarize the results of the planning phase of the Upper and Lower SLRWRF recycled water distribution system project. It includes information on the hydraulic model, facility, pipelines, and project siting and alignments. The Upper and Lower SLRWRF project will substantially increase the City's non-potable recycled water system (see *Section 6 System Supplies*).
5. **City of Oceanside, *2021 Water Conservation Master Plan Update*:** The *Water Conservation Master Plan Update* provides information to the City on how best to expand existing water conservation programs in a cost-effective way, and how these programs will assist the City in meeting future water needs for its service area. The WCMP Update was developed in concert with this 2020 Plan to reflect changes in local demand and supply conditions (such as the recent drought), and help address how the City will meet and move beyond State-mandated per capita reduction targets per SBx7-7, as well as prepare the City for meeting future conservation targets established by SB 606, and AB 1668.

6. **City of Oceanside, *Mission Basin Indirect Potable Reuse Feasibility Study*:** The *Mission Basin Indirect Potable Reuse (IPR) Feasibility Study* was created to investigate strategies to implement indirect potable reuse to enhance water supply reliability by recharging the Mission Groundwater Basin using advanced treated water produced by the SLRWRF.
7. **City of Oceanside, *2010 Seawater Desalination Pilot Facility and Feasibility Study*:** The City completed a pilot study investigating the feasibility of adding seawater desalination to its existing Mission Basin Groundwater Purification Facility, and identifying appropriate design parameters.
8. **North San Diego Water Reuse Coalition, *Regional Recycled Water Program: 2020 Project Feasibility Study*:** The North San Diego Water Reuse Coalition (Coalition) is a group of nine agencies located in northern San Diego County; the City of Oceanside being one of those nine agencies. The *Regional Recycled Water Program: 2020 Project Feasibility Study* documented the recycled water facilities associated with development of regional recycled water infrastructure. These projects are a subsect of a larger group of projects analyzed in the Coalition's 2015 *Regional Recycled Water Project Program Environmental Impact Report* (PEIR). The purpose of the program is to increase the capacity and connectivity of the recycled water storage and distribution systems of the Coalition members and maximize reuse of available wastewater.
9. **SDCWA, *2020 Urban Water Management Plan*:** SDCWA's *2020 UWMP* provides a description and analysis of the water supplies sold to the City by SDCWA. Regional Supply reliability is assessed in light of the blend of imported and local water supplies that SDCWA provides to its member agencies.
10. **Regional Advisory Committee, *2019 San Diego Integrated Regional Water Management Plan*:** The *San Diego Integrated Regional Water Management (IRWM) Plan* presents an overarching assessment of the San Diego region's water supply, water quality, and ecosystem challenges and provides recommendations for sustainable water management.
11. **City of Oceanside, *Oceanside Climate Action Plan*:** The City's CAP outlines measures, including in the areas of water and wastewater, that the Oceanside community will take to make progress towards meeting the State of California's 2050 GHG reduction goal.
12. **City of Oceanside, *General Plan*:** The City's General Plan serves as a blueprint for future growth and development within the City. The General Plan is currently undergoing a comprehensive update, anticipated to be completed in 2021.
13. **County of San Diego, *Multi-jurisdictional Hazard Mitigation Plan:*** The Multi-jurisdictional Hazard Mitigation Plan is a countywide plan that identifies risks and ways to minimize damage by natural and manmade disasters.

1.4 2020 Plan Organization

This 2020 Plan is organized into the following chapters, and generally follows the recommended outline of the 2020 Guidebook:

- Chapter 1: Introduction and Overview
- Chapter 2: Plan Preparation
- Chapter 3: System Description
- Chapter 4: System Water Use

- Chapter 5: Baselines and Targets
- Chapter 6: System Supplies
- Chapter 7: Water Supply Reliability
- Chapter 8: Water Shortage Contingency Planning
- Chapter 9: Demand Management Measures
- Chapter 10: Plan Adoption, Submittal, Implementation

This 2020 Plan also includes a series of appendices intended to clarify the contents of the UWMP and to meet requirements of the CWC and 2020 Guidebook. While the 2020 Guidebook contains a series of tables that are required to be included in the 2020 Plan, the City has elected to include additional tables, as appropriate, to clarify, highlight, or otherwise present information. Tables are numbered sequentially throughout this 2020 Plan, with a special header row added for DWR-required tables. **Figure 1-2** demonstrates how tables will be presented to distinguish between DWR-required tables and those added by the City for clarity. All DWR-required tables will be presented in the body of this 2020 Plan. Both the required DWR tables and the required SBX7-7 tables have been included as **Appendix B**.

Figure 1-1: Table Presentation in 2020 Plan

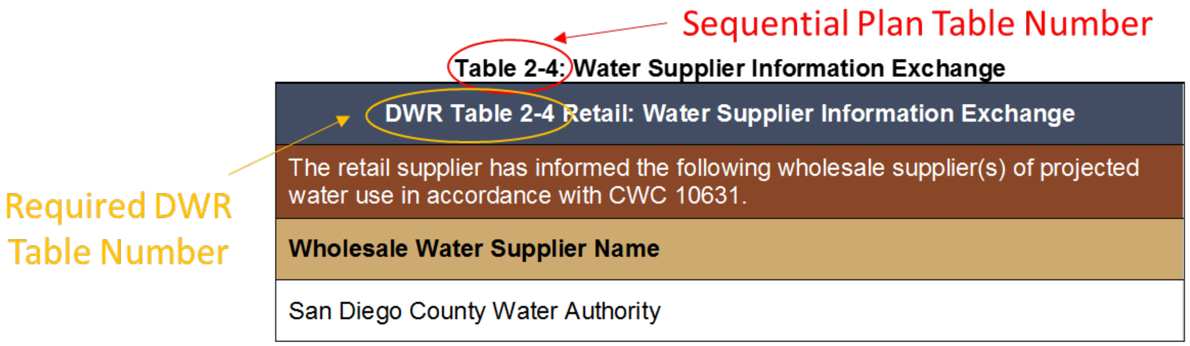


Table 2-4: Water Supplier Information Exchange

DWR 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 CWC 10631.
Wholesale Water Supplier Name
San Diego County Water Authority

1.5 Lay Description

A lay description provides the fundamental determinations of the UWMP, particularly regarding water service reliability, potential issues, and strategies for managing reliability risks. It can be considered an executive summary of the findings of analyses conducted as part of this 2020 Plan. As such, the Executive Summary of this 2020 UWMP serves as the required lay description.

SECTION 2. PLAN PREPARATION

CWC §1608.20

As defined in California Water Code §10617, the City qualifies as an "Urban Water Supplier" because it is a public agency directly providing water for municipal purposes to more than 3,000 customers. As such, the City is required to complete an Urban Water Management Plan (UWMP) every five years. This *2020 Urban Water Management Plan* (2020 Plan) is an update to the City's adopted 2015 Plan.

Preparation of the City of Oceanside's 2020 Plan was contracted to Woodard & Curran, as provided for in California Water Code §10620, paragraph (e). The 2020 Plan has been prepared in conformance with the UWMP Act, California Water Code Division 6, Part 2.6, Urban Water Management Planning.

Table 2-1, **Table 2-2**, and **Table 2-3** provide information on the City of Oceanside as a retail water agency, the water system, and how data will be reported throughout the 2020 Plan.

Table 2-1: Public Water System

DWR Table 2-1 Retail: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 (AF)
CA3710014	City of Oceanside	44,378	24,212

Table 2-2: Plan Identification

DWR Table 2-2: Plan Identification	
☑	Individual UWMP
	Regional UWMP

Table 2-3: Agency Identification

DWR Table 2-3 Agency Identification	
Name of Agency	City of Oceanside
Select one or both	
	Agency is a wholesaler
☑	Agency is a retailer
Fiscal or Calendar Year	
☑	UWMP Tables are in Calendar Years
	UWMP Tables are in Fiscal Years
Units of Measure	
☑	Acre Feet (AF)
	Million Gallons (MG)
	Hundred Cubic Feet (CCF)

2.1 Agency Coordination

CWC §10620(d)(2), §10621(b), §10631(j), §10642

During the preparation of the 2020 Plan, the City coordinated information with the San Diego County Water Authority (SDCWA), the region's water wholesaler, as shown in **Table 2-4**. A list of other agencies the City notified regarding 2020 Plan development is provided in **Table 2-5**, along with their involvement with the preparation of this 2020 Plan.

Table 2-4: Water Supplier Information Exchange

DWR 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 CWC 10631.
Wholesale Water Supplier Name
San Diego County Water Authority

Table 2-5: Coordination with Appropriate Agencies

Organization/Agency Name	Sent 60-day UWMP Notice
City of Carlsbad/Carlsbad Municipal Water District	X
City of Escondido	X
County of San Diego	X
Encina Wastewater Authority	X
Fallbrook Public Utilities District	X
Leucadia Wastewater District	X
Metropolitan Water District of Southern California	X
Olivenhain Municipal Water District	X
Rainbow Municipal Water District	X
Rincon del Diablo Municipal Water District	X
San Diego Association of Governments	X
San Diego County Water Authority	X
San Elijo Joint Powers Authority	X
Santa Fe Irrigation District	X
U.S. Marine Corps Base Camp Pendleton	X
Vallecitos Water District	X
Valley Center Municipal Water District	X
Vista Irrigation District	X

2.2 Public Participation

CWC §10642

The City actively encouraged community participation in its urban water management planning efforts. The 2020 Plan was made available for written comments from April 30 through May 30, 2021. The 2020 Plan was presented to the City's Water/Sewer Committee on May 11, 2021 and Utilities Commission on May 18, 2021 for review and comments. A Public Hearing was held before the City Council on June 16, 2021, prior to the City Council's consideration to adopt the 2020 Plan on June 16, 2021. The public hearing was advertised in the San Diego Union Tribune twice, on May 9 and 16, 2021, which also provided information on how to access and comment on the Draft 2020 Plan. Additionally, a public hearing notice was posted on the City's web site (http://www.ci.oceanside.ca.us), concurrent with the release of the Draft 2020 Plan for public review.

The 2020 Plan is available for public review online at
https://www.ci.oceanside.ca.us/gov/water/admin/uwmp.asp

Page intentionally left blank.

SECTION 3: SYSTEM DESCRIPTION

CWC §10631; §10631(a)

The City's current water supplies include water purchased from SDCWA, groundwater, and recycled water. Raw imported water from SDCWA is treated at the Robert A. Weese Water Filtration Plant (WFP). Local groundwater is pumped from the Mission Basin and treated at the Mission Basin Groundwater Purification Facility (MBGPF). The primary MBGPF treatment process utilizes reverse osmosis membranes to reduce salt concentrations present in the groundwater. Recycled water is treated at the San Luis Rey Water Reclamation Facility (SLRWRF) and used for non-potable purposes to offset demands for potable water. Future potable water supplies will include fully advanced treated (FAT) water from the Pure Water Oceanside project.

SDCWA is the regional wholesale water agency in San Diego County, and serves 24 member agencies, including the City of Oceanside. SDCWA's supply mix includes imported water and desalinated seawater. SDCWA purchases supplies from the Metropolitan Water District of Southern California (MWD), which receives its supplies primarily from the SWP and the Colorado River. SDCWA also receives Colorado River water via transfers from Imperial Irrigation District (IID) and conservation savings from several canal-lining projects. Both sources of imported water have become increasingly unreliable since the early 1990s as a result of significant droughts, water rights issues, and environmental restrictions. SDCWA also purchases desalinated seawater from the Claude "Bud" Lewis Carlsbad Desalination Plant and blends it into imported water supplies, though the City's connections may not receive these blended supplies due to the location of its connection to SDCWA's system in relation to the blended supplies.

The City's potable water supply system includes connections to SDCWA's aqueducts, as well as the City's MBGPF. The City has five connections with SDCWA's treated and untreated imported water aqueducts, referred to as Flow Control Facilities (FCFs). These FCFs include connections on Pipelines No. 1 and No. 2, the CWA Tri-Agency Pipeline, and the North County Distribution Pipeline (NCDP). FCF 2, 3, and 5 connect directly with the SDCWA aqueducts and supply both potable and raw water. FCF 4 connects to the SDCWA system via the Tri-Agency Pipeline which is a 7.2 mile long pipeline that provides treated water to the City, Carlsbad Municipal Water District, Vista Irrigation District, and Vallecitos Water District. FCF 6 connects to SDCWA's regional system via the NCDP, a 4.5 mile pipeline that runs east-west between SDCWA's Second Aqueduct and the City.

Rehabilitation of the Morro Hills No. 1 & No. 2 Reservoirs

The City receives both treated and untreated water from SDCWA. Treated water from SDCWA is conveyed directly into the City's water distribution system. Raw water from SDCWA is treated at the City's 25 MGD Robert A. Weese WFP before distribution. The WFP is located near the City's FCF 2, 3, and 5. Local groundwater is treated at the City's 6.3 MGD MBGPF. The MBGPF treats brackish groundwater extracted from the Mission Basin via eight wells owned and operated by the City. Recycled water is produced by the City at the SLRWRF and is distributed via the City's non-potable water distribution system. More information on recycled water is provided in *Chapter 6 System Supplies*.

The City's water distribution system includes 12 storage reservoirs located throughout the water system. At least one storage reservoir is located in each of seven primary pressure zones (out of a total of 28 pressure zones). Some of the primary pressure zones have subzones that are supplied via pumping if the subzone ground elevation is higher than its primary pressure zone or via pressure reducing stations if the subzone ground elevations is lower than its primary pressure zone. In addition to the storage reservoirs, the City operates nine booster pump stations, two water supply pumping stations, 54 pressure regulating stations, and seven altitude valves. Potable water is distributed to customers through 574 miles of pipelines extending throughout the City and ranging from 2 to 42 inches in diameter. The majority of the piping in the system is 8 inches in diameter and is made of asbestos cement (AC) pipe.

The City's non-potable recycled water system includes the SLRWRF, which has a secondary treatment capacity of 13.5 MGD and a tertiary treatment capacity of 3.0 MGD. Tertiary recycled water is conveyed from the SLRWRF to maintain water levels at Whelan Lake and to irrigate the Oceanside Municipal Golf Course, CalTrans landscaped area fronting the 76 and 5 freeways as well as Goat Hill Golf Course and the El Corazon Sports Complex. Additional information on the City's non-potable recycled water system is provided in *Chapter 6 System Supplies*.

3.1 Service Area Physical Description

The City encompasses approximately 42 square miles and is located 35 miles north of the City of San Diego. It is bordered on the west by the Pacific Ocean, the north by Camp Pendleton Marine Base, the south by the Carlsbad Municipal Water District, and on the east by the Rainbow Municipal Water District and the Vista Irrigation District. A map of the City and surrounding municipalities is shown in **Figure 3-1**.

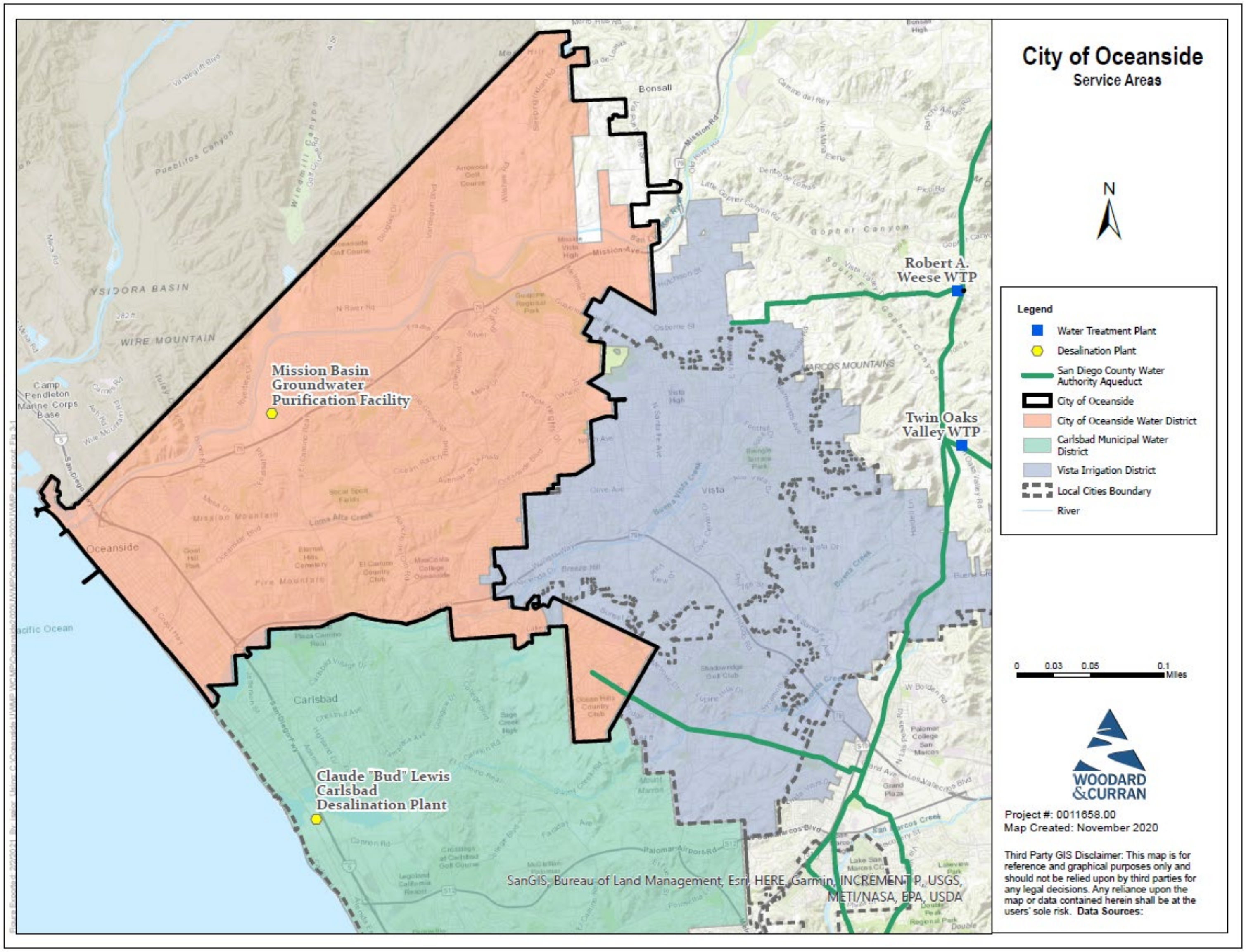
3.1.1 Agency Organizational Structure

The City of Oceanside was incorporated as a general law city in 1888, pursuant to the California Constitution Article XI and the California Government Code. The City is governed by an elected five-member council. The City is a full-service city, providing water and wastewater services through its Water Utilities Department, under the purview of the City Council.

3.1.2 Service Area Climate

The City of Oceanside has a mild, coastal climate. As shown in **Table 3-1**, the average annual temperature is 60° F. Average annual rainfall is 10.3 inches as measured at the National Weather Service Oceanside Marina Weather Station 046377. This rainfall total is typical for Southern California, which is low compared with the national average. In recent years (2016 through 2020), the City's annual rainfall averaged 118% of normal with an average temperature of 62.0ºF and 12.1 inches of precipitation (NOAA, 2020a and 2020b). Evapotranspiration (ETo) is the quantity of moisture that is both transpired by plants and evaporated by the soil plant surfaces. ETo is important to irrigation management because crop yield relates directly to ETo. Irrigators who are working to achieve maximum yields need to apply water to meet the crop's ETo demand. As shown in **Table 3-1**, the largest ETo demands occur in the summer months.

Figure 3-1: City of Oceanside Service Area



Project #: 0011658.00
Map Created: November 2020

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data Sources:**

Table 3-1: City of Oceanside Climate Characteristics[1]

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec	Annual
Standard Monthly Average ETo Demand (in)	1.9	2.2	3.4	4.5	5.3	5.7	5.9	5.6	4.5	3.4	2.4	1.9	46.6
Normal Rainfall (in)	2.6	2.9	2.1	1.0	0.2	0.1	0.1	0.1	0.2	0.7	1.1	1.9	10.3
Normal Temperature (ºF)	55	55	57	60	63	66	70	71	70	65	59	54	60

Source: NOAA, 2015

[1] Normal rainfall and temperature based on 30 years of data (1981-2010), taken as the average across six weather stations in the vicinity of the City of Oceanside, as provided by NOAA, 2015.

3.1.3 Existing and Future Development within Service Area

SANDAG's Interim Series 14 Growth Forecast, Version 17, which was used for population projections and as the basis for the City's demand projections, did not provide land use data at the time this 2020 UWMP was prepared. As such, the previous Series 13 Growth Forecast is used to analyze land use projections within Oceanside's service area. Because the City is near buildout and is not projected to experience substantial growth or changes in land use, the Series 13 data is both the best available land use data and reflects land use data at a similar scale as is anticipated in the Series 14 projections. SANDAG's Series 13 Growth Forecast found that the City's 2020 developed land use was dominated by Residential (low density, single family, multifamily, and mobile homes) at 46%, followed by Institutional (schools, roads, and parks) at 30%, Commercial (mixed use, commercial, and office) at 10%, and Industrial at 4%. The Series 13 Growth Forecast does not include agricultural land use, though it can be assumed that the remaining 10% of developed land use is devoted to agriculture. In general, the distribution of developed land use across these categories is not projected to change substantially, although residential land use is anticipated to increase by approximately 250 acres between 2020 and 2040, primarily through conversion of undeveloped land. **Table 3-2**, below, shows the current and anticipated land use, in acres, projected for the City by SANDAG's Series 13 Growth Forecast.

Historically, the City has included significant agricultural lands. Over the last few decades, large portions of the agricultural areas have been converted to residential planned communities. The City's *2002 General Plan* anticipated many developments and redevelopments within the planning horizon. The City is currently completing a South Morro Hills Community Plan which is looking at the planned development of an agricultural area. The South Morro Hills Community Plan includes a mix of agriculture, commercial, residential uses, which will be incorporated into the City's General Plan Land Use Element once completed. Since 2012, the large Morro Hills development has been constructed and is primarily composed of new low-density residences. In addition, the El Corazon Plan and Rancho Del Oro Plan entail newer developments with significant new industrial space within the City. Additional residential, commercial, and open space are included along the periphery of these developments.

Table 3-2: Current and Projected Land Use (Acres)

	2020	2025	2030	2035	2040	2045[1]	% Change (2020-2045)
Residential Land	9,488	9,634	9,675	9,712	9,741	9,741	3%
Single family	*8,212*	*8,322*	*8,348*	*8,354*	*8,382*	*8,382*	*2%*
Multifamily	*1,276*	*1,312*	*1,327*	*1,358*	*1,359*	*1,359*	*7%*
Commercial Land	1,992	1,981	1,991	2,067	2,073	2,073	4%
Industrial Land	893	918	946	983	986	986	10%
Institutional Land	6,171	6,175	6,179	6,184	6,184	6,184	0%
Agriculture Land	2,006	2,002	1,997	2,044	2,044	2,044	2%
Total Developed Land	**20,550**	**20,710**	**20,788**	**20,990**	**21,028**	**21,028**	2%
Undeveloped Land	6,330	6,170	6,092	5,890	5,852	5,852	-8%
Total Land[2]	**26,880**	**26,880**	**26,880**	**26,880**	**26,880**	**26,880**	-

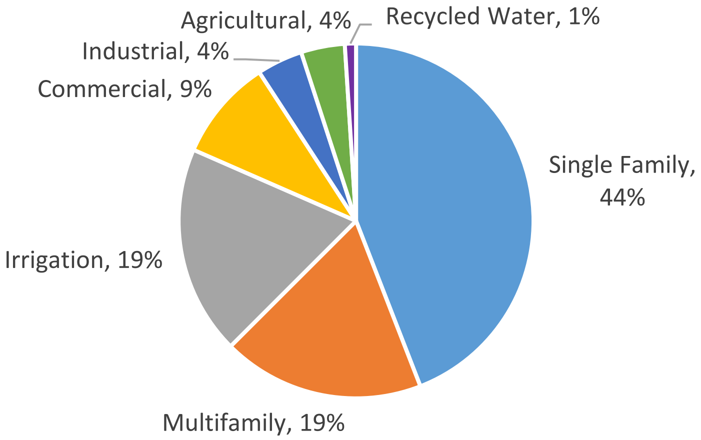
Source: SANDAG, 2016; 1. 2045 data not available. Assumed to remain approximately stead because the City is close to buildout.; 2. Based on 42 square miles

3.1.4 Overview of Water Uses in Service Area

Figure 3-2 shows the average annual consumption of the various water user categories, based on historical monthly water use and account data for years 2016 to 2020. Reflecting the developed land uses described above, the largest water sector in the City is residential representing 58% of the City's total water use. Single family residential customers comprise 40% of demand, while multifamily residential customers comprise 17%. Irrigation users, which include schools, parks, and other large irrigators, make up the next largest use category at 17% of total water use. Commercial and industrial combined uses total 11%, and agricultural uses comprise 3% of total demand. The City's recycled water deliveries currently represent 1% of total water use.

Figure 3-2 illustrates the distribution of water use by customer class as an average over the 5 years from 2016-2020. Note that the Fall/Olive exchange with VID, through which the City provides water service directly to 16 customers in VID's service area, is incorporated into single family use, and water losses are excluded from the figure. An overview of these water use categories is provided in *Chapter 4 System Water Use.*

Figure 3-2: Average Annual Water Use by Customer Class 2016-2020 (Percent of Total)



3.2 Service Area Population and Demographics

Historical and projected City population estimates are shown in **Table 3-3** and **Table 3-4**, respectively. Historical data were gathered from California's Department of Finance (DOF) for the City of Oceanside (DOF, 2015; DOF, 2020). Consistent with the *2020 Guidebook*, and as described in *Section 5 Baselines and Targets*, DOF projections were used because the City of Oceanside's water service area covers 95% of the City of Oceanside. Projected population for the City was determined using data from SANDAG's Interim Series 14 Growth Forecast.

Table 3-3: Population – Historical

Population Served	2005	2010	2015	2020
	166,958	167,086	175,068	177,531
Annual Increase	-	0.02%	0.96%	0.28%
Sources: DOF, 2015 and DOF, 2020.				

Table 3-4: Population – Current and Projected

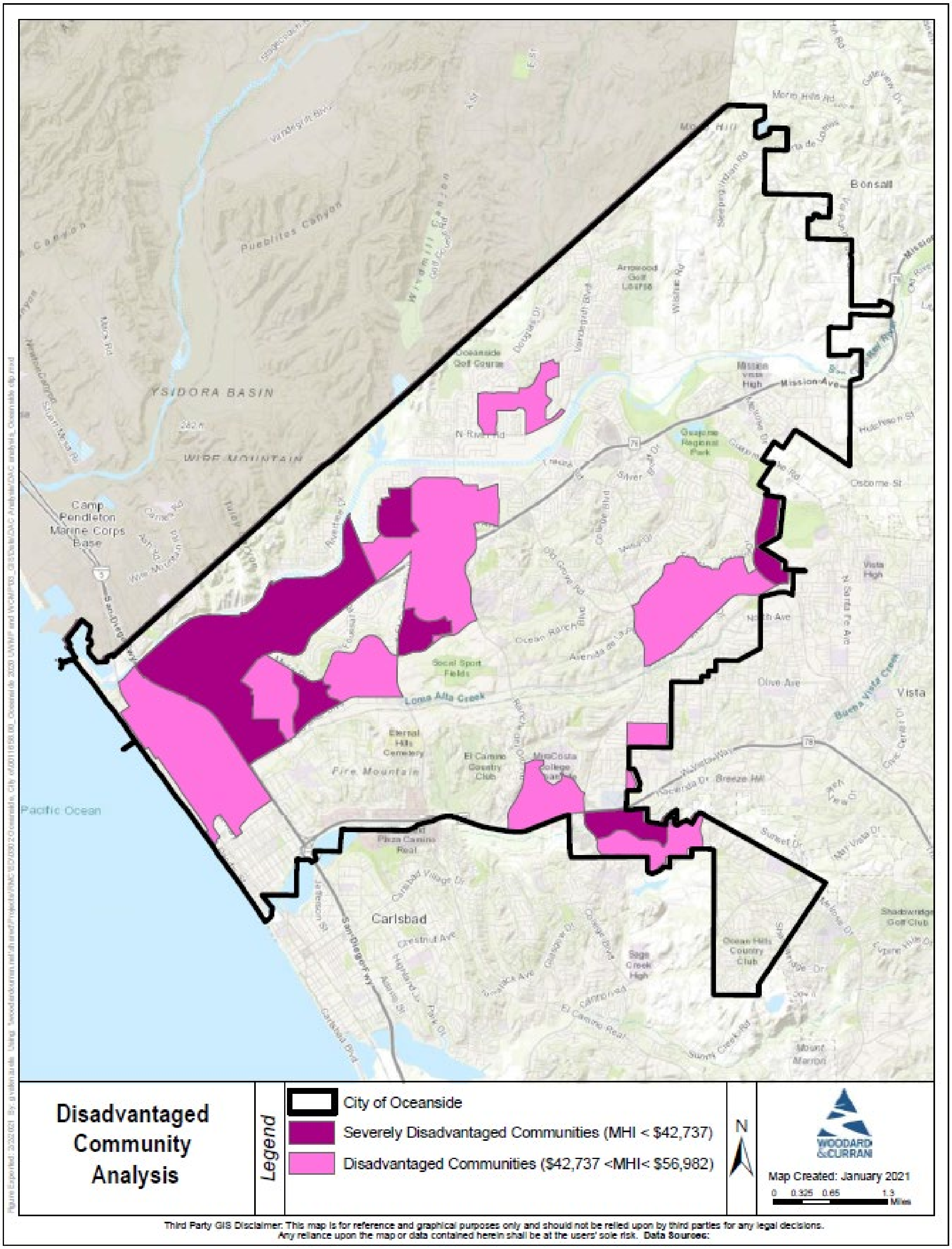
DWR Table 3-1 Retail: Population - Current and Projected						
Population Served	2020	2025	2030	2035	2040	2045
	177,531	181,659	182,527	183,483	183,482	184,657
Source: SANDAG, 2020.						

The City of Oceanside has a median household income (MHI) of $68,652 (in 2018 dollars) and a poverty rate of 11.6%. Approximately 23% of the population is under 18 years of age and 17% is over 65 years of age (US Census, 2020). Approximately 32% of the City's service area is considered to be disadvantaged communities (DACs), which are areas with an MHI less than 80% of the statewide MHI of $71,228. Of these DAC areas, 28% are considered severely disadvantaged communities (SDACs), defined as having an MHI less than 60% of the statewide MHI. DACs and SDACs in the City's boundaries are shown in **Figure 3-3**.

U.S. Census American Community Survey (2014-2018) data show the City of Oceanside's population is predominantly white (74%), with over 86% of the adult population aged 25 or older having attained a high school education, and just over 30% having attained a bachelor's degree or higher. In general, most households speak English at home, although 32% of the population speaks a language other than English at home. The most common language spoken at home other than English is Spanish, with over 21% of the total population speaking Spanish at home. Of those households speaking languages other than English at home, over 70% speak Spanish (ACS, 2018).

As discussed above in *Section 3.1.3 Existing and Future Development within Service Area*, the City of Oceanside has limited projected growth in residential development. According to DOF data, the homes in the City are mostly older, with about 75% of single-family homes built before 1990 and 82% of multiple family homes built before 1990. Typically, older homes have older, less efficient, fixtures and more leaks, leading to higher indoor water use than new homes. Replacement of fixtures through incentive programs or regular maintenance by homeowners can help reduce water use in older homes.

Figure 3-3: DACs and SDACs within the City of Oceanside, based on MHI



3.3 Climate Change

The City is an active participant in the San Diego Integrated Regional Water Management (IRWM) Program. The San Diego IRWM Program updated its IRWM Plan in 2019, which included a climate change vulnerability assessment consistent with the IRWM Guidelines. The City adopted the updated plan on December 18, 2019. This assessment has been incorporated here as **Appendix C**. For the San Diego IRWM Region, encompassing the coastal-draining watersheds in San Diego County, climate change is anticipated to result in a number of impacts that could affect the City. **Table 3-5** presents those potential regional climate change impacts that are anticipated to be realized for the City, while **Table 3-6** presents prioritized climate change vulnerabilities, adapted from the San Diego IRWM Program's climate change assessment to reflect vulnerabilities of greatest concern to the City.

Table 3-5: Potential Climate Change Impacts to the San Diego Region

Impact	Effect
Temperature	1.5°F to 4.5°F average temperature increase
Rainfall	Variable projections predict between 35% drier and 17% wetter Increase in variability between years
Supply	Up to 25% decrease in SWP supply Up to 20% decrease in Colorado River supply 164,000 acre-feet per year shortfall in imported supply
Demand	Potential 0.6% to 1.8% increase in demand by 2035
Sea level rise	12- to 18-inch rise in mean sea level rise
Wildfires	40% increase in California Coastal Shrub acreage burned in Southwestern U.S. 54% increase in overall acreage burned in Western U.S.

Source: RWMG, 2019.

Because of the City's location along the coast, the region's dependence on imported supplies, and the unique biodiversity of the region, the potential effects of climate change are of great concern. To help combat the vulnerabilities presented in **Table 3-6**, a number of strategies were developed for the San Diego IRWM region, many of which are currently being implemented, or are likely to be implemented, within the City or in ways benefitting the City. The strategies identified by the San Diego IRWM region were grouped into three tiers based on level of benefit, reduction in greenhouse gases (GHG), and ease of implementation. Tier 1 strategies, representing "no regrets" strategies, identified in the San Diego IRWM Plan and applicable to the City, are presented in **Table 3-7**. Tier 2 and 3 strategies can be found in the climate change assessment included in **Appendix C**.

Table 3-6: City of Oceanside Climate Change Vulnerabilities

Priority Level	Category and Vulnerability Issue
Very High	Water Supply: Decrease in imported supply
High	Water Supply: Sensitivity due to higher drought potential Water Quality: Increased constituent concentrations Flooding: Increases in flash flooding and inundation (extreme weather) Ecosystem/Habitat: Decrease in available necessary habitat Sea Level Rise: Inundation of storm drains and sewer systems Ecosystem/Habitat: Decrease in ecosystem services Water Supply: Lack of surface water storage* to buffer drought Ecosystem/Habitat: Decrease in environmental flows (e.g., stream flows)
Medium	Water Demand: Increase in industrial demand Water Supply: Decrease in groundwater supply Water Supply: Lack of groundwater storage* to buffer drought Water Quality: Increase in treatment cost due to water quality impacts to reservoirs Sea Level Rise: Damage to coastal recreation / tourism due to inundation Water Quality: Increased eutrophication Sea Level Rise: Decrease in land Sea Level Rise: Damage to ecosystem/habitat
Low	Water Demand: Increase in crop demand Water Demand: Limited ability to conserve further Flooding: Increases in inland flooding Ecosystem/Habitat: Increased impacts to coastal species
Very Low	Water Demand: Limited ability to meet summer demand Water Supply: Invasive species can reduce supply available Water Quality: Decrease in recreational opportunity

*The IRWM Region’s current storage capacity is sufficient; however, it lacks the ability to connect and convey water stored in some regional reservoirs.

Source: Adapted from RWMG, 2019.

Table 3-7: Tier 1 Climate Change Strategies Applicable to the City of Oceanside

Strategy	Description
Reduce Water Demand	
Urban water use efficiency	Technological and behavioral improvements that decrease indoor and outdoor residential, commercial, industrial and institutional water use.
Education	Implement outreach program to educate urban and agricultural water users in water demand reduction practices.
Improve Operational Efficiency/Transfers	
Conveyance - Regional/local	Improvements to regional and local conveyance facilities that improve conveyance capacity.
Increase Water Supply	
Conjunctive Management & Groundwater Storage	Coordinate and plan use and management of both surface and groundwater resources to maximize the availability and reliability of supplies.
Recycled Municipal Water	Increase supply of recycled water through additional wastewater treatment, and/or expand conveyance of recycled water to end users.
Improve Water Quality	
Drinking Water Treatment and Distribution	Develop and maintain adequate water treatment and distribution facilities, and protect the quality and safety of the raw water supply.
Groundwater/Aquifer Remediation	Remove contaminants that affect the beneficial use of groundwater. Can include passive or active methods.
Pollution Prevention	Prevent pollution of local surface waters and groundwater using tools that prevent point and non-point sources of pollution.
Salt and Salinity Management	Manage salt and salinity in surface and/or groundwater. Examples of methods include dilution and displacement, desalination, salt collection and storage, and aquifer recharge.
Urban Runoff Management	Prevent pollution of local surface waters by implementing best management practices (BMPs) designed to reduce the pollutant loading and reduce the volumes and velocities of urban runoff discharged to surface waters.
Improve Flood Management	
Flood Risk Management	Enhance flood protection through projects and programs that assist in the management of flood flows and to prepare for, respond to, and recover from a flood.
Practice Resource Stewardship	
Economic Incentives (Loans, Grants, Water Pricing)	Provide incentives such as financial assistance, water pricing, and water market policies intended to influence water management.
Ecosystem Restoration	Improve the condition of modified natural landscapes and biological communities to provide for their sustainability and for their use and enjoyment by current and future generations.

Strategy	Description
Land Use Planning and Management	Integrate land use and water management for the planning of housing and economic development needs of a growing population while providing for the efficient use of water, water quality, energy and other resources.
Recharge area protection	Protect recharge areas to ensure that areas suitable for recharge continue to be capable of adequate recharge rather than covered by urban infrastructure, and prevent pollutants from entering groundwater.
Watershed/Soils/Forest management	Create and implement plans, programs, projects and activities to restore, sustain, and enhance watershed functions, soil functions, and forests.
Water-dependent cultural resources and practices preservation	Create and implement plans, programs, projects and activities to preserve water-dependent cultural resources and practices
Increase urban forest management	Encourage the planting of trees in urban areas to improve urban water quality and local supplies.
Sea Level Rise	
Building water facilities in coordination with land use/sea level rise planning	Integrate water/wastewater resources planning with land use/sea level rise planning.
Source: Adapted from RWMG, 2019.	

In its 2019 Climate Action Plan, the City notes that water distribution and wastewater treatment account for 4% of the City's GHG emissions (City of Oceanside, 2019). Three measures were implemented to reduce indoor and outdoor water consumption to help decrease GHG emissions, reliance on imported water sources, and overall water use. The implementation of the 2015 Water Conservation Master Plan (WCMP) created measures for the City to comply with state requirements set by the 2009 Water Conservation Act (SBx7-7) and additional measures to reduce water use. The 2020 WCMP Update builds on these measures and incorporates flexibility to help the City to meet future water use objectives that may be required by SB 606 and AB 1668. These water measures can be found in the 2020 WCMP included as **Appendix L**, as well as *Chapter 9 Demand Management Measures* of this UWMP. The City also created a benchmarking energy use tool to help existing commercial and industrial buildings increase their awareness of water saving retrofits. Lastly, the City is a member of the North San Diego County Water Reuse Coalition, which seeks to improve water reuse in northern San Diego County, and plans to identify and implement capital improvements to the SLRWRF to increase recycled water supply capacities.

Page intentionally blank

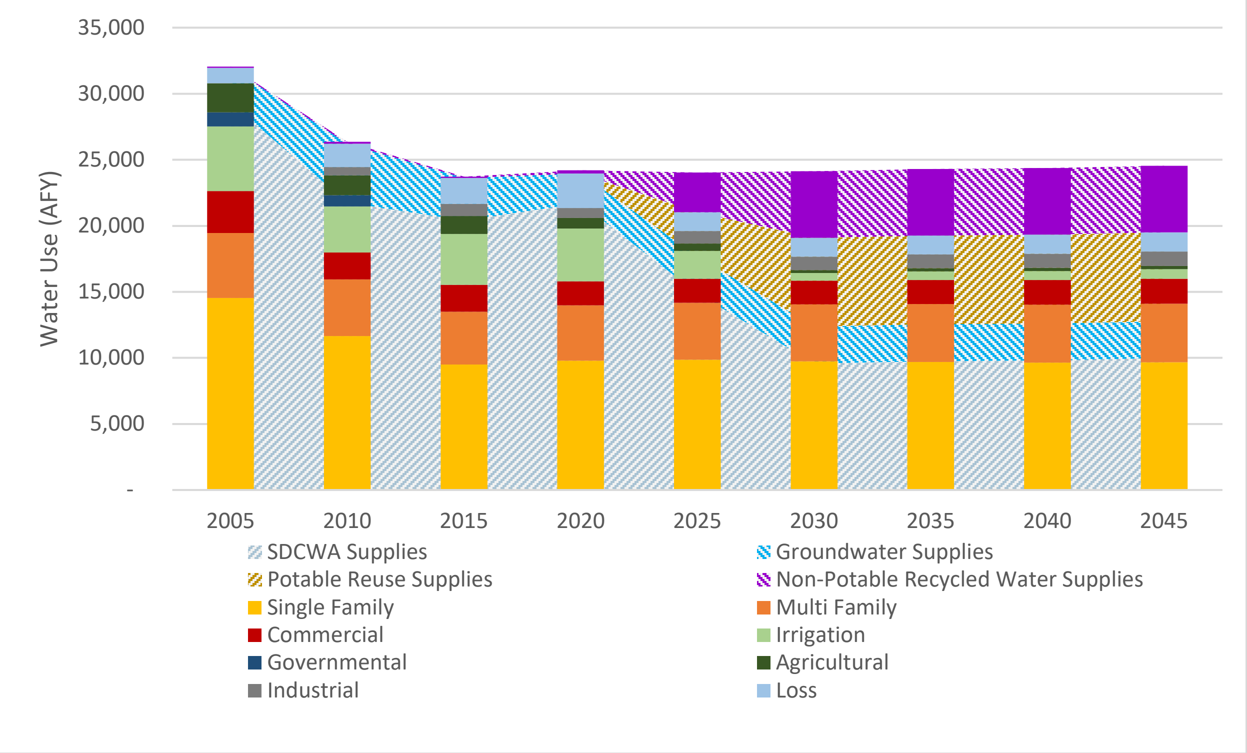
SECTION 4: SYSTEM WATER USE

This section describes the City's historic, current, and projected water use, and describes the types of water uses in the City's service area.

4.1 Water Use Sectors

The City's major water use sectors are single family residential, multifamily residential, commercial, industrial, irrigation, and agricultural. The primary water use in the City is residential, followed by landscape and commercial use. **Figure 3-2** in *Section 3 System Description* provides an overview of the distribution of water use in 2020. **Figure 4-1** shows historical and projected water use, by use sector. Recycled water is shown in **Figure 4-1**, but discussed in greater detail in *Section 6 System Supplies*. Note that **Table 4-1**, below, lists the distribution of total water use in 2020, as reported in the discussion below.

Figure 4-1: Historical, Current, and Projected Water Use and Supply for City of Oceanside[1]



[1] Government Sector was eliminated after 2010 and incorporated into Irrigation and Commercial. Note that this figure does not distinguish indirect potable reuse from traditional potable demands. VID exchange is included in the single family residential sector.

Residential (Single Family and Multifamily)

Residential water use includes single family residential and multi-family residential water users, and includes both indoor and outdoor water use. Indoor residential water use includes sanitation, cooking, laundry, and other household water uses. Outdoor residential water use primarily includes landscaping irrigation, and generally represents a substantial portion of water use for homes with landscaping (e.g., single family residences). Residential water use represents 58% of the City's water use in 2020.

Commercial

Commercial water use includes offices, businesses, and other commercial enterprises, as well as schools, churches, and public buildings. Water use is for both indoor water use, such as for sanitation, and for outdoor irrigation. Commercial water use represents 8% of the 2020 water deliveries.

Industrial

Industrial water use includes water used for industrial processes, as well as water used for other purposes at industrial sites. The City's industrial water demands were 3% of total water deliveries in 2020.

Irrigation

The irrigation sector includes parks, roadway medians, and other sectors that use water for landscape irrigation. Some of the water needs of the irrigation sector may be met with non-potable recycled water in the future, as described in *Section 6 System Supplies*. Irrigation represented 17% of total water use in 2020.

Agricultural

The Agricultural sector, which represented 3% of potable water demands, includes water used for agricultural irrigation and other agricultural practices. Some agricultural needs may be met with recycled water in the future, as described in *Section 6 System Supplies*.

Other Water Use and Losses

Approximately 11% of total water use in the City for 2020 went to other water uses that include non-revenue water and water losses. Fiscal Year 2020 losses were calculated using the AWWA Water Loss Audit methodology (see **Appendix D**) and totaled 2,609 AF.

Water Sales and Exchanges

The City sold 9.2 AF to 16 customers in Vista Irrigation District's (VID) service area through the Fall/Olive exchange. This exchange comprised 0.04% of total water use in 2020 and is billed via the Single Family Residential sector (included in this sector in **Figure 4-1**).

The City also provides water treatment services to VID's raw water purchases from SDCWA at the Weese WFP. However, these water treatment services are not quantified as either a demand or supply for the City (and therefore not included in **Figure 4-1** or **Table 4-2**). In 2020, the City treated 1,643 AF water for VID.

Recycled Water

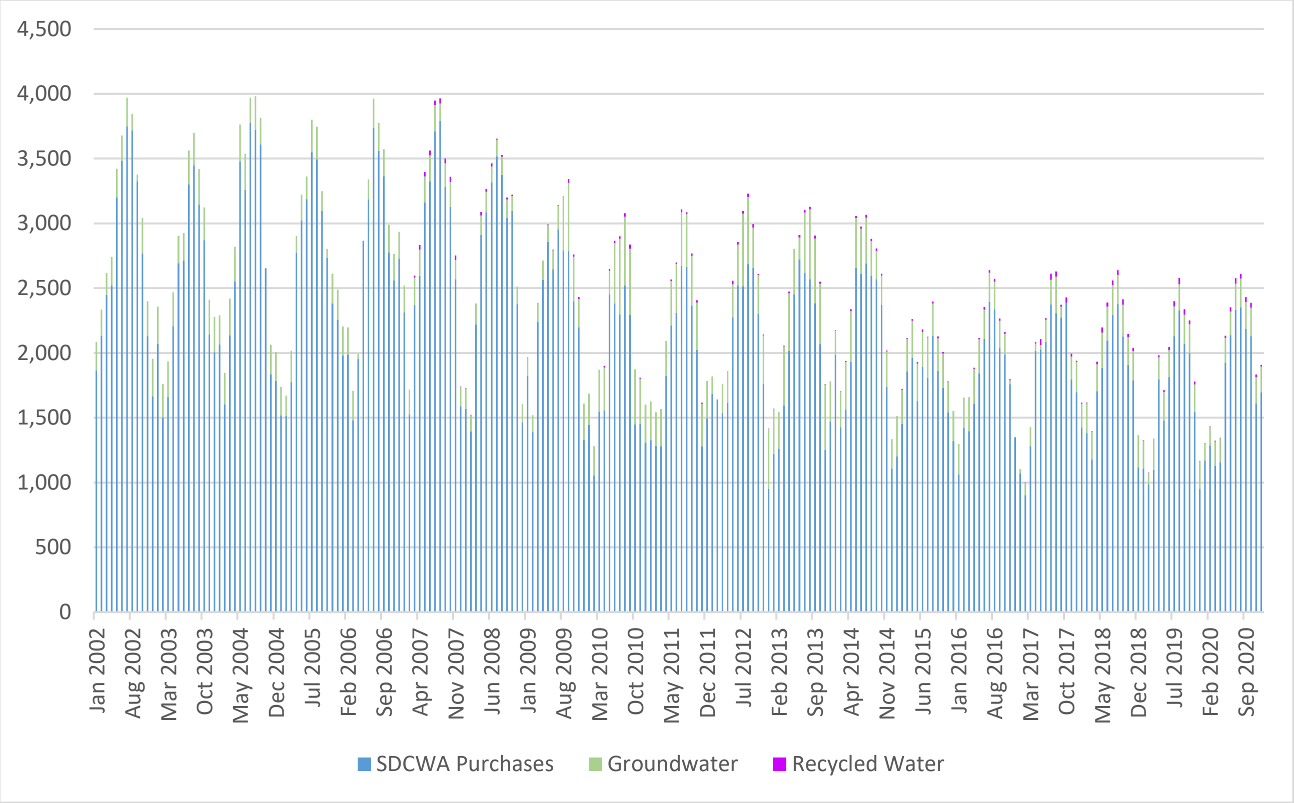
Non-potable recycled water is currently delivered for irrigation to the City's four recycled water customers. In addition, non-potable recycled water is also supplied to Whelan Lake to maintain lake levels. Non-potable recycled water deliveries made up 1% of total water use in 2020, not including the recycled water delivered to Whelan Lake.

4.2 Water Use and Demands

CWC §10631(e)(1), §10631(e)(2), §10631.1(a)

Historical and current water use records are maintained in the City's annual "Public Water System Statistics" reports that are submitted to DWR. **Figure 4-2** shows the City's historical water production by source over the last 19 years (2002 – 2020). In conjunction with the 2021 WCMP Update, historical water production data for the City was analyzed on a monthly basis.

Figure 4-2: Total Historical Water Production Volume (AFY)



4.2.1 Demand Forecast

Table 4-1 shows the City's current water use for 2020. The City began breaking down billing data for the Industrial sector in 2010 and discontinued the Government sector in 2015. Accounts formerly classified as Government were converted to either Irrigation or Commercial beginning in December 2014, as appropriate. **Table 4-1** has been expanded to also show actual non-potable recycled water sales in 2020 (excluding deliveries to Whelan Lake) and resulting total water use for the City of Oceanside.

In November 2013, the City began providing water to 16 homes within VID's service area through the Fall/Olive exchange. This water sold through the Fall/Olive exchange is included in the City's current and projected demands reported in this 2020 Plan. In addition to water the City sells directly to customers in VID's service area via the Fall/Olive exchange, the City also provides water treatment services to VID for raw water purchased from SDCWA. This raw water purchased by VID from SDCWA and treated by the City is not part of the City's supplies or demands and is not reported in this 2020 Plan.

Table 4-1: Demands for Potable and Raw Water – 2020 Actual

DWR Table 4-1 Retail: Demands for Potable and Non-Potable - Actual			
Use Type	**2020 Actual**		
	Additional Description	**Level of Treatment When Delivered**	**Volume (AFY)**
Single Family	Single family residential detached dwelling	Drinking Water	9,788
Multi-Family	More than one residential dwelling unit serviced by the meter: Duplex, townhome, condominium, apartments, mobile homes.	Drinking Water	4,172
Commercial	Non-residential domestic service	Drinking Water	1,818
Industrial	Businesses whose discharge to the wastewater system have high concentrations of BOD, TSS and /or ammonia.	Drinking Water	749
Landscape	Water only account	Drinking Water	4,014
Agricultural Irrigation	Irrigation of commercially grown crops or other dedicated agricultural connections	Drinking Water	804
Sales/Transfers/ Exchanges to other agencies	VID: Fall / Olive Exchange	Drinking Water	9
Losses	-	Drinking Water	2,609
		Total Potable Water Use	**23,963**
		Recycled Water Use*	249
		Total Water Use	**24,212**

NOTES: Governmental uses were converted to either Irrigation or Commercial beginning in January 2015. The AWWA Water Loss Audit included as Appendix D was completed for FY2020 and is used as an estimate for Calendar Year 2020 water losses.

*Excludes deliveries to Whelan Lake

Concurrently with this 2020 Plan, the City developed the 2021 Water Conservation Master Plan (WCMP) Update (included as **Appendix L**). As part of this effort, the City used Woodard & Curran demand models in conjunction with the Alliance for Water Efficiency Conservation Tracking Tool version 3.0 (AWE Tool) to project water use, passive conservation, and active conservation into the future. The AWE Tool is an Excel-based spreadsheet tool for evaluating water savings, costs, and benefits of urban water conservation programs. It was used to compare alternative conservation measures in terms of their water savings potential, impact on system costs, and potential benefits to utility customers.

As part of the WCMP Update, the City chose to assume implementation of conservation "Program B" in its demand forecast, which includes water conservation, smart meters (AMI), and further implementation of non-potable recycled water conversions. Water use projections with and without conservation savings are shown in **Table 4-2**.

Table 4-2: Baseline and Projected Water Use (AFY)[1]

	2025	2030	2035	2040	2045
Baseline Demands	24,865	25,315	25,673	25,857	26,129
Demand with Passive Conservation (Plumbing Code)	24,325	24,567	24,785	24,878	25,070
Demand with Passive and Active Conservation (Plumbing Code and WCMP Program B)	24,041	24,138	24,310	24,368	24,540

1. Total water use includes agricultural, non-potable recycled water use, and water loss.

Water use projections (with conservation) broken out by water use sector are shown in **Table 4-3**. Consistent with changes to the City's billing categories since 2010, Governmental sector use from January 2020 was divided evenly between Commercial and Irrigation sectors. The City anticipates continuing to provide a similar level of service to VID customers via the Fall/Olive exchange as was provided in 2020. This exchange is included in the demand projections presented in **Table 4-3**. In addition, the City will continue to provide treatment services to a portion of VID's raw water purchases from SDCWA however, this water is not included in the City's demands or supplies. As such, the purchased water treated for VID, and subsequently delivered by VID to its customers, is not included in **Table 4-3**.

Future Residential demands represent the highest projected water use, though the City also sells a substantial amount of Irrigation and Agricultural water. Irrigation and Agricultural water is generally used on high-value crops such as cut flowers, nursery stock, citrus, avocado, and other specialty tree crops. Users growing crops have the option of participating in the Permanent Special Agricultural Water Rate (PSAWR) program, which carries a discount in exchange for doubling the risk of cutbacks in the event of shortages. Under this program, growers also can choose to take water as commercial agricultural water, but do not receive a discount and thus have the same level of service reliability as other municipal users. The PSAWR program will be updated in 2021, which could affect the number of participants. The City also maintains an Oceanside Agricultural Water Rate (OAWR) which provides special rates for agricultural users, but requires participants to forfeit a portion of their available supply during emergency shortages.

The City encourages customers to convert turf to water-wise landscaping to conserve water

Table 4-3: Demands for Potable Water – Projected

DWR Table 4-2a Retail: Use for Potable Water - Projected						
Use Type	**Additional Description**	**Projected Water Use**				
		2025	**2030**	**2035**	**2040**	**2045**
Single Family	Single family residential detached dwelling; includes the Fall/Olive Exchange	9,872	9,740	9,692	9,655	9,660
Multi-Family	More than one residential dwelling unit serviced by the meter: Duplex, townhome, condominium, apartments, mobile homes.	4,298	4,316	4,377	4,379	4,431
Commercial	Non-residential domestic service	1,819	1,788	1,837	1,870	1,898
Industrial	Businesses whose discharge to the wastewater system have high concentrations of BOD, TSS and /or ammonia.	932	1,001	1,040	1,069	1,092
Landscape	Water only account	2,119	574	645	675	733
Agricultural irrigation	Irrigation of commercially grown crops or other dedicated agricultural connections	557	232	232	232	233
Losses		1,444	1,447	1,448	1,447	1,453
	TOTAL	**21,041**	**19,098**	**19,270**	**19,328**	**19,500**
NOTES: Projections based on SDCWA projections and revised per 2021 WCMP analysis. Governmental sector use starting in January 2015 was divided evenly between commercial and irrigation sectors.						

In addition to the potable water demands, the City uses non-potable recycled water. Current and projected non-potable recycled water demands are summarized in **Table 4-4** and discussed in greater detail in *Section 6 System Supplies*, consistent with DWR's recommended outline. The City is actively expanding its recycled water distribution system, and is projected to increase its recycled water demands to 3,000 AF by 2025 and to 5,040 AFY by 2030. Uses are generally golf course and landscape irrigation.

Table 4-4: Total Non-Potable Recycled Water Demands (AFY)

Use Type	**Additional Description**	**Projected Water Use**				
		2025	**2030**	**2035**	**2040**	**2045**
Other Non-Potable	Golf course and landscape irrigation	3,000	5,040	5,040	5,040	5,040
	TOTAL	**3,000**	**5,040**	**5,040**	**5,040**	**5,040**
NOTES: Projections based on planned and underway projects to expand the City's recycled water use.						

Table 4-5 summarizes current and projected potable and recycled water use. The City is in the process of developing indirect potable reuse supplies, which will serve potable demands. This is referred to as fully advanced treated, or FAT water. Per the 2020 Guidebook, potable reuse is incorporated into recycled water use in the official DWR tables. However, to provide clarification on the actual water demands by end users, the table presented in this section incorporates demands that will be met with

FAT water into potable demands because it will serve potable uses. This avoids issues of double-counting potable demands that will be met with potable reuse, FAT, supplies. Recycled water uses are discussed in more detail in *Chapter 6, System Supplies*.

Table 4-5: Total Water Demands (AFY)

DWR Table 4-3 Retail: Total Water Demands						
	2020	2025	2030	2035	2040	2045
Potable and Raw Water	23,963	21,041	19,098	19,270	19,328	19,500
Non-Potable Recycled Water	249	3,000	5,040	5,040	5,040	5,040
TOTAL WATER DEMAND	**24,212**	**24,041**	**24,138**	**24,310**	**24,368**	**24,540**
NOTES: Demands met by FAT water are included here as Potable and Raw Water demands. Non-potable recycled water demands are included here as Recycled Water demand.						

4.2.2 Distribution System Water Losses

CWC §10631(d)(3)(A), §10631(d)(3)(C)

Water loss is composed of apparent water losses and real water losses. Apparent losses are attributed to unauthorized consumption, customer metering inaccuracies and system data handling errors, while real losses are attributed to leakage along the pipe system, at the storage tanks, or at the service connections. The City has been quantifying water loss using the American Water Works Association (AWWA) water system balance methodology since fiscal year 2010. The City's AWWA water loss summary report for the most recent 12-month period was produced for FY 2020 and is included as **Appendix D**. The water loss calculated for each of the five most recent and available years preceding this 2020 UWMP is shown in **Table 4-6**.

Table 4-6: Water Loss Summary Most Recent 12 Month Period Available

DWR Table 4-4 Retail: Water Loss Summary Most Recent 12 Month Period Available	
Reporting Period Start Date (Month/Year)	Loss (AFY)
July 2014	1,316
January 2016	1,279
July 2017	1,336
July 2018	1,672
July 2019[1]	2,609
NOTES: 1. Reported water losses are reported as higher than previous years due to Supervisory Control and Data Acquisition (SCADA) system updates that have improved the accuracy of water loss reporting, rather than reflecting an increase in water loss in the system.	

4.2.3 Low Income Water Use and Demands

CWC §10631.1(a)

DWR requires that agencies estimate the projected water use for single-family and multifamily residential housing needed for lower income households within their service area. DWR defines lower income households as those with a median household income (MHI) earning less than 80% of area

MHI. Per the City's 2013 General Plan Housing Element, low-income households are those earning $65,500 or less.

SANDAG's Interim Series 14 Regional Growth Forecast includes projected number of households. In 2016, 52% of households in the City earned less than $60,000. Household projections from SANDAG were available for 2016, 2020, 2025, 2030, 2035, and 2045. The City's Inclusionary Housing Ordinance (Municipal Code Chapter 14C) requires developments of three or more units include affordable housing equal to 10% of the total units developed, with some exceptions. Given this requirement, roughly 10% of the overall increase in households is expected to be low-income. The resulting number of low-income households from 2020 to 2045 is shown in **Table 4-8**. Assuming that a given household will use approximately the same amount of water as another given household in the same billing category regardless of income level, the City is able to estimate the projected low-income water use for multi-family and single-family residential demands, as shown in **Table 4-8**.

Table 4-7: Low-Income Projected Water Demands (AFY)

	2020	2025	2030	2035	2040	2045
Total Households	62,306	63,355	64,414	65,524	66,068	66,899
Low Income Households[2]	**31,895**	**32,000**	**32,106**	**32,217**	**32,272**	**32,355**
Low Income Water Demands (AFY)[1]	7,151	7,247	7,186	7,191	7,172	7,201
Low Income Multi-Family Demands[1]	5,016	5,049	4,979	4,954	4,934	4,936
Low Income Single-Family Demands[1]	2,136	2,198	2,207	2,237	2,238	2,265
[1]Estimated [2]Calculated as existing low-income households plus 10% of household growth						

4.2.4 Estimating Water Savings from Codes, Ordinances, or Transportation and Land Use Plans

CWC §10631(e)(4)

The City has a number of conservation measures in effect at all times and implements additional ones in the event of a drought declaration, as described in *Section 8 Water Shortage Contingency Plan*. In addition, the City's mandatory use ordinance means that projected recycled water use is considered a verifiable supply because users will be required to convert to recycled water as it becomes feasible to connect. Further, recent changes to the State's plumbing and building codes will reduce domestic water demands by requiring installation of water efficient fixtures and other features. These statewide changes include, but are not limited to, AB 715 (efficient toilets and urinals) and SB 407 (retrofitting for efficient fixtures). Conservation efforts are included in the projected demands, as are lower income residential demands, as indicated in **Table 4-9**.

Table 4-8: Inclusion of Estimated Water Savings in Water Use Projections

DWR Table 4-5 Retail Only: Inclusion in Water Use Projections	
Future Water Savings Included Y/N	Yes
If "Yes" to above, state the section or page number where citations of the codes, ordinances, etc… utilized in demand projections are found.	Location in UWMP: Section 4.2.4; Section 6.8.3
Lower Income Residential Demands Included	Yes

4.3 Wholesale Water Demand Projections

CWC §10631(k)

From 2015 to 2020, an average 89% of the City's water was purchased from SDCWA. In the future, the City will use more water from local sources such as groundwater from Mission Basin, FAT water (potable reuse), and non-potable recycled water, thereby lessening the need for SDCWA purchases. Agency demand projections provided to SDCWA are shown in **Table 4-10**. Note that the City's projected demands on SDCWA may be different from those reported in SDCWA's 2020 UWMP due to differences in demand forecast assumptions and methodology.

Table 4-9: Agency Demand Projections Provided to Wholesale Supplier (AFY)

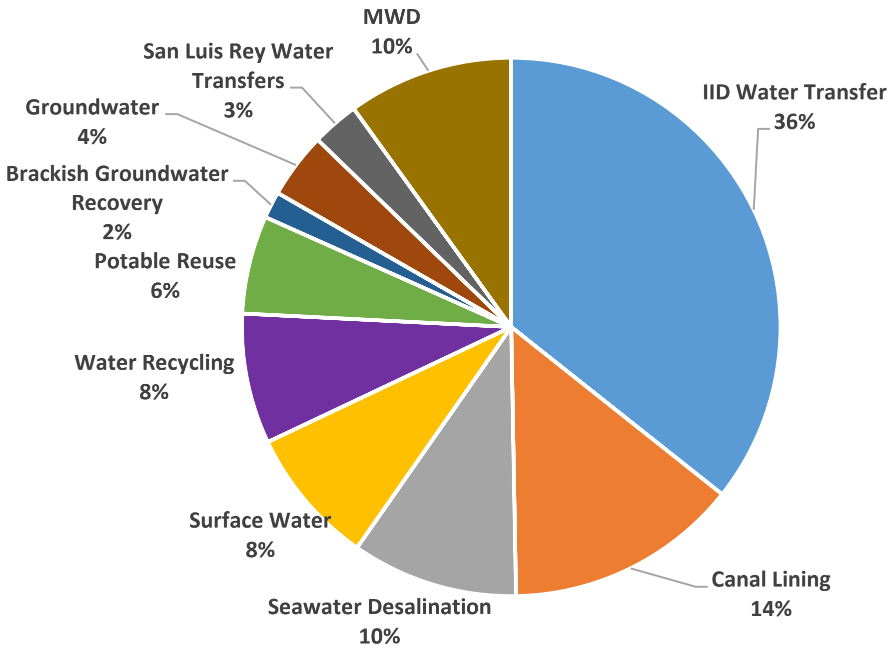
Wholesaler	2025	2030	2035	2040	2045
SDCWA	14,881	9,578	9,750	9,808	9,980

SDCWA purchases imported water from three main sources: MWD (combination of imported State Water Project and Colorado River), conserved agricultural water from IID, and conserved water from projects that lined the All-American and Coachella Canals. SDCWA has also acquired spot water transfers to offset reductions in supplies from MWD during water shortage years. In addition to imported water, SDCWA's supply mix includes desalinated seawater produced at the Claude "Bud" Lewis Carlsbad Desalination Plant (Carlsbad Desalination Plant). This desalinated water, discussed in further detail in *Chapter 6 System Supplies*, has been delivered to SDCWA member agencies as part of SDCWA's supply mix since the end of 2015, though the actual amount of desalinated seawater the City receives from SDCWA may vary or be nonexistent due to the location of the City's connections with SDCWA's system.

4.3.1 Wholesale Water Use Reduction Plan

The SDCWA Board approved a strategy to aggressively diversify its water supply portfolio by developing new local and imported water supplies, which is actively enhancing regional supply reliability. SDCWA has also been working with its 24 local member retail agencies to develop local supplies such as groundwater, recycled water, seawater desalination, and conservation. By fiscal year 2010, the San Diego region had reduced its reliance on MWD supplies to 50%. This lessened the impact of water cutbacks from MWD that began in July 2009. By 2025, SDCWA projects local water supplies to meet 31% of the region's water demand. Member agency local supplies and SDCWA's supplies independent of purchases from MWD are projected to meet 90% of demands by 2025 (see **Figure 4-3**). SDCWA also partners with its member agencies to promote conservation and conservation education through its WaterSmart programs (www.watersmartsd.org), discussed further in *Section 9 Demand Management Measures.*

Figure 4-3: Projected 2025 Regional (SDCWA) Supply Mix



Source: SDCWA 2020 UWMP.

4.4 Climate Change

As described in *Section 3 System Description*, the City faces demand vulnerabilities resulting from potential impacts of climate change. The San Diego Region identified four water-demand related vulnerabilities. **Table 3-6** summarizes those water demand vulnerabilities applicable to the City. The City anticipates that potential impacts of climate change could increase demands in the industrial and agricultural sectors, including additional water for cooling processes and irrigation increases in response to climate change. If climate change increases water intensity of industrial processes, the City's projections for this water use category (see **Table 4-3**) could be lower than actual demands. Agricultural water uses in the City are anticipated to remain fairly consistent over time. However, these demands could change substantially as a result of climate change should irrigation demands increase as temperatures rise and precipitation patterns change. On the other hand, irrigation demands may decrease if climate change contributes to conversion of agricultural land to other uses. On-going extended droughts, or the perceived risk of increased drought intensity and frequency, may increase the rate of agricultural land conversions, which would decrease agricultural water demands. At the same time, other categories of water use would increase as agricultural users are converted into other customer classes such as residential.

Anticipated temperature rises could contribute to increases in domestic water demands, though these demand increases could be tempered with long-term passive savings achieved through on-going programs that promote conversion of turf to water-wise landscaping and active conservation achieved through voluntary water use reductions as the City's population continues to increase its awareness of water use. It is evident that short-term demand decreases are achievable, but long-term calls for conservation in the light of hotter summers and greater variability in precipitation could lead to a perceived inability for further demand reduction. Some increased demands could also be offset by conservation measures implemented in response to SB 606 and AB 1668 water use reduction requirements.

SECTION 5: BASELINES AND TARGETS

The Water Conservation Act, also known as SBx7-7, was adopted in 2009, requiring the State to reduce urban water use by 20% by the year 2020. SBx7-7 requires each retail urban water supplier to set water use reduction goals to assist in achieving the statewide 20% reduction. To measure progress towards meeting their 2020 targets, DWR required agencies to meet an interim target in 2015, the halfway point between the baseline and the target year (2020), which the City successfully met in 2015. This chapter establishes the City of Oceanside's baseline periods and water use targets in accordance with SBx7-7, service area population, gross water use, and confirms compliance with the 2020 target. All required SBx7-7 tables are included as **Appendix B**. The 2020 Guidebook requires that all urban water retailers use the baseline, targets, and methodology established in their 2015 UWMPs, unless there has been a change to their water service areas. Because the City's water service area boundary remains unchanged from 2015, its baseline, targets, and methodology remain consistent with those presented in the 2015 UWMP.

5.1 SBx7-7 Baseline

To establish the SBx7-7 baseline in the 2015 UWMP, the City first calibrated its service area population for potential baseline years, using 2010 U.S. Census data. A baseline period was selected, gross water use for the baseline period added, and water use in gallons per capita per day (GPCD) was calculated. Baseline information is presented in **Table 5-1**, below.

5.1.1 Service Area Population

CWC §10608.20 (e), §10608.20 (f)

For the baseline calculation, the City's service area population estimates were updated in the 2015 Plan using the 2010 U.S. Census data to provide correct annual GPCD calculations. A Geographic Information System (GIS) analysis found that the City provides 95% of its service area with water services, which allowed the City to use California Department of Finance (DOF) population projections for its service area data. These population projections are presented in **Table 5-1**, below.

5.1.2 Baseline Periods

CWC §10608.12(b), §10608.20(e), §10608.20(g), §10608.22

SBx7-7 requires agencies to determine their baseline per capita water use and calculate their 2020 target water use per the *Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use* (*Methodologies*). Baselines are determined by averaging the historical per capita water use of 10 to 15 consecutive years. Agencies that prepared a 2015 UWMP and did not experience changes to their water service areas must use the same baseline period for their 2020 UWMPs. Per the Methodologies, the City is required to use a 10-year baseline period because its 2008 recycled water use, 66 AF, was less than 10% of its 2008 measured retail water demand. Based on analysis of potential baseline periods, the City selected a 10-year baseline period from 1999 to 2008. The per capita water use for each base period year is shown in **Table 5-1**. The City's daily system gross water use is the sum of the water purchased and produced each year, with agricultural water use and recycled water use excluded. Annual daily per capita water use for each year, determined by dividing gross water use by population, was averaged to determine the baseline daily per capita water use of 171 GPCD.

According to SBx7-7, the water use reduction must meet a minimum of 95% of the City's baseline per capita use for a continuous 5-year period ending no earlier than December 31, 2007 and no later than December 31, 2010. As displayed in **Table 5-1**, the City's 5-year baseline for 2004 through 2008 is 172 GPCD, therefore, the 2020 target must reduce water consumption to at least 163 GPCD.

5.1.3 Gross Water Use

CWC §10608.12, California Code of Regulations Title 23 Division 2 Chapter 5.1 Article

Gross water use is a measure of water that enters the distribution system of the supplier over a 12-month period. **Table 5-1** shows the annual gross water use for each year of the 10-year baseline period from 1999 to 2008, as well as the 5-year baseline period from 2004 to 2008. This table also shows the GPCD for each year in the 5-year and 10-year baseline periods, which were then averaged to establish the 2020 water use targets.

Table 5-1: Annual Gross Water Use

SBX7-7 Table 4 Annual Gross Water Use; SBX7-7 Table 5: Gallons Per Capita Per Day (GPCD)[1]						
Baseline Year		**Volume Into Distribution System**	**Agricultural Use**	**Annual Gross Water Use[2]**	**Service Area Population**	**Daily Per Capita Water Use**
10 to 15 Year Baseline - Gross Water Use						
Year 1	1999	33,254	2,330	30,924	158,451	174
Year 2	2000	33,862	2,719	31,142	161,624	172
Year 3	2001	32,141	2,369	29,772	162,907	163
Year 4	2002	35,467	3,255	32,211	164,312	175
Year 5	2003	32,844	2,480	30,364	165,962	163
Year 6	2004	35,169	2,408	32,760	166,859	175
Year 7	2005	33,611	2,221	31,391	166,958	168
Year 8	2006	34,311	2,530	31,781	165,539	171
Year 9	2007	35,585	2701	32,884	165,545	177
Year 10	2008	33,050	1795	31,255	166,064	168
10 year Baseline Average Gross Water Use				**31,448**	**-**	**171**
5 Year Baseline - Gross Water Use						
Year 1	2004	35,169	2,408	32,760	166,859	175
Year 2	2005	33,611	2,221	31,391	166,958	168
Year 3	2006	34,311	2,530	31,781	165,539	171
Year 4	2007	35,585	2701	32,884	165,545	177
Year 5	2008	33,050	1795	31,255	166,064	168
5 Year Baseline Average Gross Water Use				**32,014**	**-**	**172**
2020 Compliance Year - Gross Water Use						
2020		23,963	804	23,159	177,531	116

NOTES: In order to not artificially lower gross water use, recycled water was not reported here. The Water Code Section 10608.12(g) defines "Gross Water Use" as the total volume of water, whether treated or untreated, entering the water distribution system of an urban retail water supplier, excluding recycled water, the net volume of water that is placed into long-term storage, the volume of water that is conveyed for use by another water supplier, and the volume of water delivered for agricultural use.

[1] This table consolidates SBX7-7 Tables 4 and 5. A full set of SBX7-7 tables has been provided in **Appendix B**.

[2] Some differences may occur due to rounding.

5.1.4 Baseline GPCD Water Use

CWC §10608.12(b)

Table 5-1, above, shows the 10-year and 5-year baselines established for the City. The 10-year baseline was determined from gross water use for the years 1999-2008 and results in 171 GPCD; this is the value that must be reduced by 20% by 2020 (137 GPCD). The City's 5-year baseline was determined from gross water use for the years 2004-2008 and results in 172 GPCD; this is the value at which 95% would comprise the City's maximum 2020 target (163 GPCD). If the City's calculated 2020 target (20% reduction from the 10-year baseline) is higher than 95% of the 5-year baseline, the lower number must be used as its 2020 target. The lower of the two numbers is the "confirmed 2020 target". As such, the City's calculated 2020 target is 137 GPCD. The following section addresses the City's compliance with its water use targets.

5.2 2020 Target

CWC §10608.20(b), §10608.20(e), §10608.20(g), §10608.22, §10608.24(a), §1060 8.40

SBx7-7 requires urban water suppliers to establish per capita water use targets by using one of four methods:

- **Method 1:** A per capita water use by 2020 that is 80% of the urban retail water supplier's baseline per capita daily water use. The City's baseline is 171 gallons per capita per day (GPCD). The resulting per capita demand target for 2020 is 137 GPCD (reduction of 20% from baseline), with an interim 2015 target of 154 GPCD (reduction of 10% from baseline).
- **Method 2:** The per capita daily water use that is estimated using the sum of several defined performance standards. This method requires quantifying the landscaped area and the baseline commercial, industrial, and institutional (CII) use.
- **Method 3:** 95% of the applicable state hydrologic region target, as set forth in the 2020 Guidebook (DWR, 2020). Oceanside, located in DWR's South Coast Hydrologic Region Number 4, has a year 2020 target of 95% of 149 GPCD, which is 142 GPCD.
- **Method 4:** A provisional method that was developed by DWR where the target is based on indoor residential, CII, outdoor, and water loss components. Using the Provisional Method 4 Target Calculator provided by DWR with a CII water use in 2003 of 2,989 ac-ft gives a 2020 target of 151 GPCD.

The 2020 Guidebook requires that urban water suppliers use the same methodology for their 2020 target in their 2020 UWMPs as their 2015 UWMPs. The City selected Method 1 in its 2015 UWMP and is therefore using Method 1 in this 2020 UWMP. **Table 5-2** shows the 10-year baseline and the 2020 target, as determined through Method 1. The City's 2020 target is 137 GPCD, calculated as a reduction of 20% from the baseline 171 GPCD. The 2020 target must reduce Oceanside's 2020 water use by a minimum of 5% from the 5-year baseline. The 5-year baseline GPCD, the maximum 2020 water use target (calculated as 95% of the 5-year baseline GPCD), the calculated 2020 target, and the confirmed 2020 target are also shown in **Table 5-2**. This confirms that the 2020 target is sufficient. As seen, the 2020 target is well below the maximum 2020 target of 163 GPCD. **Table 5-3** provides a summary of the City's baselines and targets under SBx7-7.

Table 5-2: Confirm Minimum Reduction for 2020 Target

10-15 Year Baseline GPCD	Calculated 2020 Target GPCD	5 Year Baseline GPCD	Maximum 2020 Target[1]	Confirmed 2020 Target GPCD
171	137	172	163	137
[1] Maximum 2020 Target is 95% of the 5 Year Baseline GPCD				

Table 5-3: Baselines and Targets Summary

DWR Table 5-1 Baselines and Targets Summary				
Baseline Period	Start Years	End Years	Average GPCD	Confirmed 2020 Target
10-15 year	1999	2008	171	137
5 Year	2004	2008	172	

5.3 Water Conservation Target Compliance

CWC §10608.12(e), §10608.20(e), §10608.24(a), §10608.24(d)(1)

As noted above, water suppliers are required to calculate their actual 2020 GPCD to assess and determine whether they have met the 2020 target. As shown in **Figure 4-1** (refer to *Section 4 System Water Use*), overall water use has declined in recent years. Based on 2020 gross water use and estimated population, and as shown in **Table 5-4**, the City of Oceanside's 2020 actual water use is 116 GPCD. The City has therefore met (and exceeded) its 2020 water use reduction target. Because the City met its 2020 target, no optional adjustments were made to its 2020 GPCD.

Table 5-4: 2015 Compliance

DWR Table 5-2: 2020 Compliance							
Actual 2020 GPCD	Optional Adjustments to 2020 GPCD					2020 Confirmed Target GPCD	Did Supplier Achieve Targeted Reduction for 2020?
	Extraordinary Events	Economic Adjustment	Weather Normalization	Total Adjustments	Adjusted 2020 GPCD		
116	-	-	-	-	116	137	Yes
NOTES: The City was within its 2020 Target prior to adjustments made for extraordinary events, economic adjustments, or weather normalization. No adjustments were made.							

SECTION 6. SYSTEM SUPPLIES

This section addresses the historical, current, and projected supplies available to the City to meet demands discussed in *Section 4 System Demands*. As described in this section, the City relies on three major supply sources: SDCWA imported water purchases, desalinated groundwater, and non-potable recycled water. The City is actively developing indirect potable reuse (FAT water) as a future supply, anticipated to be available by 2022, which will be used to offset water purchased from SDCWA. **Figure 4-2** shows monthly water production data for the last 14 years (2002 – 2020) (see *Section 4 System Water Use*). **Table 6-1** and **Figure 6-1** provide a summary of the City's historical and projected water supplies from 2010 – 2045. A map showing the location of the City's local supplies is shown as **Figure 6-2**.

Table 6-1: Summary of Historical and Projected Supplies (AFY)

Supply	2010	2015	2020	2025	2030	2035	2040	2045
Purchased SDCWA Imported Water Supply	24,897	20,400	21,662	14,881	9,578	9,750	9,808	9,980
Groundwater	3,732	3,213	2,302	2,800	2,800	2,800	2,800	2,800
Recycled Water (Non-Potable)	119	104	249	3,000	5,040	5,040	5,040	5,040
Potable Reuse Water	0	0	0	3,360	6,720	6,720	6,720	6,720
Total	**28,748**	**23,717**	**24,212**	**24,041**	**24,138**	**24,310**	**24,368**	**24,540**

Figure 6-1: Historical and Projected Supply Mix (AFY)

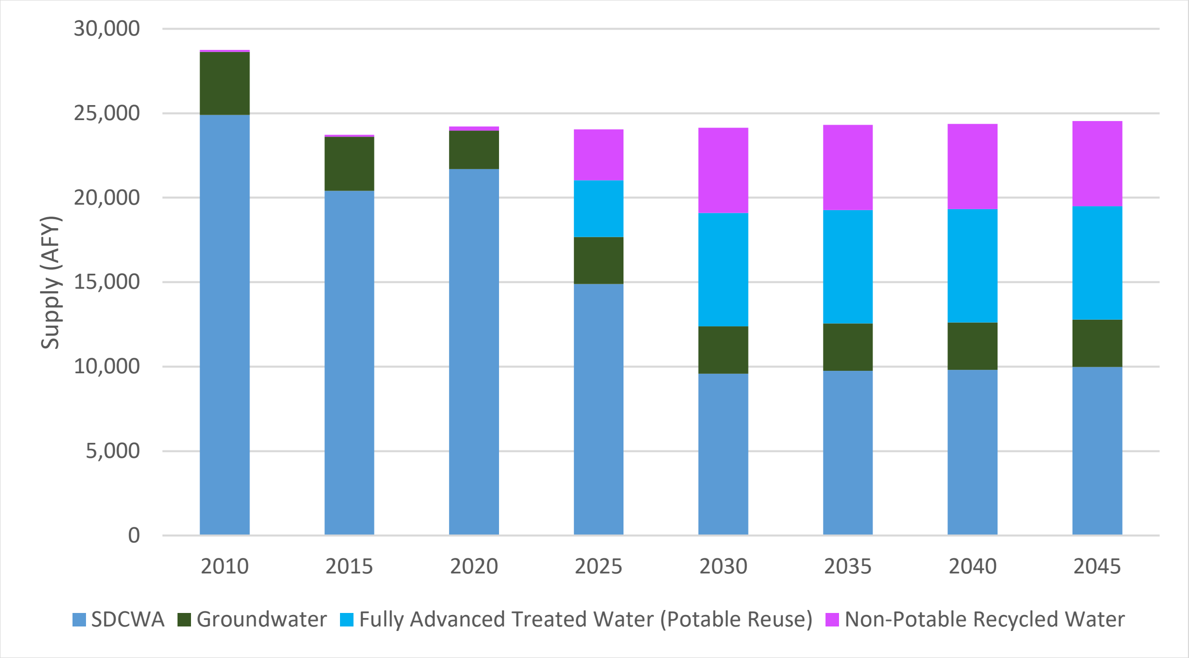
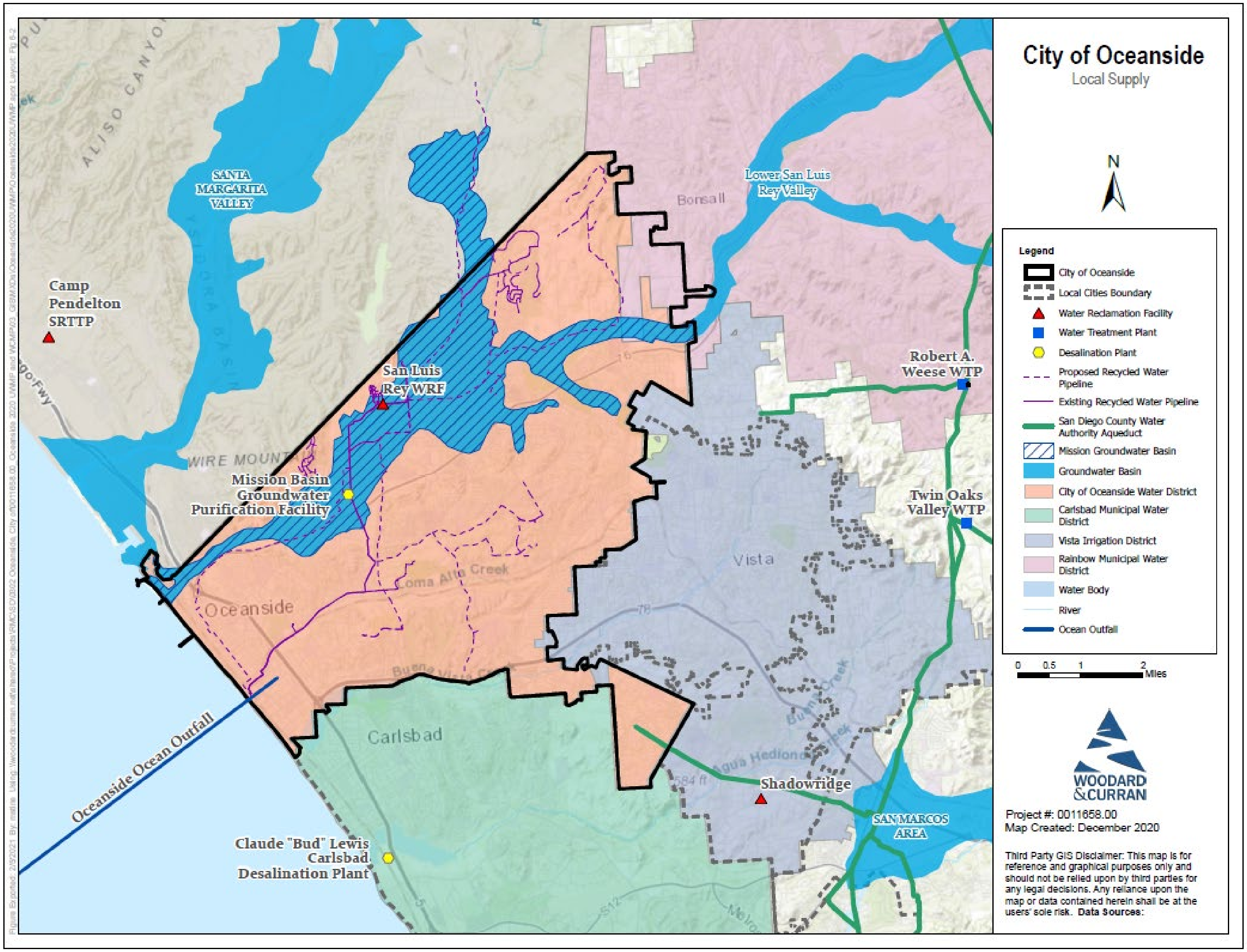


Figure 6-2: City of Oceanside Local Supplies



6.1 Summary of Existing and Planned Water Sources

CWC §10631(b)

The City currently has two direct sources of potable water: water purchased from SDCWA (raw and treated), and local groundwater from the Mission Basin of the Lower San Luis Rey River Valley. SDCWA's imported water is sourced from the SWP and Colorado River via MWD and the Colorado River via transfers from IID and conservation savings from several canal-lining projects. The City received both treated SDCWA water and raw water from SDCWA, which is treated at the City's Weese WFP prior to delivery. SDCWA also purchases desalinated seawater and blends it into member agency treated water supplies. The City operates well fields that deliver raw groundwater to the MBGPF for treatment. Recycled (non-potable) water is produced at the SLRWRF and delivered to four irrigation customers and Whelan Lake. Recycled water deliveries to Whelan Lake are not metered and generally not reported in the City's demand and supply tables unless otherwise noted. Historical water supplies are provided in **Table 6-2**.

Table 6-2: Historical Water Supplies (in FY)

Supply Source	Supply (acre feet)						Average Supply (AFY)	Percentage of Supply (%)
	2015	2016	2017	2018	2019	2020		
Purchased from SDCWA	20,400	21,316	22,224	21,293	19,305	21,662	21,033	89%
Groundwater	3,213	2,313	1,491	2,749	2,450	2,302	2,420	10%
Recycled Water (Non-Potable)	104	120	242	268	239	249	204	1%
Total	**23,717**	**23,750**	**23,958**	**24,310**	**21,995**	**24,212**	**23,657**	**100%**
Purchased water includes treated and untreated water purchased from SDCWA, including water served to VID customers in the Fall/Olive exchange. Groundwater treated at the Mission Basin Groundwater Purification Facility. Non-potable recycled water produced at SLRWRF. Does not include recycled water delivered to Whelan Lake.								

As shown in **Table 6-2**, approximately 89% of the City's water supply for the period 2015 through 2020 came from water purchased from SDCWA. This period is indicative of historical water supply for the City. In the future, the City plans to use more water from local sources, thereby lessening the need for imported water. Current water supplies utilized in 2020 are shown in **Table 6-3**.

Table 6-3: Water Supplies – 2020 Actual

DWR Table 6-8 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2020		
		Actual Volume	Water Quality	Total Right or Safe Yield (optional)
Desalinated or Imported Water	Blend of imported water and desalinated seawater purchased from SDCWA	21,662	Raw and Treated	--
Groundwater	Desalted groundwater from MBGPF	2,302	Raw Water	--
Recycled Water (Non-Potable)	Recycled Water produced at SLRWRF	249	Recycled water	--
	Total	**24,212**		
NOTES: Includes SDCWA water treated and served to VID customers in the Fall/Olive exchange. Some differences may occur due to rounding				

Future potable water supplies include the SDCWA supplies, expanded extraction and treatment of water from the Mission Basin, and indirect potable reuse. The MBGPF has a treatment capacity of up to 7,130 acre-ft per year of treated water (6.4 MGD). Operation of the MBGPF began in 1992, with an expansion completed in 2002, and a granular activated carbon process added in 2009.

SDCWA supplies both treated and untreated water to the City through five aqueduct connections. Treated water is conveyed directly to the City's water distribution system, while untreated water is first conveyed to the City's Weese WFP in unincorporated County of San Diego. The Weese WFP is owned and operated by the City and was originally designed and constructed in 1983 with a capacity of 16.5 MGD. As reported in the City's *2015 Water Master Plan*, the annual water supply for the City in 2012 comprised an average day demand of 24.9 MGD (City of Oceanside 2015a).

The City is planning the expansion of its recycled water system through both additional non-potable recycled water deliveries and an indirect potable reuse project (FAT water) to increase water supply reliability. The City is currently expanding its Upper and Lower SLRWRF systems to connect additional customers to the non-potable recycled water distribution system. The indirect potable reuse project, known as Pure Water Oceanside, will produce 3,360 AFY of FAT water at the City's advanced water treatment (AWT) facility, which will be injected into the Mission Basin, and eventually extracted and treated at the MBGPF to be used to meet potable demands. The Pure Water Oceanside project will reduce the City's reliance on imported water purchased from SDCWA. The City has begun construction on Pure Water Oceanside, and anticipates delivering potable water from the project starting in mid-2022.

Future construction of a seawater desalination facility has been evaluated by the City, but is currently in the feasibility phase. A 2010 *Seawater Desalination Pilot Facility and Feasibility Study* placed monitoring and test wells at a site near the Oceanside Harbor and utilized a reverse osmosis treatment system. This study was designed to develop design parameters for a treatment process supporting implementation of a full-scale seawater desalination project at the MBGPF. Water would be extracted from the ocean by a series of 10 to 20 wells in the Mission Narrows area, near the mouth of the San Luis Rey River, and blended with brackish groundwater from the Mission Basin prior to treatment. This blend would result in a lower salinity source and allow for greater recovery of potable water by reducing the energy demands for treatment. The project is currently the most expensive option for water supplies, therefore, the City is not continuing to explore this supply option at this time and this supply is not included in the City's projections. Planned water supplies are incorporated into the City's water supply projections. Projected water supplies are provided in **Table 6-4**. The planned water supplies are based on meeting anticipated growth through 2045.

Table 6-4: Water Supplies – Projected

DWR Table 6-9 Retail: Water Supplies — Projected											
Water Supply	**Additional Detail on Water Supply**	**Projected Water Supply**									
		2025		**2030**		**2035**		**2040**		**2045**	
		Reasonably Avail. Volume	Total Right or Safe Yield *(opt.)*	Reason-ably Avail. Volume	Total Right or Safe Yield *(opt.)*	Reason-ably Avail. Volume	Total Right or Safe Yield *(opt.)*	Reason-ably Avail. Volume	Total Right or Safe Yield *(opt.)*	Reason-ably Avail. Volume	Total Right or Safe Yield *(opt.)*
Purchased or Imported Water	From SDCWA	14,881	-	9,578	-	9,750	-	9,808	-	9,980	-
Desalinated Groundwater	Mission Basin	2,800	10,000	2,800	10,000	2,800	10,000	2,800	10,000	2,800	10,000
Recycled Water	Non-potable	3,000	-	5,040	-	5,040	-	5,040	-	5,040	-
Other	Indirect Potable Reuse Water	3,360	-	6,720	-	6,720	-	6,720	-	6,720	-
Total		**24,041**	**10,000**	**24,138**	**10,000**	**24,310**	**10,000**	**24,368**	**10,000**	**24,540**	**10,000**
NOTES: Assumes purchased water make up any demands not fulfilled by local supplies. Indirect potable reuse water is FAT water that is injected into the Mission Basin and extracted for potable use.											

6.2 Purchased Water

As noted above, the City purchases a portion of its water from SDCWA, who in turn purchases a portion of its water from MWD. MWD is Southern California's wholesale water agency, and SDCWA is the largest customer among MWD's 26 member agencies. MWD derives its water supply from the Colorado River (via the Colorado River Aqueduct) and the SWP (via the California Aqueduct). In 1998, SDCWA entered into a transfer agreement with IID to purchase conserved agricultural water. Through this agreement and the execution of the 2003 Quantification Settlement Agreement (QSA) on the Colorado River, SDCWA receives an annually-increasing volume up to 200,000 AF by 2021 for 45 years with the potential to extend the agreement for another 30 years. SDCWA also receives 77,700 AF per year of conserved water from lining of the All-American and Coachella Canals for 110 years (SDCWA, 2021).

SDCWA supplies a blend of imported water and desalinated seawater to member agencies within San Diego County. SDCWA's imported water includes SWP supplies from MWD and Colorado River supplies acquired through other means. SDCWA receives Colorado River supplies via transfers from IID and conservation savings from several canal-lining projects. In October 2015, SDCWA began purchasing treated desalinated seawater from the Carlsbad Desalination Plant, which is operated by Poseidon Resources Group. This desalinated seawater is blended into SDCWA's treated water supply and delivered to SDCWA's member agencies. However, the City may or may not receive desalinated seawater as part of its SDCWA purchases due to the location of its connections to SDCWA's system in relation to the Carlsbad Desalination Plant. Additional information regarding SDCWA's historical, current, and planned supplies is available in SDCWA's 2020 Urban Water Management Plan.

SDCWA supplies both treated and raw imported water to the City through five aqueduct connections. Treated water is delivered through the City's hydrogeneration station and then into the City's distribution system. Raw water is treated at the City's Weese WFP prior to delivery into the City's distribution system. From 2015 to 2020, approximately 54% of the water the City purchased from SDCWA was treated water and 46% was untreated water that was then treated at the City's Weese WFP.

Table 4-10 (see *Section 4 Demands*) shows the amount of water the City anticipates purchasing from SDCWA in five-year increments through 2045.

6.3 Groundwater

CWC §10631(b)(1), §10631(b)(2), §10631(b)(3), §10631(b)(4)

The City utilizes groundwater from the Mission Basin subbasin of the San Luis Rey Valley Groundwater Basin, shown in **Figure 6-2**, above. An overview of the Mission Basin, along with a summary of the City's associated facilities and use, is provided below.

6.3.1 Mission Basin

The Mission Basin is currently designated as a subbasin to the San Luis Rey Valley Groundwater Basin (DWR Bulletin 118 Groundwater Basin No. 9-7). Although the San Luis Rey Valley Groundwater Basin has been designated a medium priority basin under the California Statewide Groundwater Elevation Monitoring (CASGEM) program, meaning that the state considers it a priority basin for monitoring, the Mission Basin is classified as a "Very Low" priority basin, per DWR's Sustainable Groundwater Management Act (SGMA) Basin Prioritization Dashboard. As such the City is no longer exploring formation as the Groundwater Sustainability Agency (GSA) for the lower basin, or the designation as a formally-recognized basin separate from San Luis Rey Valley Groundwater Basin.

The Mission Basin is an alluvial basin extending from the Pacific Ocean in the west to just beyond the City's eastern border. The basin is not adjudicated but is estimated to have a natural safe yield of 7,000 to 10,000 AFY. Due to high levels of TDS, ranging between 500 mg/L and 2,000 mg/L, desalting is required prior to distribution and use (MWD, 2007). Trichloropropane (TCP), iron and manganese levels are also of concern in the Mission Basin, but are treated to safe levels at the MBGPF (City of Oceanside, 2015a).

The City has conducted studies to determine the impact of groundwater pumping on local groundwater levels (Welch, 1996). Those studies concluded that the expansion of the MBGPF will result in no significant impacts to existing groundwater-dependent vegetation during extended dry-year periods lasting up to three years. With the addition of Pure Water Oceanside, FAT water produced at the planned AWT facility will be recharged into the groundwater basin regardless of hydrologic conditions. Therefore, the MBGPF is considered a reliable source of potable water during multiple-dry water years.

6.3.2 Mission Basin Groundwater Purification Facility

The MBGPF is a desalting treatment facility that treats brackish groundwater extracted from the Mission Basin via eight wells including four "on-site" wells located at the MBGPF site and four "off-site" wells, located in the eastern portion of the basin near North River Road west of College Blvd. The MBGPF was put into service in 1992 with a capacity of 2.0 MGD, and expanded to its current capacity of 6.37 MGD, or 7,130 acre-feet per year, in 2002. The City is currently constructing three additional extraction wells to increase utilization of this existing capacity. A third stage RO process is also being constructed that will yield additional potable water while minimizing the amount of brine discharged to the Oceanside Ocean Outfall.

The primary MBGPF treatment process utilizes reverse osmosis membranes to reduce salt concentrations present in the groundwater. A secondary treatment process, added in 2009, utilizes granular activated carbon to remove 1, 2, 3-trichloropropane (TCP) from six of the wells. A side-stream treatment system is employed to reduce iron and manganese. The reverse osmosis membranes are Hydranautics Model ESPA1 that operate at a feed pressure of approximately 150 psi. The facility is capable of removing many impurities from the groundwater including particles, iron, manganese, TCP, and sodium to meet drinking water standards. Iron and manganese are present in the on-site wells, and manganese is present in the off-site wells.

After the minerals and other impurities are removed through reverse osmosis, the product is then blended with a 20% share of water direct from the well field and subjected to additional post-blend treatment to result in a finished, potable water supply. **Table 6-5** shows the amount of groundwater pumped for the past 5 years. During this period, the City experienced some challenges in groundwater extraction, including mechanical limitations and well production. The City is continuing to make improvements to reduce these challenges, but has determined that as currently configured for extractions, the reliable average brackish groundwater supply is 2,800 AFY. The addition of FAT water will allow for increased extraction of groundwater and help to consistently maximize the use of existing groundwater pumping and treatment facilities. The City anticipates expanding groundwater extraction and use as a part of Pure Water Oceanside to offset demands for purchased SDCWA water. Projected groundwater supplies are presented in **Table 6-4**, above.

Table 6-5: Groundwater Volume Pumped (AFY)

DWR 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	Mission Basin	2,313	1,491	2,749	2,450	2,302
	TOTAL	**2,313**	**1,491**	**2,749**	**2,450**	**2,302**

6.4 Surface Water

The City does not use or plan to use self-supplied surface water as part of its water supply.

6.5 Storm Water

The City does not currently divert storm water for beneficial reuse and has no plans to do so as of the development of this plan.

6.6 Transfer Opportunities

CWC §10631(d)

The City has multiple connections to an intricate outside network of water distribution systems through SDCWA and neighboring urban water suppliers that can be utilized in an emergency. Aside from the small volume of water that the City provides to VID customers, the City does not regularly sell or transfer water to other agencies. The City currently has nine emergency interconnections with four neighboring agencies that can be used to share supplies during short-term emergencies or planned shutdowns. The City has three emergency interconnections with Rainbow Municipal Water District (RMWD), two with Carlsbad Municipal Water District (CMWD), three with VID, and one with USMC Camp Pendleton. These connections are considered short-term exchanges for emergencies and are described in **Table 6-6** below.

Table 6-6: Transfer and Exchange Opportunities – Emergency Connections

Neighboring Agency	Location	Size	Direction
VID	Rose and Granada	8	City
VID	Fall Place	8	City
VID	E. Vista Way and Osborne	14	City and VID
RMWD	Camino Corto	6	City
RMWD	Weese WFP	8	RMWD
CMWD	Vista Way and El Camino Real	16	Carlsbad
CMWD	College South of Esplanade	8	Carlsbad
CMWD	Quarry Creek[1]	8	Carlsbad
USMC Camp Pendleton	Morro Hills Reservoir	12	Camp Pendleton

1. This is a future connection. Connection has been constructed, but is currently inoperable until a transfer agreement is finalized.
Source: City of Oceanside, 2015a

6.7 Desalinated Water Opportunities

CWC §10631(i)

The City has planned for desalinated water as an expected future water supply to become less dependent upon imported water and to diversify its water resources. Overall, the increase in demand over the next 25 years is significant, making the opportunity to use desalinated water even more important in the City's plan to rely less on imported water and to expand its own water resources. There are two types of desalinated water available to the City: desalinated groundwater and desalinated seawater. Desalinated groundwater is discussed in *Section 6.3 Groundwater* above. The City may also receive some desalinated seawater through its purchases of treated water from SDCWA. SDCWA's blended treated supplies began to include desalinated seawater from the Carlsbad Desalination Plant at the end of 2015. These blended desalinated seawater supplies acquired through regular purchases from SDCWA are considered part of the City's SDCWA supplies.

In addition to SDCWA's desalinated seawater supplies, the City is exploring the potential for an independent supply of desalinated seawater. The City completed a *Seawater Desalination Pilot Facility and Feasibility Study* in October 2010. The main objective of this study was to identify a feasible, constructible and cost-effective project to add a seawater component to the MBGPF. As per the study, the source of the seawater would be a series of extraction wells near the mouth of the San Luis Rey River. The design of the wells would prevent drawdown of the Mission Basin and avoid potential effects on the other City wells and the habitat mitigation areas.

As conceived, seawater would be pumped from the wells back to the MBGPF, where a seawater reverse osmosis plant would be co-located. There is sufficient City-owned land to accommodate this addition, and the treated water would be introduced into the distribution system. The brine and brine disposal limitations would be similar to the groundwater storage and retrieval project described previously.

Combining existing MBGPF brackish water treatment with a nearby seawater component could potentially reduce costs for the City by co-locating facilities and reducing dependence on purchased water. This approach also maximizes the use of Mission Basin supplies and could result in a raw water salt content that is significantly lower than direct seawater, which can reduce energy costs substantially. The City's *2015 Water Master Plan* assumed implementation of a 5.0 MGD desalination plant with a net production of 4.5 MGD, or 5,040 AFY, in the long-term planning period. However, due to high cost of this project, the City has elected to exclude this potential seawater desalination supply from its supply projections.

6.8 Wastewater and Recycled Water

CWC §10633(a-g)

6.8.1 Wastewater Collection and Treatment Facilities

The City's wastewater collection and treatment system is composed of two major systems: the SLRWRF and the La Salina WWTP along with their collection systems. The SLRWRF collects wastewater from the central and eastern portions of the City, as well RMWD and portions of the City of Vista. The La Salina WWTP has historically collected wastewater from the western portion of the City; however, the City is currently in the process of decommissioning the La Salina WWTP. Effluent from both plants is discharged to the ocean through the Oceanside Ocean Outfall. The Morro Hills area in the northern part of the City uses septic systems and is not currently connected to any of the

City's wastewater facilities. The SLRWRF tertiary processes were recently expanded and can treat up to 3 MGD of wastewater to non-potable recycled water standards, while the La Salina WWTP has no tertiary treatment. The City tied portions of the Fallbrook land outfall into its existing recycled water distribution system to deliver recycled water to CalTrans.

San Luis Rey Water Reclamation Facility

The City of Oceanside has produced recycled water for many years, starting with the construction of the SLRWRF in 1972. Secondary effluent was supplied to Whelan Lake for storage, though the lake has since then changed its uses and is presently a bird sanctuary. The City has an existing recycled water system consisting of over 6 miles of recycled water pipeline that serves four irrigation customers: the City of Oceanside, Oceanside Municipal Golf Course, Goat Hill Golf Course, and El Corazon Sports Park. In total, these four customers received 249 AFY of non-potable recycled water in 2020. Additional non-potable recycled water is delivered into Whelan Lake to maintain water levels, which received an estimated 241 AF in 2020. Non-potable recycled water is produced year-round. Between 2016 and 2020, annual deliveries to Whelan Lake averaged an estimated 505 AF, or approximately 72% of the City's total recycled water production. Average recycled water use from 2015-2020 was lower than the City's anticipated current and future demands for recycled water due to overall water use reduction measures implemented during the 2012-2016 drought. Although recycled water use was exempt from mandatory restrictions, some changes implemented depressed demand (e.g., conversion to water wise landscaping), as well as behavioral changes in response to public perception.

The SLRWRF provides secondary treatment for most of the City service area, as well as RMWD and a portion of the City of Vista. By agreement, the plant provides treatment for up to 1.5 MGD of wastewater from the RMWD.

The treatment processes at the SLRWRF include preliminary, primary, and activated sludge secondary treatment. The biosolids are anaerobically digested and dewatered by centrifuges prior to land application. The majority of secondary effluent is sent to the Oceanside Ocean Outfall via the La Salina WWTP.

In 1991, a tertiary filter and chlorine contact basin was constructed. In 2018, the tertiary treatment system was replaced and the facility expanded to 3.0 MGD to meet Title 22 requirements for unrestricted reuse. The effluent is disinfected in a chlorine contact channel and then stored in a 2.0 million gallon (MG), aboveground concrete reservoir located at the southerly portion of the SLRWRF. The non-potable recycled water is then pumped to recycled water customers or to replenish Whelan Lake. Secondary treatment capacity will increase from 13.5 MGD in 2020 to 17.4 MGD by 2045. The expansion of the upper and lower recycled water distribution system within the City is currently underway (see discussion below).

Installation of recycled water pipelines constructed as part of the Recycled Water Conversion and Pipelines Project

La Salina Wastewater Treatment Plant

The La Salina WWTP has a rated secondary treatment capacity of 5.5 MGD. The treatment processes include preliminary, primary, and activated sludge secondary treatment. The biosolids are anaerobically digested, dewatered by belt filter presses, and land applied off-site. There are no recycled water treatment facilities at the La Salina WWTP.

In 2014, the City completed an alternatives analysis for rehabilitating the La Salina WWTP but received City Council direction to move forward with the option to convert the plant to a pump station for centralized treatment and reclamation at SLRWRF. Therefore, all projected wastewater flows to La Salina WWTP will augment flows at SLRWRF.

Fallbrook Public Utility (FPUD) District Treatment Plant

FPUD currently owns and operates one wastewater and tertiary treatment plant (Plant No. 1) with a design capacity of 2.7 MGD average annual flow. Until recently, tertiary recycled water that was not used by FPUD was disposed in the Fallbrook Land Outfall, which runs through the City of Oceanside. By agreement with the City of Oceanside, FPUD can discharge up to 2.4 MGD on an annual average basis through the Oceanside Ocean Outfall.

FPUD is planning to upgrade its treatment plant to produce advanced treated recycled water and use the Fallbrook Land Outfall for brine discharge. In 2019, FPUD and the City completed a pipe interconnection in order to transfer operations and ownership of the western portion of the Fallbrook Land Outfall to the City. The transfer of ownership was completed in 2020. This western portion of the Fallbrook Land Outfall connects to the Oceanside Land Outfall near SLRWRF (FPUD, 2020). As a result, recycled water that recently served Caltrans through FPUD will not be available in FPUD's future projections. The City is currently serving non-potable recycled water to Caltrans as part of its recycled water system expansion.

Camp Pendleton Southern Regional Tertiary Treatment Plant

North of the City, the U.S. Marine Corps (USMC), Camp Pendleton owns and operates the Southern Regional Tertiary Treatment Plant (SRTTP) which began operation in August 2006 and was expanded in 2013. The SRTTP has a tertiary design capacity of 7.5 MGD and currently treats an annual average flow of about 2.4 MGD. The recycled water produced is supplied through a recycled water distribution system to irrigate four sites in the southern part of the Camp Pendleton Base. In addition, USMC intends to inject between 435 to 870 AFY of recycled water produced SRTTP to create a seawater intrusion barrier (RWQCB, 2018). Currently, the SRTTP treats all wastewater to tertiary levels, and excess tertiary treated effluent that is not recycled is discharged to the Pacific Ocean via the Camp Pendleton Land Outfall, which ties into the Oceanside Ocean Outfall at the La Salina WWTP.

Table 6-7 shows the volume of wastewater collected in the City's service area in 2020 from the SLRWRF and La Salina WWTP. **Table 6-8** summarizes the wastewater treatment and disposal within the City's service area.

Table 6-7: Wastewater Generated Within Service Area in 2020

DWR Table 6-2 Retail: Wastewater Collected Within Service Area in 2020						
Percentage of 2020 service area covered by wastewater collection system *(optional)*						--
Percentage of 2020 service area population covered by wastewater collection system *(optional)*						--
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2020 (AF)	**Receiving Wastewater Treatment**			
			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 Oceanside	Metered	8,866	City of Oceanside	SLRWRF	Yes	No
City of Oceanside	Metered	2,683	City of Oceanside	La Salina WWTP	Yes	No
USMC Camp Pendleton	Metered	950	USMC Camp Pendleton	SRTTP	No	Yes
Total Wastewater Collected from Service Area in 2020:		**12,499**	-	-	-	-
NOTES: Volumes were monitored in million gallons and converted into acre-feet for purposes of this 2020 Plan.						

Table 6-8: Wastewater Treatment and Discharge within Service Area in 2020

DWR Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020											
☐	No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.										
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)*	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2020 volumes				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
SLRWRF	Oceanside Ocean Outfall	Ocean Outfall		Ocean outfall	Yes	Secondary, disinfected	8,682	8,089	--	--	n/a
SLRWRF	City of Oceanside	Recycled Water Customers		Other	Yes	Tertiary	--	--	249	--	n/a
La Salina WWTP	Oceanside Ocean Outfall	Ocean Outfall		Ocean outfall	No	Secondary, undisinfected	2,867	2,786	--	--	n/a
Camp Pendleton SRTTP	Oceanside Ocean Outfall	Ocean Outfall		Ocean outfall	Yes	Tertiary	950	950	--	--	n/a
						Total	**12,499**	**11,825**	**249**	**0**	**--**
NOTES:											

6.8.2 Potential and Projected Recycled Water Use

As noted previously, the City is actively pursuing substantial expansion of its recycled water system. As a member of the North San Diego Water Reuse Coalition, the City is coordinating with eight other water and wastewater agencies in northern San Diego County to maximize recycled water use and improve recycled water efficiencies. Many of the planned recycled water projects and uses discussed here are also part of the Coalition's efforts. Additional information on the North San Diego Water Reuse Coalition is provided below.

Non-Potable Recycled Water

In 2015, the City completed its *Recycled Water Master Plan* (RWMP). The RWMP updates projected demands, needed treatment and distribution facilities, and estimated cost of water. The RWMP is a component of the North San Diego Water Reuse Coalition's *Regional Recycled Water Project Final Program Environmental Impact Report* (PEIR), which was certified in October 2015. Three subsequent addendums to the 2015 PEIR were adopted to address minor changes to the locations and sizes of the RWMP proposed pipelines and facilities. Initial expansion of the SLRWRF to 3.0 MGD has been completed and will eventually increase to 6.0 MGD in the future. Potential uses of recycled water include agricultural irrigation, landscape irrigation, wildlife habitat enhancement at Whelan Lake, and groundwater recharge. The primary use for recycled water will be for landscape irrigation, which includes golf courses (Oceanside Municipal Golf Course, Arrowood Golf Course, Ocean Hills Country Club, El Camino Golf Course), cemeteries, parks (El Corazon Site), and homeowner associations.

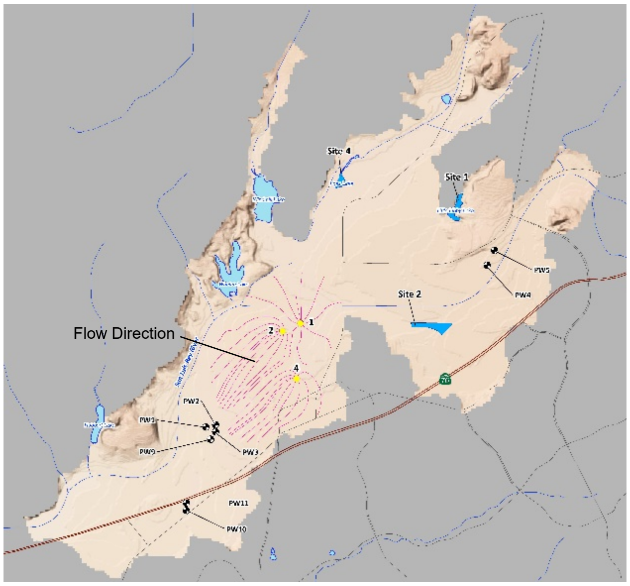
As recommended in the City's RWMP, two proposed recycled water systems were developed:

1. The Upper SLRWRF System would supply demands north and east along North River Road towards the City's eastern boundary. The system would receive tertiary effluent from the SLRWRF and would convey it through a 20-inch diameter pipeline, parallel to the existing 10-inch diameter recycled water pipeline serving recycled water customers in the northeastern area of the City. This system contains a branched network that includes pipelines, storage tanks, pump stations, and pressure-reducing valves. The AWT facility effluent will be blended with tertiary treated water to supply the Upper SLRWRF System. The Upper SLRWRF would serve 2,923 AFY of recycled water over the next 15 years and includes approximately 13 miles of new 6- to 20-inch diameter pipeline (Dudek, 2018; Oceanside, 2019b). The Upper SLRWRF System includes the following components:
   - Morro Heights Site: One 3.0 MGD pre-stressed concrete reservoir and an approximately 3,100 gallons per minute (gpm) pump station is proposed for an undeveloped parcel that is currently privately owned, and would require the City to purchase before construction could occur. The pump station will be designed with the ability to expand up to 4,100 gpm.
   - Groves Site: One existing 4.0 MGD pre-stressed concrete reservoir (Morro Tank) is planned to be purchased from RMWD and will be rehabilitated. It will be located at the northernmost end of the system on a City-owned parcel.
   - Pressure Reducing Valves: Three 12-inch pressure reducing valves will be located near the Morro Heights and Groves sites.
2. The Lower SLRWRF System would convey tertiary recycled water from SLRWRF to potential customers in the Central and Southwest areas of Oceanside. This is a branched network system

that includes pipelines, storage tanks, and pump stations. The Lower SLRWRF System would serve 2,267 AFY of recycled water over the next 25 years (and includes approximately 19 miles of 6- to 20-inch diameter pipeline. The Lower SLRWRF system includes the following components:

- Fire Mountain Site: One 2.2 MG pre-stressed concrete reservoir and a 1,150 gpm packaged pump station would be constructed on a portion of a 5.7 City-owned parcel adjacent to the existing 3.0 MG Fire Mountain Reservoir.
- Mesa Pump Station: An approximately 1,500 gpm packaged pump station would be located on a small portion of City-owned parcel of the El Corazon site.
- Old Grove Site: One approximately pre-stressed concrete 2.2 MG reservoir is proposed on a vacant 2.15 City-owned parcel. In addition, an approximately 2,200 gpm package pump station would be located next to the reservoir.

Indirect Potable Reuse



Indirect Potable Reuse (IPR) modeling showing flow direction of recycled water in the Mission Basin.

The City is also planning to expand its local water supplies through the implementation of Pure Water Oceanside. FAT water produced at the AWT facility will also be stored in the Mission Basin for groundwater recharge through the use of a combination of injection and extraction. The recharged FAT water would help replenish the local groundwater basin, which would later be extracted for potable water use. The MBGPF will be utilized to treat the additional supply, which will be pumped into the distribution system of the Guajome pressure zone. It is anticipated that Pure Water Oceanside will inject approximately 3,360 AFY of FAT water into the Mission Basin by 2025 (Phase 1) and 6,720 AFY by 2030 (Phase 2). After treatment at the MBGPF, the water will supplement the City's potable water supply. This is approximately 13% of the City's water supply needs in 2025, and approximately 27% of supplies from 2030-2045. After Phase 2 of Pure Water Oceanside is implemented, 39% of the City's water supply will come from Pure Water Oceanside and native groundwater supplies.

North San Diego Water Reuse Coalition

The City is currently a member of the North San Diego Water Reuse Coalition, a coalition of nine water and wastewater agencies. The North San Diego Water Reuse Coalition prepared a Regional Recycled Water Feasibility Study which is being utilized by the group to pursue funding from the State of California, as well as other state or local grant funds. Both the non-potable recycled water and indirect potable reuse program components are included in the North San Diego Water Reuse Coalition study.

Table 6-9 presents the current and projected recycled water use in the City through 2045. Projected recycled water supply will serve landscape irrigation demands for customers in the municipal, commercial, and government sectors, as well as potable demands through Pure Water Oceanside.

Table 6-9: Current and Projected Recycled Water Use

DWR Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area										
☐	Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.									
Name of Agency Producing (Treating) the Recycled Water:					City of Oceanside					
Name of Agency Operating the Recycled Water Distribution System:					City of Oceanside					
Supplemental Water Added in 2020					Not Applicable					
Source of 2020 Supplemental Water					Not Applicable					
Beneficial Use Type	Potential Beneficial Uses of Recycled Water (Describe)	Amount of Potential Uses of Recycled Water (Quantity)	General Description of 2020 Uses	Level of Treatment	2020	2025	2030	2035	2040	2045
Agricultural irrigation	Meet agricultural irrigation demands	773	irrigation	Tertiary		449	775	774	774	773
Landscape irrigation (exc. golf courses)	Meet landscape irrigation demands	3,728	irrigation	Tertiary		2,166	3,739	3,736	3,735	3,733
Golf course irrigation	Meet golf course irrigation demands	214	irrigation	Tertiary	249	195	199	203	204	207
Commercial use	Meet landscape irrigation demands on commercial parcels	326	irrigation	Tertiary		190	327	327	327	327
Groundwater recharge (IPR)	Recharge of the Mission Groundwater Basin	6,720	n/a	Advanced		3,360	6,720	6,720	6,720	6,720
				Total:	**249**	**6,360**	**11,760**	**11,760**	**11,760**	**11,760**
NOTES: IPR - Indirect Potable Reuse.										

As compared to the projections for 2020 from the 2015 Plan, actual 2020 recycled water use was high. **Table 6-10** shows the 2015 projection along with the actual 2020 recycled water use.

Table 6-10: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual Use

DWR Table 6-5 Retail: 2015 UWMP Use Projection Compared to 2020 Actual		
Use type	2015 Projection for 2020	2020 actual use
Sales to Other Agencies	-	-
Agricultural irrigation	-	-
Landscape irrigation (ex golf courses)	104	249
Golf course irrigation	-	-
Commercial use	-	-
Industrial use	-	-
Geothermal and other energy production	-	-
Seawater intrusion barrier	-	-
Recreational impoundment	-	-
Wetlands or wildlife habitat*	-	241
Groundwater recharge (IPR)	-	-
Other	-	-
Total	**104**	**490**
*Projected deliveries to Whelan Lake were not quantified in the 2015 UWMP.		

6.8.3 Methods to Encourage Recycled Water Use

Although recycled water is currently only available to four customers and to Whelan Lake for habitat purposes, the City does offer financial incentives that will encourage recycled water use when it is made available to future customers. The City currently offers a discounted price for recycled water ranging between approximately 10% below the cost of potable water. In 2020, recycled water was sold at $2.58 per unit as opposed to $5.25 per unit for potable water. In addition, Section 37.144 of the City's municipal code includes a mandatory use ordinance that states "If recycled water service is determined by the administrative authority to be feasible, applicants for new water service shall be required to install onsite facilities to accommodate both potable water and recycled water service in accordance with the latest Water, Sewer, and Reclaimed Water Design and Construction Manual. The administrative authority may also require existing customers to retrofit existing onsite water service facilities to accommodate recycled water service." With the expansion of the City's recycled water distribution system and increased recycled water production, recycled water delivery will become more feasible. In concert with this mandatory use requirement and the expansion of the recycled water system, the City anticipates a substantial increase in recycled water use. **Table 6-11** shows the City's planned methods to expand future recycled water use.

Table 6-11: Methods to Expand Future Recycled Water Use

DWR Table 6-6 Retail: Methods to Expand Future Recycled Water Use			
Actions	**Description**	**Planned Implementation Year**	**Expected Increase in Recycled Water Use**
Upper SLRWRF System – Phase 1	Morro Heights RW Reservoir and Pump Station, pipelines	2025	2,264
Lower SLRWRF System – Phase 1	Fire Mountain RW Reservoir and Pump Station, pipelines	2025	487
Lower SLRWRF System – Phase 2	Mesa RW Reservoir, Old Grove Reservoir, pipelines	2035	972
Lower SLRWRF System – Phase 3	Old Grove Pump Station, pipelines	2035	805
Mandatory Use Ordinance	Municipal Code Sec. 37.144	2014	-
		Total	**4,528**

6.9 Future Water Projects

CWC §10631 (g)

This section includes planned and alternative water projects to supply the City in the future.

6.9.1 Mission Basin Groundwater Purification Facility

The MBGPF is a very cost-effective source of water. However, limited well capacity and TCP contamination has limited the output to approximately 4.1 MGD. When capacity is reached, the average cost per acre-foot of operations and maintenance to treat the water will drop further. The City is taking steps to increase the groundwater capacity to match the existing treatment capacity of 6.4 MGD. The design and construction of three new extraction wells and pipelines to the MBGPF and brine minimization facilities are underway.

6.9.2 Local Seawater Desalination Facility

In October 2010, the City completed a feasibility study that examined the potential to add seawater desalination to the existing MBGPF in order to meet future water supply demands. The source of the seawater would be a series of extraction wells near the mouth of the San Luis Rey River. The operation of seawater barriers would also be considered for the recharge and extraction project. The seawater reverse osmosis plant would be constructed at the MBGPF where treated water would be introduced into the distribution system.

Combining existing MBGPF brackish water treatment with a nearby seawater component could potentially reduce costs for the City. This approach also maximizes the use of San Luis Rey supplies and could result in a salt content that is significantly lower than direct seawater. Lower salt content can significantly reduce energy costs. Additional feasibility studies are currently underway to determine the potential for local seawater desalination. These studies expand on the work completed in 2010. The project is currently the most expensive option for water supplies and therefore, has been put on hold until it becomes more cost-effective.

6.9.3 Wastewater Recycling

The 2018 *Upper and Lower SLRWRF Recycled Water Conveyance System Planning Study* (Oceanside, 2018) investigated the feasibility of developing an extensive recycled water distribution system for the SLRWRP to identify markets within the City limits.

- The Upper SLRWRF System would be implemented in one phase and would have a total capital cost of $31 million. The Upper SLRWRF System would offset an additional 2,264 AFY of potable water on top of existing production.
- The Lower SLRWRF System would be implemented in four phases and would have a total cost of $72 million. The Lower SLRWRF System would offset 2,267 AFY of potable water.

The City plans to pursue additional direct reuse opportunities for treated effluent in the future, as funding becomes available. The SLRWRF expansion included space for increased tertiary treatment capacity of 7.5 MGD for direct reuse. The City will require dual distribution facilities to be built in new developments where recycled water is planned for use.

The City is also actively expanding its recycled water program through Pure Water Oceanside to increase water supply reliability. Pure Water Oceanside is anticipated to initially produce 3,360 AFY potable water and ultimately produce 6,720 AFY potable water, which would reduce the reliance on imported water.

Future water projects described in this section, while not yet fully implemented, have already been accounted for in the City's verifiable supply and therefore, are not included in **Table 6-12.**

Table 6-12: Future Water Supply Projects

<table>
<tr><th colspan="8">DWR Table 6-7 Retail: Expected Future Water Supply Projects or Programs</th></tr>
<tr><td>X</td><td colspan="7">No expected future water supply projects or programs that provide a quantifiable increase to the agency's water supply. Supplier will not complete the table below.</td></tr>
<tr><td>☐</td><td colspan="7">Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.
LOCATION OF THE NARRATIVE___________________________</td></tr>
<tr><th rowspan="2">Name of Future Projects or Programs</th><th colspan="2">Joint Project with other agencies?</th><th rowspan="2">Description (if needed)</th><th rowspan="2">Planned Implementation Year</th><th rowspan="2">Planned for Use in Year Type</th><th rowspan="2" colspan="2">Expected Increase in Water Supply to Agency</th></tr>
<tr><th>Y/N</th><th>If Yes, Agency Name</th></tr>
<tr><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td>N/A</td><td colspan="2">N/A</td></tr>
<tr><td colspan="8">NOTES:</td></tr>
</table>

6.10 Climate Change Impacts to Supply

As described in *Section 3 System Description*, the City faces some vulnerabilities to its supplies, especially as it relates to its reliance on imported supplies. The City's supplies are vulnerable to a decrease in imported supply, sensitivity related to higher drought potential, a potential decrease in groundwater supplies coupled with limited groundwater storage. It is also vulnerable to the impacts of invasive species that could reduce available supplies, particularly if this impact reduces subsurface flows into the Mission Basin. Because the City's imported supplies (received as part of purchased supply mix from SDCWA) are dependent on snowmelt, and the City currently purchases approximately 89% of its supply from SDCWA, climate change impacts to snowpack and timing of snowmelt can negatively impact available imported supplies. Although the San Diego region expressed some concern that seawater intrusion could make limited groundwater basins less available, the City already uses a brackish basin for supply, and is capable of continuing to treat brackish groundwater at the MBGPF even if seawater intrusion occurs.

The previous drought showed that the City is able to implement temporary use reduction measures to address supply limitations of drought, but some of these efforts are only designed to be temporary, and are not a long-term solution to climate change impacts to supply availability. As described in this section, the City is working to reduce reliance on purchased SDCWA water, while SDCWA is also seeking to reduce dependence on imported water from MWD.

6.11 Energy Intensity of Water Services

Energy intensity reporting offers several benefits to the City and its customers. Benefits include identifying energy savings opportunities, calculating GHG emission reductions associated with the City's water conservation program, and identifying potential opportunities for receiving energy efficiency funding.

The City estimated its water services' operational energy intensity using the best available information. Operational energy intensity is defined as the total amount of energy expended by the City on a per acre-foot basis to take water from where the City acquires water to its point of delivery to customers. Per the *2020 UWMP Guidebook*, the City is only reporting on energy associated with water services within its operational control.

6.11.1 Potable Supply Extraction, Storage, Conveyance, Treatment, and Distribution Processes

Extraction, storage, conveyance, treatment, and distribution water management processes for existing potable supplies (purchased imported water and groundwater) are described below.

Potable Supply Extraction

The energy required to pump water from groundwater basins is termed "extraction". As noted in previous subsections, groundwater is extracted from four on-site wells (Wells 1, 2, 3, and 9) and four off-site wells (Wells 4, 5, 10, and 11) that convey raw groundwater to the MBGPF for treatment. Well information is presented in **Table 6-13**. In 2020, the energy used to pump the 2,302 AF of groundwater is estimated at 420,455 kWh, or approximately 183 kWh per AF.

Table 6-13: Groundwater Well Characteristics

Well #	Location	Contaminant	Nominal Capacity
			gpm
1	MBGPF	TCP, Iron, Manganese	750
2	MBGPF	TCP, Iron, Manganese	1,160
3	MBGPF	TCP, Iron, Manganese	1,500
4	North River Road, e/o Calle Montecito	Iron, Manganese	1,200
5	North River Road, e/o Calle Montecito	Iron, Manganese	1,165
9	MBGPF	TCP, Iron, Manganese	1,000
10	Firestation No. 7	TCP, Iron, Manganese	1,600
11	Firestation No. 7	TCP, Iron, Manganese	1,600
Source: Oceanside, 2015a			

Potable Supply Storage

The City manages a potable water system that includes 12 water storage reservoirs at nine sites. Both groundwater and imported water supplies are either placed into or withdrawn from storage. In 2020, energy consumption amounted to 264,240 kWh of electricity to store 12,267 AF of imported water and groundwater supplies, which is approximately 22 kWh per AF.

Potable Supply Conveyance

Energy associated with imported water diversion and conveyance is considered from its point of delivery at City-owned facilities. Purchased imported water from SDCWA's aqueducts enters City-owned facilities at five aqueduct connections, referred to as flow control facilities (FCF). Treated imported water is conveyed directly to the City's distribution system, while untreated imported water is first conveyed to the Weese WFP for treatment. Characteristics of the five FCFs are presented in **Table 6-14**. Energy associated with purchased imported water comes from the five FCFs. Energy for potable water conveyance in 2020 was 4,117 kWh to convey 12,267 AF of purchased water to Weese WFP, or 0.3 kWh per AF.

Table 6-14: Imported Water Flow Control Facility Characteristics

FCF #	From	To	Capacity		
			gpm	cfs	mgd
Treated					
2[1]	SDCWA Pipeline 4	Oceanside 2 or Oceanside 3	17,500	39	25.2
3[1]	SDCWA Pipeline 4	Oceanside 2 or Oceanside 3	17,500	39	25.2
4	Tri-Agency Pipeline	Hydroelectric Plant	8,100	18	11.6
6	North County Distribution Pipeline	Directly to distribution system	31,850	71	45.9
Untreated					
2[1]	SDCWA Pipeline 3	Weese WFP	17,500	39	25.2
5	SDCWA Pipeline 5	Weese WFP	29,600	66	42.7
1. Treated FCFs 2 and 3 are used one at a time and can be configured to convey treated or untreated imported water. Source: Oceanside, 2015a					

Potable Supply Treatment

Untreated imported water supplies and groundwater supplies are both treated before entering the City's supply distribution system. Untreated imported water is treated at the Weese WFP, and brackish groundwater is extracted and desalinated at the MBGPF. The primary MBGPF treatment process utilizes reverse osmosis (RO) membranes to reduce TDS concentrations present in the groundwater. A secondary treatment process utilizes granular activated carbon to remove 1, 2, 3- TCP from six of the wells. A side-stream treatment system is employed to reduce iron and manganese. After the RO process, the product is then blended with a 20% share of water direct from the well field (Wells 4 and 5) and subjected to additional post-blend treatment. Energy associated with purchased imported water and groundwater comes from the treatment processes at the Weese WFP and MBGPF. In 2020, water treatment used 3,419,777 kWh of electricity to treat 12,267 AF of imported water and groundwater supplies, which is approximately 279 kWh per AF.

Potable Supply Distribution

The City manages a potable water system that includes 28 pressure zones, 12 water storage reservoirs at nine sites, nine booster pumping stations (PS), two water supply PS located at the MBGPF, 54 pressure regulating stations (PRS), and seven altitude valves. The City's distribution system also consists of 574 miles of 2-inch to 42-inch pipeline. The City's booster pumping stations deliver water from lower pressure zones to upper pressure zones of the distribution system. As the majority of the City's water supplies enter the distribution system in the upper pressure zones, seven of the eleven City PSs are typically in standby mode and operate only under emergency conditions. Two active PSs (Sleeping Indian PS and Morro Hills PS) are needed to pump imported water from FCF 6 to the Morro Hills PS Zone. The two water supply PSs at the MBGPF (Zone 320 PS and Zone 511 PS) pump water to the Guajome and Talone Zones.

Imported water supplies originate at the upper elevations of the distribution system, thus storage reservoirs are configured to be replenished from the upper pressure zones with an altitude valve from the upper pressure zone supplying the inlet.

PRS allow distribution systems to transfer water from upper pressure zones to lower pressure zones without exceeding the allowable pressures in the lower zones or completely draining the pressure out of the higher zone. Several of these PRS function in a standby or backup role. PS, PRS, and storage reservoir characteristics tables from the City's *2015 Water Master Plan* are provided in **Appendix M**.

The energy required to distribute 23,964 AF of potable water supplies to customers in 2020 totaled 992,910 kWh, or approximately 41 kWh per AF.

Energy data was provided by the City's energy meters, while water and sewer volumes were based on the City's metering data. **Table 6-15** provides a summary of the energy intensity of City's potable water management processes and **Table 6-16** provides a summary of total energy intensity of water supplies. In total, the City's potable water deliveries are estimated to have an energy intensity of 213 kWh per AF.

Table 6-15: Energy Intensity of Potable Water Supply Processes

DWR Table O-1C: Recommended Energy Reporting – Multiple Water Delivery Products								
Enter Start Date for Reporting Period	1/1/2020	**Urban Water Supplier Operational Control**						
End Date	12/30/2020							
	Water Management Process						**Non-Consequential Hydropower (if applicable)**	
	Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Total Volume Entering Process (AF)	2,302	12,267	12,267	12,267	23,964	*N/A*	0%	*N/A*
Retail Potable Deliveries (%)	100%	100%	100%	100%	100%		0%	
Retail Non-Potable Deliveries (%)	0%	0%	0%	0%	0%		0%	
Wholesale Potable Deliveries (%)	0%	0%	0%	0%	0%		0%	
Wholesale Non-Potable Deliveries (%)	0%	0%	0%	0%	0%		0%	
Agricultural Deliveries (%)	0%	0%	0%	0%	0%		0%	
Environmental Deliveries (%)	0%	0%	0%	0%	0%		0%	
Other (%)	0%	0%	0%	0%	0%		0%	
Total Percentage	100%	100%	100%	100%	100%	*N/A*	0%	*N/A*
Energy Consumed (kWh)	420,455	264,240	4,117	3,419,777	992,910	*5,101,499*	0%	*5,101,499*
Energy Intensity (kWh/AF)	**182.7**	**21.5**	**0.3**	**278.8**	**41.4**	***N/A***	**0.0**	***N/A***

Table 6-16: Total Energy Intensity

DWR Table O-1C: Recommended Energy Reporting – Multiple Water Delivery Products		
	Production Volume (AF)	Total Utility (kWh/volume)
Retail Potable Deliveries (AF)	23,964	212.9
All Water Delivery Types (AF)	**23,964**	**212.9**

6.11.2 Wastewater and Recycled Water Collection and Conveyance, Treatment, and Distribution Processes

Recycled water energy intensity is reported separately from other water supplies because it is currently not utilized as a direct potable water supply. This section describes the recycled water conveyance, treatment, and distribution management processes operated by the City. Currently, the City manages a wastewater collection system that consists of gravity sewer pipelines and force mains, lift stations, two wastewater treatment plants, two land outfalls, one ocean outfall, and one brine outfall. Wastewater can be treated at the SLRWRF to tertiary standards for delivery via the City's recycled water distribution system. The recycled water distribution system includes recycled water pipelines and a storage tank.

Wastewater Collection and Conveyance

The City's sewer collection system includes approximately 460 miles of 4-inch to 42-inch gravity pipeline and 33 lift stations to collect and transport wastewater to the SLRWRF and La Salina WWTP. The City also maintains 135 miles of force mains ranging from 3-inches to 42-inches in diameter. Lift station characteristics from the *2015 Water Master Plan*, including pump sizes, are presented in **Appendix M**. The City's wastewater service area is divided into two tributary areas based on two treatment plants: SLRWRF and the La Salina WWTP. Effluent from both plants is discharged to the Pacific Ocean through the Oceanside Ocean Outfall (OOO). In 2020, conveyance used 5,567,002 kWh of electricity to collect and convey 12,499 AF of wastewater, which is approximately 445 kWh per AF.

Wastewater and Recycled Water Treatment

The SLRWRF contains a conventional activated sludge plant that provides secondary treatment. The facility consists of two liquid treatment trains, Plant 1 and Plant 2, downstream of the common headworks and load equalization tanks. Plant 1 consists of rectangular primary clarifiers, activated sludge basins, and rectangular secondary clarifiers. Plant 2 includes rectangular primary clarifiers and activated sludge basins, and circular secondary clarifiers. The headworks includes bar screens, a washer compactor, and a grit chamber. Waste activated sludge from both plants is thickened by gravity belt thickeners before being sent to one of four operating digesters. Primary sludge is sent directly from the clarifiers to the digesters.

The La Salina WWTP treats wastewater entirely from the City's coastal zone. It treats wastewater to the secondary level by conventional biological treatment followed by clarification. Once decommission and demolishment is complete, wastewater that currently flows to La Salina WWTP will be diverted through a new pump station to the SLRWRF.

Energy associated with wastewater and recycled water comes from the treatment processes at the SLRWRF and the La Salina WWTP. In 2020, wastewater treatment used 2,018,589 kWh of electricity to treat 11,924 AF, which is approximately 169.3 kWh per AF. Non-potable recycled water treatment used 5,117 kWh of electricity to treat 204 AF of wastewater, which is approximately 25 kWh per AF of non-potable recycled water. Note that a portion of the energy used to treat recycled water may be captured in wastewater treatment as the energy meters do not distinguish between the secondary treatment train and the tertiary treatment train.

Wastewater and Recycled Distribution and Discharge

The City manages one ocean outfall and two land outfalls. The OOO is a 36-inch steel pipe that extends 8,850 feet into the Pacific Ocean. Effluent is discharged through 24 diffuser ports located along the last 230 feet of outfall. Brine is also discharged through a brine line from the MBGPF and Genentech (an industrial discharger) to the OOO. The La Salina Land Outfall consists of 400 feet of 27-inch pipeline that connects the La Salina WWTP to the OOO. The La Salina WWTP pump station conveys wastewater effluent from the plant to the Pacific Ocean via the La Salina Outfall and OOO. The San Luis Rey Land Outfall connects the SLRWRF to the OOO via the La Salina WWTP. Most secondary effluent from the SLRWRF passes through an effluent pump station on-site and is discharged to the San Luis Rey Land Outfall. Energy demands for this effluent pump station are included in the treatment process energy demands for purposes of this analysis due to limited ability to separate energy demands at SLRWRF. A portion of the SLRWRF effluent is treated to a higher level for recycled water use. Recycled water is stored in a 2.2 MG storage tank located at the southerly portion of the SLRWRF. Recycled water from the SLRWRF is then delivered to customers through 6 miles of recycled water distribution pipeline. The energy required to distribute 204 AF of recycled water supplies to non-potable customers in 2020 totaled 9,989 kWh, or approximately 49 kWh per AF.

Table 6-17 presents the energy intensity calculations based on the City's water supply processes for non-potable recycled water supplies. Energy data were provided by the City's energy meters, while water and sewer volumes were based on the City's metering data.

Table 6-17: Energy Intensity of Non-Potable Water Supply Processes

DWR Table O-2: Recommended Energy Intensity - Wastewater & Recycled Water				
Enter Start Date for Reporting Period	1/1/2020	**Urban Water Supplier Operational Control**		
End Date	12/30/2020			
	Water Management Process			
	Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Wastewater Entering Process (AF)	12,499	11,924	11,123	11,924
Wastewater Energy Consumed (kWh)	5,567,002	2,018,589	0	7,585,591
Wastewater Energy Intensity (kWh/AF)	445	169	0	636
Volume of Recycled Water Entering Process (AF)	204	204	204	204
Recycled Water Energy Consumed (kWh)	0	5,117	9,989	15,106
Recycled Water Energy Intensity (kWh/AF)	0.0	25.1	49.0	74.0

Page intentionally left blank.

SECTION 7. SUPPLY RELIABILITY ASSESSMENT

This section describes the overall reliability of the City's water supplies, including water quality characteristics and contingency planning under drought conditions.

7.1 Constraints on Water Sources

CWC 10631, CWC 10634

Two major constraints on water sources have potential to affect water supply reliability for the City: service reliability and water quality. This section discusses the reliability of the City's water supplies with respect to water quality and service reliability.

7.1.1 Service Reliability

The costs of demand management or supply augmentation to reduce the frequency and severity of shortages are now high enough that the City must look more carefully at the costs of unreliability to make the best possible estimate of the net benefit of taking specific actions, hence the term "reliability planning." Reliability is a measure of a water service system's expected success in managing water shortages. To plan for long-term water supply reliability, planners examine an increasingly wide array of supply augmentation and demand reduction options to determine the best courses of action for meeting water service needs. Such options are generally evaluated using the water service reliability planning approach.

Service reliability can be affected by climate (e.g., drought, snowmelt, and other factors), environmental needs (e.g., minimum flow requirements for habitat), and other factors such as cost (e.g., cost to buy or produce water, cost to expand systems to deliver water). Other factors that can cause water supply shortages are earthquakes, chemical spills, and energy outages at treatment and pumping facilities. City planners include the probability of catastrophic outages when using the reliability planning approach. **Table 7-1** shows the different factors that may result in inconsistency of supply.

Table 7-1: Factors Resulting in Inconsistency in Supply

Name of Supply (Treatment Plant)	Political/ Legal	Environmental	Water Quality	Climatic
SDCWA water supply (Weese WFP)	Increased cost of water	Pumping restrictions on SWP; Earthquake and aqueduct breakage		Reduced natural streamflow and/or snowpack
Groundwater (MBGPF)			Increased TDS from seawater intrusion	Reduced natural recharge
Recycled water (SLRWRF)	Cost to install infrastructure			Reduced wastewater flows in drought
Potable Reuse (AWT Facility)	Cost to install infrastructure			Reduced wastewater flows in drought

Reliability planning requires information about: (1) the expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; (3) how available contingency measures can reduce the impact of shortages when they occur.

Installing Cured-In-Place-Pipe (CIPP) slip lining to rehabilitate the City's pipelines and protect against leakages and water quality contamination.

The City of Oceanside is one of 24 member retail agencies of SDCWA. Member agency status entitles the City to directly purchase water for its needs from SDCWA on a wholesale basis. The City looks to SDCWA to ensure, to the best of its ability, that adequate amounts of imported water will be available to satisfy future water requirements. To improve the reliability of the region's water supply, SDCWA is executing a long-term strategy to diversify the region's supply sources, make major investments in the region's water delivery and storage system, and improve water use efficiency.

In 1991, the San Diego region was 95% reliant on a single supplier of imported water – MWD. This made the region extremely vulnerable to water supply shortages. That year, an ongoing drought forced MWD to cut deliveries to the San Diego region by 30%. As a result of that crisis, the SDCWA Board approved a strategy to aggressively diversify its water supply portfolio by developing new local and imported water supplies. Additionally, SDCWA has invested in carryover storage supplies to help achieve reliability in dry years and multiple dry years. SDCWA is working with its 24 local member retail agencies to develop local supplies such as groundwater, recycled water, seawater desalination, and conservation. These efforts will offset demands on imported water, and on MWD in particular, while emphasizing local, drought-proof supplies. This strategy has enhanced regional supply reliability and helped to lessen the impact of water cutbacks from MWD during the most recent drought. Currently, SDCWA member agency local water sources meet 28% of the region's water demand, while 90% of demand is met with water acquired from sources other than MWD, including local water sources. As noted in *Section 6 System Supplies*, 10% of the City's total supplies were from local sources (groundwater and non-potable recycled water), and by 2030, 60% of the City's total demands are expected to be met using local supplies (groundwater, indirect potable reuse [FAT water], and non-potable recycled water). These efforts to reduce purchases from MWD support the State's goals of reducing reliance on the San Joaquin-Sacramento Bay-Delta (Delta) because MWD is the region's only source of water from the Delta. Documentation of the region's reduce reliance on the Delta is provided as **Appendix K.**

SDCWA's supply reliability analysis found that there would be reliable supplies for all years in a normal year, single-dry year scenario, and all five years of a multi-dry year scenario for 2025 through 2045. This analysis was completed using a conservative methodology that only considered member agencies' "verifiable" local supplies, in addition to SDCWA's supply projections and share of MWD supplies.

Verifiable supplies are those that are far enough along in the planning, construction, or funding process to be considered certain during the projected planning period.

In addition to development of local supplies, water conservation efforts support improved supply reliability by reducing water demand. As part of the City's conservation program, the City of Oceanside adopted Ordinance No. 091-15 on March 27, 1991, which established a water conservation program for the City. The City's "Water Conservation" code was amended in 2008 through adoption of Ordinance No. 08-IR0439-1 and again in 2015 with adoption of Ordinance No. 15-OR0276-1, to revise the existing water conservation program and add drought response conservation measures to be implemented in the event of mandatory water reductions. In 2021, the City updated the Water Conservation Program and Drought Response Conservation Measures ordinance consistent with the Water Shortage Contingency Plan (see *Section 8 Water Shortage Contingency Planning*). The City Council adopted this ordinance in June 2021, which is provided as **Appendix E**.

The City first completed a comprehensive Water Conservation Master Plan in May 2011, which was updated in 2016. The 2021 WCMP Update was completed in conjunction with this 2020 Plan, and is provided here as **Appendix L**.

7.1.2 Water Quality

The City currently treats local groundwater supplies to eliminate total dissolved solids (TDS), iron, manganese, and trichloropropane that are characteristic of the groundwater in the region. Groundwater is extracted and treated at the MBGPF for delivery to the potable water system. Due to water quality issues, local groundwater must be treated in order to distribute up to 6.37 MGD of drinking water (capacity of the MBGPF). Given current and projected operations, no water quality issues are expected to impact the City's water supply.

7.2 Reliability by Type of Year

CWC 10631

This section identifies the historical water years that meet conditions for an average water year, a single-dry year, and five-consecutive-year drought, for drought planning purposes. Single-dry and five-consecutive-year conditions are usually based on historical records of annual runoff from a particular watershed. A five-consecutive-year drought period is the driest five-year historical sequence. The City purchases water from SDCWA to meet demands that cannot be met by local supplies, and as such, this assessment relies on SDCWA's analysis of supply reliability under varying conditions. SDCWA's reliability assessment accounts for dry-year impacts on its member agencies' local supplies and subsequent impacts on member agency demands on SDCWA. Consistent with SDCWA's 2020 UWMP, the City's single-dry year was determined to be 2015 and the five-consecutive-year drought was 2011 through 2015. Because the City's local supplies are not dependent on local, short-term hydrologic conditions, the City has elected to use a 33-year average (1986-2018) as its normal year, consistent with SDCWA's 2020 UWMP**. Table 7-2** shows the City's basis for water year data.

Table 7-2: Basis of Water Year Data

<table>
<tr><th colspan="5">DWR Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment)</th></tr>
<tr><th rowspan="4">Year Type</th><th rowspan="4">Base Year</th><th colspan="3">Available Supplies if Year Type Repeats</th></tr>
<tr><th>☐</th><th colspan="2">Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP.
Location ___________________________</th></tr>
<tr><th>☑</th><th colspan="2">Quantification of available supplies is provided in this table as either volume only, percent only, or both.</th></tr>
<tr><th colspan="2">Volume Available</th><th>% of Average Supply</th></tr>
<tr><td>Average Year</td><td>1986-2018</td><td colspan="2">-</td><td>100%</td></tr>
<tr><td>Single-Dry Year</td><td>2015</td><td colspan="2">-</td><td>107%</td></tr>
<tr><td>Consecutive Dry Years 1st Year</td><td>2011</td><td colspan="2">-</td><td>107%</td></tr>
<tr><td>Consecutive Dry Years 2nd Year</td><td>2012</td><td colspan="2">-</td><td>108%</td></tr>
<tr><td>Consecutive Dry Years 3rd Year</td><td>2013</td><td colspan="2">-</td><td>108%</td></tr>
<tr><td>Consecutive Dry Years 4th Year</td><td>2014</td><td colspan="2">-</td><td>108%</td></tr>
<tr><td>Consecutive Dry Years 5th Year</td><td>2015</td><td colspan="2">-</td><td>109%</td></tr>
<tr><td colspan="5">NOTES: The City as selected base years that aligned with SDCWA's 2020 UWMP supply reliability assessment. SDCWA projects that its supplies will be reliable through all potential single and multiple dry year scenarios, therefore, additional purchases would be made from SDCWA to meet demands when needed. "% of Average Supply" indicates percent supply available to meet potable demands due to diversification and/or carryover storage, based on average supply available for each scenario year from 2025-2045.</td></tr>
</table>

7.3 Supply and Demand Assessment

CWC 10635

The UWMP Act requires every urban water supplier to assess the reliability of its water supply for normal, single-dry and multiple-dry years. Single-dry and multiple-dry year conditions were based on the City's historical water use records.

The City has historically conserved water during single and multiple-dry years, so the forecast demands for dry years are considered conservative. The City anticipates no reduction of groundwater supplies for any hydrologic scenario. Groundwater is generally a drought-proof supply because the City's projected extraction is well below the normal year safe yield. Both indirect potable reuse supplies (FAT water) and non-potable recycled water supplies are drought-proof supplies that would remain available during all scenarios. Because there is sufficient capacity at SLRWRF to serve recycled water as demands increase in response to dry year conditions, as recycled water demands increase, deliveries would increase to meet demand. **Table 7-3** identifies supply availability as a percent of normal year supplies for each scenario.

Demands are projected to increase during dry year scenarios, as shown in **Table 7-3**. Because potable local supplies would not increase in availability, the City would need to purchase additional water from SDCWA to meet these increased demands. Therefore, for all years that SDCWA projects supply reliability, the City assumes it will be able to purchase sufficient water from SDCWA to meet demands.

SDCWA currently forecasts that it will have sufficient supply available to meet all member agency demands, including in all years of a multiple-year drought scenario. Should more extreme droughts than projected occur, or non-drought-related supply interruptions occur that affect SDCWA's supply availability, extraordinary conservation measures are described in *Section 8 Water Shortage Contingency Planning*

Table 7-3: Demand and Supply Assumptions, as Percent of Normal

Source	Normal Water Year	Single-Dry Water Year	Multiple-Dry Water Years				
			Year 1	Year 2	Year 3	Year 4	Year 5
Demands							
Potable Water	100%	107%	107%	108%	108%	108%	109%
Recycled Water	100%	107%	107%	108%	108%	108%	109%
Total Percent of Normal Demands		107%	107%	108%	108%	108%	109%
Supplies							
SDCWA Purchases	100%	Variable (110-114%)	Variable (110-115%)	Variable (111%-115%)	Variable (111%-116%)	Variable (112%-117%)	Variable (112%-117%)
Groundwater	100%	100%	100%	100%	100%	100%	100%
Advanced Treated Water	100%	100%	100%	100%	100%	100%	100%
Recycled Water	100%	107%	107%	108%	108%	108%	109%
Total Percent of Normal Potable Supplies		107%	107%	108%	108%	108%	109%
Total Percent of Overall Normal Supplies		*107%*	*107%*	*108%*	*108%*	*108%*	*109%*

7.3.1 Normal Supply and Demand Comparison

Table 7-4 and **Table 7-5** compare current and projected potable and non-potable water supplies and demands. In average precipitation years, the City has sufficient water to meet its customers' needs, through 2045. This is based on continued commitment to the City's active and passive conservation programs, maintaining current groundwater rights, additional imported water available when needed from SDCWA, and the supply of recycled water and indirect potable reuse.

Table 7-4: Normal Year Supply and Demand Comparison – Potable

DWR Table 7-2 Retail: Normal Year Supply and Demand Comparison - Potable					
	2025	2030	2035	2040	2045
Supply totals	21,041	19,098	19,270	19,328	19,500
Demand totals	21,041	19,098	19,270	19,328	19,500
Difference	0	0	0	0	0
NOTES:					

Table 7-5: Normal Year Supply and Demand Comparison – Non-Potable

DWR Table 7-2 Retail: Normal Year Supply and Demand Comparison – Non-Potable					
	2025	**2030**	**2035**	**2040**	**2045**
Supply totals	3,000	5,040	5,040	5,040	5,040
Demand totals	3,000	5,040	5,040	5,040	5,040
Difference	0	0	0	0	0
NOTES: Indirect potable reuse (FAT water) is not included in this table because it will be used to meet potable demands, and will offset purchases from SDCWA. It has therefore been included in DWR Table 7-2 for Potable Water.					

7.3.2 Single-Dry Year Supply and Demand Comparison

2015 was identified as the driest year in recent record, consistent with SDCWA's 2020 UWMP. The single-dry year scenario investigates the effect of an isolated single dry period similar to this year occurring in the future.

During a single-dry year, demands are expected to increase by an average of 7%. To meet these demands, the City will continue to supply customers with groundwater, recycled water, and projected indirect potable reuse water supplies. The availability of local potable supplies during a single dry year is expected to remain consistent with availability during a normal year. The availability of non-potable recycled water is expected to increase to meet the increased non-potable recycled water demand because there is sufficient treatment capacity at the SLRWRF to produce enough additional recycled water to meet demands during a single dry year. To make up the remaining supply needed to serve the increased demands under a single dry year, the City will purchase additional water from SDCWA. The City anticipates that SDCWA will have sufficient supplies to allow for these additional purchases because SDCWA projects 100% reliability in the single-dry year scenario with changes in demand and supply consistent with the analysis completed by the City.

In the event of a historical single-year drought, the City has sufficient water to meet its customers' needs, through 2045, as shown in **Table 7-6** and **Table 7-7**.

Table 7-6: Single Dry Year Supply and Demand Comparison – Potable

DWR Table 7-3 Retail: Single Dry Year Supply and Demand Comparison - Potable					
	2025	**2030**	**2035**	**2040**	**2045**
Supply totals	22,470	20,395	20,578	20,640	20,824
Demand totals	22,470	20,395	20,578	20,640	20,824
Difference	0	0	0	0	0

Table 7-7: Single Dry Year Supply and Demand Comparison – Non-Potable

DWR Table 7-3 Retail: Single Dry Year Supply and Demand Comparison – Non-Potable					
	2025	**2030**	**2035**	**2040**	**2045**
Supply totals	3,204	5,382	5,382	5,382	5,382
Demand totals	3,204	5,382	5,382	5,382	5,382
Difference	0	0	0	0	0
NOTES: Indirect potable reuse (FAT water) is not included in this table because it will be used to meet potable demands, and will offset purchases from SDCWA. It has therefore been included in DWR Table 7-3 for Potable Water.					

7.3.3 Five-Consecutive-Year Drought Supply and Demand Comparison

The five-consecutive-year drought period supply and demand comparison examines the effect of the driest five-year historical sequence occurring in the future. The historical dry year period was identified as the five-year period from 2011-2015, consistent with SDCWA's 2020 UWMP. The City has completed this analysis consistent with SDCWA's 2020 UWMP, which projected an average increase in demand of 7% in year 1 of a multiple dry year sequence, 8% in years 2 through 4, and 9% in year 5 (see **Table 7-3**, above).

During an extended event, an assumption was made that recycled water production would increase to meet additional recycled water demands due to available treatment capacity and wastewater flows at the SLRWRF (3.0 MGD or 3,362 AFY), while indirect potable reuse and groundwater supplies would remain consistent with normal year projections. To make up the remaining supply needed to meet increased demands during each year of the multiple dry year scenario, the City will purchase additional water from SDCWA. These additional purchases are anticipated to be accommodated for all years, as SDCWA projects 100% reliability in all future years due to the diversification of its supplies and availability of carryover supplies. Available supplies would be sufficient to meet demands, as shown in **Table 7-8** and **Table 7-9.**

Table 7-8: Five-Consecutive-Year Drought Supply and Demand Comparison - Potable

DWR Table 7-4 Retail: Multiple Dry Year Supply and Demand Comparison - Potable						
		2025	2030	2035	2040	2045
First Year	Supply totals	22,573	20,488	20,673	20,735	20,920
	Demand totals	22,573	20,488	20,673	20,735	20,920
	Difference	0	0	0	0	0
Second Year	Supply totals	22,654	20,562	20,748	20,810	20,995
	Demand totals	22,654	20,562	20,748	20,810	20,995
	Difference	0	0	0	0	0
Third Year	Supply totals	22,737	20,638	20,823	20,886	21,072
	Demand totals	22,737	20,638	20,823	20,886	21,072
	Difference	0	0	0	0	0
Fourth Year	Supply totals	22,821	20,714	20,900	20,963	21,150
	Demand totals	22,821	20,714	20,900	20,963	21,150
	Difference	0	0	0	0	0
Fifth Year	Supply totals	22,851	20,741	20,928	20,991	21,178
	Demand totals	22,851	20,741	20,928	20,991	21,178
	Difference	0	0	0	0	0
NOTES:						

Table 7-9: Five-Consecutive-Year Drought Supply and Demand Comparison – Non-Potable

DWR Table 7-4 Retail: Multiple Dry Year Supply and Demand Comparison – Non-Potable						
		2025	**2030**	**2035**	**2040**	**2045**
First Year	Supply totals	3,218	5,407	5,407	5,407	5,407
	Demand totals	3,218	5,407	5,407	5,407	5,407
	Difference	0	0	0	0	0
Second Year	Supply totals	3,230	5,426	5,426	5,426	5,426
	Demand totals	3,230	5,426	5,426	5,426	5,426
	Difference	0	0	0	0	0
Third Year	Supply totals	3,242	5,446	5,446	5,446	5,446
	Demand totals	3,242	5,446	5,446	5,446	5,446
	Difference	0	0	0	0	0
Fourth Year	Supply totals	3,254	5,466	5,466	5,466	5,466
	Demand totals	3,254	5,466	5,466	5,466	5,466
	Difference	0	0	0	0	0
Fifth Year	Supply totals	3,258	5,474	5,474	5,474	5,474
	Demand totals	3,258	5,474	5,474	5,474	5,474
	Difference	0	0	0	0	0
NOTES: Indirect potable reuse (FAT water) is not included in this table because it will be used to meet potable demands, and will offset purchases from SDCWA. It has therefore been included in DWR Table 7-4 for Potable Water.						

7.4 Regional Supply Reliability

CWC 10620

The City continues to evaluate supply enhancement options, including additional water recycling, desalinated seawater, increasing groundwater supplies, indirect potable reuse, water transfers, and additional imported water supplies through its collaboration with SDCWA. The City's efforts to increase local supplies is discussed in *Section 6 System Supplies*. On-going demand management measures implemented by the City to help maximize existing supply resources are discussed in *Section 9 Demand Management Measures*.

7.5 Drought Risk Assessment

A Drought Risk Assessment (DRA) was performed in the preparation of this 2020 Plan to evaluate the reliability of each supply source under a long-term drought. The results of the DRA are considered in the development of demand management measures and water supply projects. The DRA provides an opportunity to evaluate the functionality of the City's Water Shortage Contingency Plan (WSCP), presented here in *Section 8 Water Shortage Contingency Planning*. This evaluation can help identify undesired risks and allow for proactive steps to be taken prior to the next actual long-term drought. The DRA can be modified or updated on an interim cycle, as needed, to allow for the incorporation of new information as it becomes available or in the event of unforeseen circumstances.

7.5.1 Data and Methodology

Per UWMP requirements, the DRA is based on the five driest consecutive years on record. Similar to the supply reliability analysis presented above, the City chose to align its DRA with SDCWA's DRA due to the City's reliance on SDCWA supplies to meet demands that cannot be met with local supplies. To align with SDCWA's DRA, the historical period used in this analysis is the period from 2014 to 2018. This represents the five-year period SDCWA determined with the lowest local water supply production from surface water and groundwater, the two local water supplies most susceptible to variation due to weather. Data used to calculate the City's supply capabilities under the scenario of five consecutive dry years is provided in **Table 7-10**. Per SDCWA's methodology, projected local surface water and groundwater supplies reflect actual production from 2014 to 2018. All other local supplies assume no reduction in availability over the five-year period due to the drought resilience of these supplies. Because the City does not use surface water supplies, and its groundwater supplies are considered to be drought-proof, the City's existing local supplies, brackish groundwater and non-potable recycled water, are held constant at current 2020 production volumes.

Projected demands were calculated by escalating 2020 demands annually for five years based on multipliers provided by SDCWA (shown in **Table 7-10**). The multipliers are based on a weather index developed to assess the impact of dry/hot weather on demands (SDCWA, 2021).

7.5.2 Determination of Reliability

SDCWA anticipates a surplus of water supplies in all five years of a drought and would have enough supply to meet the City's increased demands. Based on the analysis shown in **Table 7-10**, the City is able to meet its water demands in all five years and therefore, actions under the WSCP would not be required.

Table 7-10: Drought Risk Assessment

Oceanside Drought Risk Assessment	2021	2022	2023	2024	2025
Local Supplies[1]					
Brackish Groundwater	2,264	2,264	2,264	2,264	2,264
Non-Potable Recycled Water	249	249	249	249	249
Potable Reuse	0	0	0	0	0
Total Projected Local Supplies	**2,513**	**2,513**	**2,513**	**2,513**	**2,513**
Demand					
CY 2020 Normal Year Demand	24,212	24,212	24,212	24,212	24,212
Demand Projection Multiplier[2]	108%	112%	116%	120%	125%
Consecutive 5-Year Drought Demand	**26,149**	**27,118**	**28,086**	**29,054**	**30,265**
Purchased Supplies					
SDCWA Purchases[3]	23,636	24,605	25,573	26,542	27,752
Total Projected Supplies with SDCWA Purchases	**26,149**	**27,118**	**28,086**	**29,054**	**30,265**
Impacts of WSCP Actions	0	0	0	0	0
Remaining Potential Surplus Supply, or (Shortage) that will be addressed through Management Actions	0	0	0	0	0

1. Supplies held constant at actual CY 2020 levels to align with SDCWA 2020 UWMP methodology.
2. Based on a weather index developed to assess the impact of dry/hot weather on water demands, multiplier applied to 2020 actual demands.
3. SDCWA anticipates having a surplus of supply per its 2020 UWMP. The City will only purchase as much water from SDCWA as needed to meet demands.

Page intentionally left blank.

SECTION 8. WATER SHORTAGE CONTINGENCY PLANNING

This section acts as the City's Water Shortage Contingency Plan (WSCP) to address potential water shortages, including catastrophic interruptions and drought management. It documents the process the City will follow to anticipate water supply disruptions and describes how the City will address water shortages. This WSCP can help the City justify projects, policies, and programs determined necessary to mitigate the risk of a water shortage condition. The following elements are included in this WSCP:

- Water Supply Reliability Analysis
- Legal Authorities
- Annual Water Supply and Demand Assessment Procedures
- Water Shortage Levels and Shortage Response Actions
- Monitoring, Reporting, and Refinement of Procedures
- Compliance and Enforcement
- Financial Consequences
- Communication Protocols

The WSCP is a stand-alone document that can be amended, as needed, without amending the City's 2020 UWMP. The process for WSCP amendments and required public hearings are described in *Section 10 Plan Adoption, Submittal, and Implementation.*

8.1 Water Supply Reliability

CWC 10632(a)(1)

This section describes the findings related to water system reliability and key issues that may create a shortage condition. SDCWA's supply during a non-allocation dry period could exceed the supplies used during a normal year given the ability to purchase additional imported supplies from its wholesaler, Metropolitan Water District of Southern California (MWD). Further SDCWA projects sufficient supplies and carryover storage to meet demands in future single and multi-dry year scenarios, due to supply diversification and availability of supplies held in carryover storage (SDCWA 2021). The City's supply is determined to be reliable in normal year, single-dry year, and multiple-dry years scenarios, with additional supplies purchased from SDCWA to meet demands in dry years as needed. The City has also taken steps to bolster its local supplies, which are drought-proof, in order to reduce reliance on imported water supplies.

8.2 Legal Authorities

CWC 10632(a)(7)

Under California law, including California Water Code (CWC) Chapters 3.3 and 3.5 of Division 1, Parts 2.55 and 2.6 of Division 6, Division 13, and Article X, Section 2 of the California Constitution, the City Council is authorized to implement the water shortage actions outlined in this WSCP. In all water shortage cases, shortage response actions to be implemented will be at the discretion of the City

Council and will be based on an assessment of the supply shortage (determined by the City's annual supply and demand assessment, notification from SDCWA to member agencies, or other means as appropriate), customer response, and need for demand reductions.

It is noted that upon proclamation by the Governor of a state of emergency under the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2 of the Government Code) based on drought conditions, the state will defer to implementation of locally adopted water shortage contingency plans to the extent practicable. The City will coordinate with regional and local water suppliers for which it provided water supply services for possible proclamation of a local emergency as necessary.

8.3 Annual Water Supply and Demand Assessment Procedures

CWC 10632(a)(2)

The annual water supply and demand assessment (Annual Assessment) is a new requirement for UWMPs. The assessment is used to determine if there will be a shortfall in City water supplies for the current year and one dry year. This section describes the procedures used to 1) approve the Annual Assessment and 2) conduct the Annual Assessment. While the UWMP's Drought Risk Assessment (DRA) evaluates longer-term, multi-year water supply reliability, the Annual Assessment focuses on actual forecasted near-term water supply conditions (i.e., next 12 months). The steps and timing to complete the Annual Assessment and submit the final report are listed below to provide consistency year-after-year regardless of City staff changes:

1. March - April
    a. City determines available local supplies.
    b. City coordinates with SDCWA to gather necessary information for SDCWA to conduct its wholesaler Annual Assessment.
2. April-May
    a. SDCWA announces member agency allocation determination for current year.
    b. SDCWA determines carryover (and emergency storage apportionments if under emergency).
    c. City conducts Annual Assessment:
        i. City determines total available supply – inclusive of imported water supply.
        ii. City determines infrastructure constraints (including water quality conditions limiting local sources).
        iii. City determines expected demand for current year and one subsequent dry year, anticipated to be based on regional projections from SDCWA.
        iv. City compares supply and demand and makes a determination of the water supply reliability (see *Section 8.2.6 Evaluation Criteria*).
3. June
    a. City Council reviews and approves Annual Assessment determination.
    b. City coordinates with SDCWA on submittal of the report. Annual Assessment report to be submitted to the state by July 1.

It should be noted that this timeline serves as a guideline for preparing the Annual Assessment and may be modified based on circumstances relevant at that time.

8.3.1 Decision-Making Process

A formal decision-making process will occur each year to approve the water supply reliability determination of the Annual Assessment. The Annual Assessment will document anticipated shortages if any, triggered shortage response actions, associated compliance and enforcement actions, and communication actions. These results will be presented to the City Council for approval. If the Annual Assessment determines a potential supply shortage, the City Council's approval of the Annual Assessment, with potential coordination with SDCWA, will also serve as a formal declaration of any foreseen water shortage level, and trigger recommendations for specific shortage response actions.

8.3.2 City Water Supply Projection

The City will evaluate the water system reliability for the coming year, while considering a subsequent dry year. Under normal (non-shortage) conditions, the City can purchase as much water as necessary from SDCWA to meet demands. When that supply (imported supply) is under shortage conditions, the amount of shortage (allocation of shortage) specific to the City is determined in a process lead by SDCWA. SDCWA uses the availability of the City's local supplies to determine the City's imported water allocation. In years where there is a shortage of imported water, the City's ability to access imported water depends on the availability of its local supplies. The evaluation of supply availability by SDCWA and by the City, therefore, depends on the availability of the City's local supplies. To inform SDCWA's allocation process, the City must describe and quantify, in AF, each source of City-owned water supply. The City's local water supply portfolio consists of desalinated groundwater, non-potable recycled water, and in the future, potable reuse. Imported water supplies include SDCWA imported water and in the event of regional shortages, SDCWA Carryover Storage supplies.

Groundwater

The City utilizes brackish groundwater from the Mission Basin subbasin of the San Luis Rey Valley Groundwater Basin as one of its local potable supplies. Groundwater is treated to potable standard at the Mission Basin Groundwater Purification Facility (MBGPF). The City's reliable average groundwater supply is 2,800 AFY and is not affected by single or multi-year drought because the City extracts less than the safe yield of the Mission Basin.

Non-Potable Recycled Water

The City's non-potable recycled water supply is produced at the San Luis Rey Water Reclamation Facility (SLRWRF), which has a current treatment capacity of 3.0 million gallons per day (MGD). Recycled water is delivered to irrigation customers in the City's Upper and Lower Conveyance systems and to Whelan Lake. Expansion of the recycled water distribution system is anticipated to meet projected demands of 3,000 AFY by 2025 and up to 5,040 AFY by 2030. This source of supply is reliable during single and multi-year droughts because it uses wastewater as its source, and the City produces sufficient wastewater to meet recycled water demands even in drought years.

Indirect Potable Reuse

The City is currently implementing its Pure Water Oceanside project, which will produce 3,360 AFY of fully advanced treated (FAT) water at the City's advanced water treatment (AWT) facility by 2025. This water will be injected into the Mission Basin and eventually treated at the MBGPF for indirect potable use. Similar to the City's non-potable recycled water, FAT water will be available for indirect potable reuse even during single and multi-year droughts.

SDCWA Purchased Water

The City purchases water from SDCWA. SDCWA's water supply portfolio consists of desalinated seawater, Colorado River water, and State Water Project water. Purchases from SDCWA are used to meet City demands after local supplies have been utilized. SDCWA's desalinated seawater is a drought-proof supply, while its Colorado River water supplies that are independent of supplies purchased from MWD are highly reliable due to SDCWA's prioritization for Colorado River allocations.

SDCWA Carryover

If a potential water supply shortage is identified in SDCWA's annual assessment, SDCWA will evaluate the use of stored water reserves from its Carryover Storage program. Carryover storage includes surface water in the San Vicente Reservoir and out-of-region groundwater storage in California's Central Valley. There is 100,000 AF of storage capacity in San Vicente Reservoir and 70,000 AF of storage capacity in groundwater storage (SDCWA, 2021).

The available water supply evaluation used in the Annual Assessment will consider hydrological and regulatory conditions. The methodology for determining the available supply from each water supply source is presented in **Table 8-1**.

Table 8-1: Supply Source Availability Evaluation Methodology

Supply Source	Evaluation Methodology
Groundwater	Determine previous year's production and apply potential production constraints.
Recycled Water (Non-Potable)	Determine previous year's production and account for potential decreases in wastewater flow.
Potable Reuse	Determine previous year's production and account for potential decreases in wastewater flow. This supply will not be available until 2025.
SDCWA Purchased Water	Allocation determined by SDCWA.
SDCWA Carryover	Determine available supply to the City based on SDCWA WSCP and the most recent information.

8.3.3 Planned Water Use for Current Year and Subsequent Dry Year

Unless otherwise specified, the Annual Assessment will use the City's most recent unconstrained demand forecast to determine its current year water use. Unconstrained demand is defined as the City's expected customer water need for the coming year prior to the application of shortage response actions. Specifically, the City will use the projected demands with passive and active conservation presented in *Section 4 System Water Use* (see **Table 4-2**). Additional real-time adjustments should be applied to account for factors such as weather, prior-year conditions, anticipated new demands for the year, and other factors pertinent to the land use and customer use patterns. Dry year demand is based on the single-dry year as defined in *Section 7 Supply Reliability Assessment* of the City's 2020 UWMP.

The current year water use projection should then be revised to include adjustment factors to ensure enough supply is available to meet the anticipated higher demands in the subsequent dry year. Each year's assessment will be informed by the characterizations in *Section 6 System Supplies* and other relevant factors and considerations at the time of the assessment.

8.3.4 Infrastructure Considerations

The City is required to describe the methodology for identifying existing water supply infrastructure capabilities and potential constraints. The City's existing water supply infrastructure is well-documented on the City's GIS system and continuously assessed by Water System Operations staff. Existing water supply infrastructure includes City-owned infrastructure and regional and imported water infrastructure. City-owned infrastructure includes water treatment plants, pipelines, pump stations, and groundwater wells. Regional and imported water infrastructure includes a seawater desalination plant, and SDCWA's aqueducts and regional pipelines. The City will evaluate existing water supply and capacities and any constraints for the current year and for one subsequent dry year for City-owned supplies and infrastructure, and will rely on SDCWA's assessment for water supplies, capacities, and constraints for regional supplies and infrastructure. City-owned infrastructure constraints may consider service area-level supply capabilities in the current year, such as shut-downs due to maintenance, construction impacts, and water quality impacts. Once constraints have been identified, the City will determine whether the total quantified water supply (as determined in Section 8.2.2 above) should be adjusted to account for these identified constraints. The City will coordinate with SDCWA to evaluate regional infrastructure constraints to determine how they would impact available City water supplies.

8.3.5 Evaluation Criteria

The City relies on SDCWA to evaluate regional supply and demand and to evaluate water shortage levels. The City's supply and demand evaluation criterion are applied as minor adjustments to account for the latest information on City-owned supplies or unpredicted changes in City demand. As such, the City will evaluate City-owned supply storage levels, changes in recycled water availability, changes in groundwater availability, and recent water demand trends to determine any deviations from the SDCWA Annual Assessment.

8.4 Drought Ordinance

The City has three ordinances in place to establish operational procedures for long-term (drought) and short-term (catastrophic) water shortages. The City updated its drought ordinance to maintain consistency with SDCWA's 2021 Model Drought Ordinance, which was revised in 2021 to include the six state-mandated water shortage levels (see *Section 8.5* below). Shortage response actions described in this WSCP align with the City's new drought ordinance. The existing ordinances are listed and described in further detail below.

- Water Conservation Program and Drought Response Conservation Measures for Mandatory Water Reductions (Ordinance No. 08-OR0439-1)
- Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)
- Amendment to Oceanside City Code, Chapter 37 (Ordinance No. 21-OR0413-1)

Water Conservation Program and Drought Response Conservation Measures for Mandatory Water Reductions (Ordinance No. 08-OR0439-1)

Originally adopted in 1991, the July 2008 updates to the City's "Drought Ordinance" established regulations to be implemented during times of declared water shortages or declared water shortage emergencies. Ordinance No. 08-OR0439-1 establishes four levels of drought response actions, with increasing restrictions on water use in response to decreasing available supplies. This ordinance was based on a model program developed by the SDCWA for its member agencies. A copy of the ordinance is included in **Appendix E**.

Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)

The City's "Drought Ordinance" was amended in May 2015 to incorporate Governor Brown's 2014 state of emergency proclamation for drought and the 2015 Executive Order for 25% reduction of water use statewide. The City first escalated the drought response level from a Level 1 Drought Watch to a Level 2 Drought Alert in August 2014. SDCWA and its member agencies were able to analyze the effectiveness of the drought response program during this timeframe. The City then revised the Levels 1 and 2 drought conditions with the adoption of Ordinance No. 15-OR0276-1. A copy of the ordinance is included in **Appendix E.**

Amendment to Oceanside City Code, Chapter 37 (Ordinance No. 21-OR0413-1)

The City's most recent amendment to the Drought Ordinance occurred in June 2021 to reflect the six state-mandated drought response levels. This amendment revised Section 37 of the City Code which previously reflected the Water Conservation Program and Drought Response Conservation Measures for Mandatory Water Reductions (Ordinance No. 08-OR-0439-1) described above. The water shortage levels and response actions included in this WSCP as described below reflect the amendments to the City Code adopted in June 2021. A copy of the ordinance is included in **Appendix E**.

8.5 Water Shortage Levels and Shortage Response Actions

CWC 10632(a)(3)

Shortage levels in this WSCP have been standardized to the six required shortage levels to provide consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions. The water shortage levels shown in **Table 8-2** are a sequential, regulatory program of increasingly stringent prohibitions on the use of water delivered within the City. In addition to the shortage response actions associated with the City's Drought Ordinance, this WSCP describes applicable supply augmentation, demand reduction, and operational change measures that can be implemented in times of shortages per water shortage level designation. When the City declares that a particular stage is in effect, City customers must comply with all regulations contained in the declared stage. In order to encourage water use efficiency and awareness, the City never operates below Level 1.

For the purposes of this WSCP, special water features are defined and analyzed separately from pools and spas. Non-pool and non-spas may use or be able to use recycled water, whereas pools and spas must use potable water for health and safety considerations. Special water features include, but are not limited to, ornamental fountains, lakes, and ponds.

Table 8-2: Water Shortage Contingency Plan Levels

DWR Table 8-1 Retail: Water Shortage Contingency Plan Levels		
Shortage Level	**Percent Supply Reduction**	**Shortage Response Actions**
1	Up to 10%	Limited irrigation hours unless using drip/micro-irrigation. If not using irrigation system, irrigation with buckets, hand-held hose with shut-off nozzle, or low-volume non-spray irrigation. Repair water leaks within 5 days of notification, and use non-potable water for construction when available.
2	Up to 20%	All restrictions under Level 1 plus additional limits on landscape irrigation frequency and duration. Leaks must be repaired within 72 hours of notification, and use of decorative water features prohibited unless using recirculated water.
3	Up to 30%	All restrictions under Level 1 and Level 2 plus additional limits on landscape irrigation, prohibition on washing vehicles (with exceptions), and repair of leaks within 48 hours of notification. Consideration of annexations will be suspended.
4	Up to 40%	All restrictions under Levels 1, 2, and 3 plus prohibition on filling or re-filling ornamental lakes or ponds except as needed to sustain aquatic life of significant value.
5	Up to 50%	All restrictions under Levels 1, 2, 3, and 4, plus prohibition of all landscape irrigation except crops and products for nurseries and commercial growers, with some exception. All leaks must be repaired within 24 hours of notification. The City may establish water allocation at Level 5, and will prohibit new potable water services, temporary meters, and permanent meters, with some exceptions.
6	>50%	All restrictions under Levels 1, 2, 3, 4, and 5, plus prohibition of all landscape irrigation with exception of crops and landscape products of commercial growers and nurseries, as well as exceptions for fire protection, erosion control, threatened species, livestock, public works projects, and environmental mitigation projects.

The City's Drought Ordinance establishes regulations to be implemented during the water shortage levels with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies. During a Water Shortage Level 1 condition, water waste is prohibited and the City encourages consumers to follow the Water Shortage Level 1 water conservation measures through local and regional public education and awareness measures. During a Water Shortage Level 2 condition or higher, the established water conservation measures and water use restrictions are mandatory and violations are subject to criminal, civil, and administrative penalties and remedies specified in this ordinance and as provided by the City's Administrative or Municipal Code.

At all times, the following water use restrictions are in place within the City's service area:

- Stop the use of potable water to wash paved surfaces, except when necessary to alleviate safety or sanitation hazards
- Stop water waste resulting from inefficient landscape irrigation and onto non-targeted areas
- Use recirculating ornamental fountains only

- Wash vehicles using a bucket and hand-held hose with a shutoff nozzle, mobile high pressure/low volume system, or at commercial site that recirculates water onsite
- Restaurants serve water only upon request
- Hotel and other commercial lodging offer guest the option of not laundering towels and linens daily

Water Shortage Level 1

A Drought Response Level 1 condition occurs when SDCWA notifies its member agencies that supply shortages may occur due to drought. During these conditions, member agencies are encouraged to implement voluntary demand reduction of up to 10% to ensure sufficient supplies will be available to meet anticipated demands. The City's never operates at a level below Drought Response Level 1 in order to encourage water use efficiency at all times.

During a Drought Response Level 1, the City actively promotes water efficiency through public education and outreach to increase public awareness of the need to implement the water conservation measures listed in **Table 8-2**. The conservation practices encouraged during a Level 1 condition include:

- Water landscaped areas not irrigated by an irrigation system by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation
- Irrigate residential and commercial landscapes before 10 a.m. or after 6 p.m. only. Watering is permitted at any time when a drip/micro-irrigation system/equipment is used.
- Irrigate nursery and commercial grower's products before 10 a.m. or after 6 p.m. only; Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time
- Repair all water leaks within five days of notification by the City
- Use non-potable water for construction purposes when available

Water Shortage Level 2

A Drought Response Level 2 condition occurs when SDCWA notifies its member agencies that demand reductions of up to 20% are required in order to maintain sufficient supplies to meet anticipated demands. The City declares a Level 2 condition through adoption of a resolution by City Council. With the declaration of a Level 2 drought condition, mandatory water use restrictions are implemented. All restrictions under Level 1 must continue to be adhered to, with the addition of the following mandatory measures:

- Limit landscape irrigation to no more than three assigned days per week. This does not apply to commercial growers or nurseries unless under order by the governor or the State.
- Limit irrigation using sprinklers to no more than ten minutes per assigned day. This does not apply to landscape irrigation systems using water efficient devices.
- Water landscaped areas not irrigated by an irrigation system by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation, on same schedule as landscape irrigation (three days per week in dry season, one day per week in wet season)

- Repair all leaks within 72 hours upon notification by the City
- Stop operation of ornamental fountains or other decorative water features unless recirculated water is used

Water Shortage Level 3

A Drought Response Level 3 condition occurs when SDCWA notifies its member agencies that demand reduction of up to 30% is required in order to have sufficient supplies available to meet anticipated demands. All water users shall continue to comply with water conservation measures under Level 1 and Level 2 during a Drought Response Level 3 with the addition of the following mandatory conservation measures:

- Limit landscape irrigation to no more than two assigned days per week. This does not apply to commercial growers or nurseries.
- Water landscaped areas not irrigated by an irrigation system by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation on same schedule as landscape irrigation.
- Stop washing vehicles except at commercial carwashes that re-circulate water or by high pressure/low volume wash systems.
- Repair all leaks within 48 hours upon notification by the City

The City will suspend consideration of annexations to its service area when a Drought Response Level 3 condition is declared.

Water Shortage Level 4

A Drought Response Level 4 condition occurs when SDCWA declares a water shortage emergency and notifies its member agencies that a demand reduction of up to 40% is required for the City to have maximum water supplies available to meet anticipated demands. The City will declare a Level 4 in the manner and on the grounds provided in CWC Section 350. All water conservation measures under Levels 1, 2, and 3 shall continue to be adhered to with the addition of the following measure:

- Stop filling or re-filling ornamental lakes or ponds, except to the extent needed to sustain aquatic life of significant value, provided that such animals were actively managed within the water feature prior to declaration of a drought response level

Water Shortage Level 5

A Drought Response Level 5 condition occurs when SDCWA declares a water shortage emergency and notifies its member agencies that a demand reduction of up to 50% is required for the City to have maximum water supplies available to meet anticipated demands. The City will declare a Level 5 in the manner and on the grounds provided in CWC Section 350. All water conservation measures under Levels 1, 2, 3, and 4 shall continue to be adhered to with the addition of the following measures:

- Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries, with the exception of 1) maintenance of trees and shrubs watered consisted with methods and timing described in Water Shortage Level 3, 2) required for fire protection as specified by the Fire Marshal, 3) required for erosion control, 4) maintenance of rare plants or plants supporting rare animals, 5) maintenance of landscaping within active public parks, playing fields, day care centers, schools, cemeteries, and golf course greens provided that such irrigation does not exceed two days per week, 6) watering of livestock, and 7) public works projects and actively irrigated environmental mitigation projects.

- Repair all water leaks within 24 hours upon notification by the City

The City may establish a water allocation for properties within its service area. Additionally, with the declaration of a Drought Response Level 5 condition, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided, and no statement of immediate ability to serve or provide potable water service shall be issued, with exceptions for 1) a project with a valid unexpired building permit, 2) a project necessary to protect public health, safety, and welfare, and 3) applicants providing substantial evidence of an enforceable commitment that water demands will be offset prior to provision of new water meters.

Water Shortage Level 6

A Drought Response Level 6 condition occurs when SDCWA declares a water shortage emergency and notifies its member agencies that a demand reduction of more than 50% is required for the City to have maximum water supplies available to meet anticipated demands. The City will declare a Level 6 in the manner and on the grounds provided in CWC Section 350. All water conservation measures under Levels 1, 2, 3, 4, and 5 shall continue to be adhered to with the addition of the following measure:

- Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries, with the exception of maintenance required for fire protection as specified by the Fire Marshal, maintenance for erosion control, maintenance of rare plants or plants supporting rare animals, watering of livestock, and public works projects and actively irrigated environmental mitigation projects.

8.6 Demand Reduction Actions

As described above, the City implements mandatory water use restrictions with the Shortage Levels 2, 3, 4, 5 and 6. **Table 8-3** presents the City's demand reduction actions and indicates at which shortage level the action takes effect.

Table 8-3: Demand Reduction Actions

DWR Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap? (percentage)	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
1	Landscape - Limit landscape irrigation to specific times	6%	Irrigation must take place before 10 a.m. or after 6 p.m. Watering allowed when using drip/micro-irrigation system/equipment used.	No
1	Other - Require automatic shut of hoses	2%		No
1	CII - Other CII restriction or prohibition	0.1%	Limit landscape irrigation to specific times for nursery or commercial growers	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Leaks must be repaired within 5 days	No
1	Other	0.1%	Non-potable water must be used for construction purposed when available	No
2	Landscape - Limit landscape irrigation to specific days	8%	Limited to three assigned days per week. Does not apply to commercial growers or nurseries unless under order from governor or State. f	Yes
2	Landscape - Other landscape restriction or prohibition	5%	Limit irrigation using sprinklers to no more than 10 minutes per day. Does not apply to systems using water efficient devices.	Yes
2	Other - Require automatic shut off hoses	2%		Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%	Leaks must be repaired within 72 hours	Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	1%	With the exception of features that use re-circulated water	Yes
3	Landscape - Limit landscape irrigation to specific days	16%	Residential and commercial landscape irrigation limited to two assigned days per week.	Yes
3	Other - Require automatic shut off hoses	2%		Yes

DWR Table 8-2: Demand Reduction Actions				
Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap? (percentage)	Additional Explanation or Reference	Penalty, Charge, or Other Enforcement?
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	1%		Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Leaks must be repaired within 48 hours	Yes
4	Other water feature or swimming pool restriction	1%	Stop filling or re-filling ornamental lakes or ponds except to the extent needed to sustain aquatic life	Yes
5	Landscape – Prohibit all landscape irrigation	22%	With the exception of crops and landscape products of commercial growers and nurseries or other listed exceptions	Yes
5	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	5%	Leaks must be repaired within 24 hours	Yes
6	Landscape - Prohibit all landscape irrigation	25%	With the exception of crops and landscape products of commercial growers and nurseries or other listed exceptions	Yes
NOTES:				

8.7 Operational Change Measures and Other Actions

The City also provides operational change measures to reduce water use in the most restrictive stages. These methods are listed in **Table 8-4**.

Table 8-4: Operational Change Measures and Other Actions

DWR Table 8-3: Supply Augmentation and Other Actions			
Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap? (percentage)	Additional Explanation or Reference
1	Expand Public Information Campaign	2%	
3-6	Implement or Modify Drought Rate Structure or Surcharge	4%	
4-6	Moratorium or Net Zero Demand Increase on New Connections	4%	
6	Other	10%	Water allocations may be established
NOTES:			

8.8 Monitoring, Reporting, and Refinement of Procedures

CWC 10632(a)(9)

Under normal conditions, the City monitors water sales and deliveries on a monthly basis. It also continually monitors water levels at Weese WFP to gauge water supply and demand conditions. All of the City's water connections are metered with each individual meter read monthly. The City prepares monthly sales and delivery reports which are reviewed and compared to reports and statistics from prior months and the same period of the prior year. Under shortage conditions, the City will determine water savings made from implementing the stages of the WSCP by reviewing and comparing production reports. Each customer or customer group can be evaluated for compliance with conservation requirements.

The WSCP is an adaptive management plan that can be revised and refined to ensure its shortage response actions are effective and produce desired results. Results of monitoring and reporting efforts will be used to evaluate the effectiveness of shortage actions. If certain procedure refinements or new actions are identified by City staff, or suggested by customers or other interested parties, the City Council has the authority to quickly incorporate and implement such refinements to the WSCP, as needed.

8.9 Penalties and Charges

CWC 1063(a)(6)

The City of Oceanside does have provisions for penalties and charges for excessive use and mandatory prohibition violations. These are shown in **Table 8-5**.

Table 8-5: Penalties and Charges

Penalties or Charges	Stage When Penalty Takes Effect
Section 37.109 of the City Code provides that penalties for violation of the code sections related to water conservation are punishable as misdemeanor crimes under section 1.7 (a) (1) of the City Code with fines not to exceed $1,000 or imprisonment for a term not exceeding six months or both.	2
The City's Water Conservation Ordinance includes provisions that water service can also be discontinued or limited to any customer who uses excessive water in a drought.	2

8.10 Revenue and Expenditure Impacts of Water Shortage

CWC 10632(a)(7)

It is difficult to precisely gauge the revenue and expenditure impacts of implementation of the WSCP. The plan provides for prohibitions on outdoor water use and requests for indoor use reductions, enforced by misdemeanor penalties for violation. Ultimate impacts will be based upon a mix of responses to these requirements and overall public cooperation in saving water in additional ways. Revenue will be reduced through lower water sales. However, the City will see this compensated to some degree by lower water purchase, pumping and treatment charges.

During the most recent drought, the City has experienced revenue impacts. The following is the City's estimate for revenue loss due to conservation efforts, most significantly in CY 2015 as a result of the State's Emergency Conservation Regulation. These figures assume that percent reductions have a direct offset on all volumetric-based charges (i.e., water sales, SDCWA surcharges, clean water surcharge). Estimates are based on data that was available and should be used for judging order of magnitude only. It should also be noted that these estimates do not represent direct reductions to the City's net operating revenues, because there are offsetting reductions in expenditures that also occur with reduced consumption levels.

- FY 2014/15 – Approximately -9.4% consumption reduction from FY 2013/14 levels, which resulted in approximately $2 million in reduced revenues
- FY 2015/16 – Approximately -17.5% consumption reduction from FY 2014/15 levels, which will total -25% reduction in consumption (and associated revenue reduction) from FY 2013/14 levels

For planning purposes, it is assumed that City's consumption reduction targets are met for each WSCP stage. Revenue losses are proportional to the commodity rate revenue not received, less variable cost reductions for treated water purchases from the SDCWA. No additional costs are assumed for WSCP (code) enforcement because it is assumed that enforcement will be completed using existing staff. While most water savings are likely to accrue from reduced outdoor water use there will also be revenue losses from somewhat less sewage produced and treated. For purposes here, and since the City charges a commodity charge on estimated sewage flow and can control that charge, revenue losses are assumed to be offset by collection and treatment cost reductions.

8.11 Measures to Overcome Impacts

Impacts during Drought Response Levels 1 through 6 would likely be absorbed by City reserves without requiring a rate increase provided the shortage condition did not persist for more than a year. Impacts beyond a year or impacts from a greater level of shortage would need to be individually assessed. Measures to reduce expenses would be considered during a shortage such as reduction in capital expenditures, deferring non-critical maintenance items and deferring filling of personnel vacancies. Should revenue loss impacts begin to affect essential water system operations, the City has established a drought rate structure to offset loss of revenue.

As a conservation measure, the City has established a Drought Rate Structure, per Ordinance No. 09-OR0336-1, to be implemented to achieve the water reduction targets established in the City's Drought Ordinance in the event of mandatory water reductions. These drought rates were updated to reflect the WSCP and the six state-mandated water shortage levels. The following tables (**Table 8-6, Table 8-7,** and **Table 8-8**) show the rate increases to be implemented during each water shortage level, following passage of the updated drought ordinance.

Because the City's accounts are fully metered, accounting for actual consumption can be monitored. Water production records will be examined monthly and compared against historical average monthly consumption data for that period. These data will be analyzed to assess any need for alterations to the WSCP.

Table 8-6: Water Shortage Level 3 Rates - Up to 30% Mandatory Reduction

Ordinance Level 3 Drought Alert Rates: up to 30% Mandatory Reduction			
Service Fee Surcharge (per account): 10% higher than the current monthly rate (per meter equivalent)			
Commodity Charge: 1 unit = 748 gallons	Range	Reduction up to 10% - Increase Over Current Rate	Reduction up to 20% - Increase Over Current Rate
Single Family			
First Tier	0-13 units	0%	0%
Second Tier	14-20 units	25%	60%
Third Tier	21+ units	45%	100%
Multi Family			
First Tier	0-7 units	0%	0%
Second Tier	8-14 units	20%	55%
Third Tier	15+ units	40%	109%
Irrigation	per unit	20%	40%
Non-Residential/ Commercial Agricultural	per unit	15%	25%

Table 8-7: Water Shortage Level 4 Rates - Up to 40% Mandatory Reduction

Ordinance Level 4 Drought Alert Rates: up to 40% Mandatory Reduction		
Service Fee Surcharge (per account): 25% higher than the current monthly rate (per meter equivalent)		
Commodity Charge: 1 unit = 748 gallons	**Range** 1 unit = 748 gallons	**Increase over Current Rate**
Single Family		
First Tier	0-11 units	0%
Second Tier	12-18 units	70%
Third Tier	19+ units	120%
Multi Family		
First Tier	0-7 units	0%
Second Tier	8-12 units	65%
Third Tier	13+ units	115%
Irrigation	per unit	60%
Non-Residential/ Commercial Agricultural	per unit	40%

Table 8-8: Water Shortage Levels 5 and 6 Rates - Above 40% Mandatory Reduction

Ordinance Level 5 and 6 Drought Alert Rates: Above 40% Mandatory Reduction		
Service Fee Surcharge (per account): 30% higher than the current monthly rate (per meter equivalent)		
Commodity Charge: 1 unit = 748 gallons	Range	Increase over Current Rate
Single Family		
First Tier	0-5 units	0%
Second Tier	6-10 units	80%
Third Tier	11+ units	150%
Multi Family		
First Tier	0-4 units	0%
Second Tier	5-8 units	75%
Third Tier	9+ units	145%
Irrigation	per unit	80%
Non-Residential/ Commercial Agricultural	per unit	50%

8.12 Catastrophic Supply Interruption

CWC 10632(a)(3)

To prepare for a potential catastrophic water supply interruption, the City has been diversifying its local water supply sources. As described in *Section 6 System Supplies*, the City is pursuing expansion of groundwater use, implementation of potable reuse, and exploring the potential for future seawater desalination opportunities. Development of local supplies helps to reduce risk of supply interruption from larger, more extensive imported water systems (whose supplies could be affected by events distant from the City, and whose size presents additional opportunities for an interruption event), while regional efforts to diversify supplies, such as the Carlsbad Desalination Plant, provide additional sources of supply. In addition, the City has multiple interties with neighboring agencies (see *Section 6 System Supplies*), and has developed additional relationships with its neighbors through the North San Diego Water Reuse Coalition.

The City's Emergency Plan identifies the Construction and Engineering Branch of the Utilities Department as responsible for the restoration of water and wastewater facilities. In the event of a water emergency, this branch is responsible for surveying and restoring disrupted systems, developing a damage assessment, and assisting other branches with construction or engineering needs.

8.13 Seismic Risk Assessment and Mitigation Plan

CWC 10632.5.(a)

Urban water suppliers are required to include within their WSCP a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities. An urban water supply may comply with this requirement by submitting a copy of the most recently adopted multihazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the multihazard mitigation plan addresses seismic risk.

Appendix H includes a copy of the *Multi-jurisdictional Hazard Mitigation Plan for the City of Oceanside, California* (MHM Plan). The MHM Plan was prepared with input from the City and under the federal Disaster Mitigation Act of 2000. Seismic risk is considered and addressed throughout the plan. The MHM Plan identified seismic risks including earthquakes and tsunamis due to the City's history of earthquakes and proximity to both local faults and the Pacific Ocean. The City's hazard mitigation goals include adopting building, engineering, and fire codes and zoning ordinances that promote disaster-resistant development, and reducing possibility of damage to critical facilities or infrastructure due to earthquakes and tsunamis (including retrofitting reservoirs to seismic standards).

8.14 Communication Protocol for Current or Predicted Shortage

A current or predicted shortage, as determined by the Annual Assessment, will be communicated to the public upon submittal of the Annual Assessment Report in June of any given year. Communications by Water Shortage Level are outlined by the City's drought ordinances, and will be carried over to any future ordinance updates. These communications are described in the following subsections. The City also reports which shortage level is in effect when it submits its monthly water use data to the SWRCB. In addition to the formal noticing to the public the City will do at the varying Water Shortage Levels, as noted in **Table 8-4** above, the City will expand its public information campaign starting in Water Shortage Level 1, which will also serve as a means of communicating Water Shortage Levels and required actions. This information campaign may include bill inserts, public service announcements, or other outreach efforts.

8.14.1 Water Shortage Level 1

The existence of a Water Shortage Level 1 condition may be declared by the Water Utilities Director upon a written determination of the existence of the facts and circumstances supporting the determination. A copy of the written determination shall be filed with the Oceanside City Clerk and provided to the Oceanside City Council. The Water Utilities Director may publish a notice of the determination of existence of Water Shortage Level 1 condition in one or more newspapers, including a newspaper of general circulation within the City of Oceanside. The City may also post notice of the condition on its website.

8.14.2 Water Shortage Level 2, Level 3, Level 4, or Level 5

The existence of Water Shortage Level 2, Level 3, Level 4, or Level 5 conditions may be declared by resolution of the Oceanside City Council adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation measures applicable to Shortage Levels 2, 3, or 4 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, the City shall publish a copy of the resolution in a newspaper used for publication of official notices.

8.14.3 Water Shortage Level 6

The existence of a Water Shortage Level 6 condition may be declared in accordance with the procedures specified in California Water Code sections 351 and 352. The mandatory conservation measures applicable to Water Shortage Level 6 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, the City shall publish a copy of the resolution in a newspaper used for publication of official notices.

The Oceanside City Council may declare an end to a Water Shortage Level by the adoption of a resolution at any regular or special meeting held in accordance with State law.

8.15 Communication Protocol for Triggered or Anticipated to Be Triggered Shortage Response Action

The public will be notified about triggered or anticipated to be triggered shortage response actions. The implementation of shortage response actions associated with any water shortage level will take effect on the tenth (10th) day after the date the shortage response action is declared. Within five (5) days following the declaration of the shortage response action, the Water Utilities Director will publish a notice giving the extent, terms, and conditions around the use and consumption of water a minimum of one time for three (3) consecutive days in the City of Oceanside's official newspaper.

8.16 Catastrophic Communications

In the event of a catastrophic supply interruption that requires water use to be quickly prioritized for or limited to essential public health and safety needs, the City will immediately deploy appropriate strategies from Water Shortage Levels 1 through 6. In addition, outreach messaging will reflect emergency conditions and the need to focus on health and public safety. The City may also consider potential joint news release/new events with public health officials or incident commanders to announce conditions and explain needed action. Finally, the City will ensure ongoing coordination with emergency response services with daily advisories or alerts as needed.

SECTION 9. DEMAND MANAGEMENT MEASURES

CWC 10631(f) (1)(A); CWC 10631(f)(A); CWC 10631(f)(B)(i) through CWC 10631(f)(B)(vii); CWC 526(a); CWC 257(b)

This section describes the demand management measures (DMM) undertaken by the City and quantifies DMM efforts from 2016 through 2020.

9.1 Demand Management Measures

The following sections describe the DMMs that have been implemented by the City of Oceanside over the past 5 years, along with planned implementation to achieve future water use targets.

9.1.1 Water Waste Prevention Ordinances

The City has three ordinances in place to give the City the authority to prohibit water waste and encourage water use efficiency within the service area. Each ordinance is updated as-needed to stay current with State regulations. The three ordinances are listed and described in further detail below.

- Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)
- Water Efficient Landscaping (Ordinance No. 10-OR0412-1)
- Recycled Water (Ordinance No. 14-OR0565-1)

Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)

The City's "Drought Ordinance" was amended in 2015 to incorporate Governor Brown's 2014 state of emergency proclamation for drought and the 2015 Executive Order for 25% reduction of water use statewide. This ordinance clarified the four drought response levels and described the water use restrictions and required reductions for each stage. In 2021, the City updated and adopted its Water Conservation Program and Drought Response Conservation Measures ordinance to incorporate the six required levels of water shortage under the Water Shortage Contingency Plan (see *Section 8 Water Shortage Contingency Planning*). A copy of the adopted 2015 ordinance and 2021 ordinance is included in **Appendix E**.

Water Efficient Landscaping (Ordinance No. 10-OR0412-1)

To ensure compliance with the State's Water Conservation in Landscaping Act, this ordinance was implemented to include 2006 development landscape design requirements and is written to be as effective as the State's Model Water Efficient Landscape Ordinance. This ordinance was updated on July 15, 2015, and included in **Appendix F**.

Recycled Water (Ordinance No. 14-OR0565-1)

The ordinance establishes the authority for the City to enforce connection to and use of recycled water where applicable. A copy of the ordinance is included in **Appendix G.**

Planned Implementation to Achieve Water Use Targets

The City will maintain and expand its water waste prevention ordinances as needed to meet demand management goals established in this 2020 Plan.

9.1.2 Metering

Per California Water Code §527, the City is required to install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025. All water service connections are metered and billed according to water consumed. The City has an active water meter replacement program in place to continually change out older meters based on staff availability each month. In addition, to comply with future water use objectives, the City will need to ensure that all meters are accurately classified.

Planned Implementation to Achieve Water Use Targets

With City Council approval in August 2020, the City is preparing to implement an advanced metering infrastructure (AMI) program. AMI, in concert with a web-based interface software (WaterSmart), will provide real-time consumption data to facilitate early identification of water loss, allow customers to track daily water use, and provide a mechanism for ongoing outreach and communication between the City and its customers. It will also allow the City to notify customers of overwatering throughout the month rather than only once month.

The City's AMI program is anticipated to be fully implemented for customers citywide by March 2024.

9.1.3 Conservation Pricing

The City has and will continue to utilize a combination of uniform and increasing block or tiered rate conservation rate structures. Residential customers comprised of single family, master-metered residential, and multifamily customer classes are billed in increasing block structures where the water rate increases with additional water units consumed. **Table 9-1** shows the proposed residential customer billing rates for 2020. Commercial, agricultural, and irrigation customer classes are billed using uniform rate structures where a flat rate is billed for every unit consumed. **Table 9-2** shows the proposed billing rates for commercial customers.

Table 9-1: Residential Customer Billing Rates

Tier	Block Structure	Cost per Unit
Single Family and Master – Metered (per dwelling unit)		
Tier 1	0 – 13 units	$2.57/unit
Tier 2	14 units and above	$3.46/unit
Multi-Family (per dwelling unit)		
Tier 1	0 – 7 units	$2.61/unit
Tier 2	8 units and above	$3.07/unit

Table 9-2: Commercial Customer Billing Rates

Tier	Cost per Unit
Commercial Ag rate	$2.79/unit
Special Ag Rate	$1.83/unit
Irrigation rate	$2.82/unit
Commercial rate	$2.69/unit

Planned Implementation to Achieve Water Use Targets

The City will maintain and expand its conservation pricing as needed to meet demand management goals established in this 2020 Plan.

9.1.4 Public Education and Outreach

The City engages in a variety of public education and outreach efforts to improve water use management, education, and efficiency. These programs are described here.

Outreach Activities

The City provides water conservation messaging to customers through their dedicated water conservation website www.SaveWaterOceanside.com which contains water conservation tips, rebate program information, water saving videos, and important links to other water conservation websites and regional partners. Water conservation messaging is also distributed via public events and social media.

The City staffs a "Green Oceanside" booth dedicated to promoting water conservation at several events throughout the year. Displayed are brochure handouts containing indoor and outdoor water saving information and conservation tools as free giveaways. Giveaway items include California-friendly landscaping guides, pressure gauges, home water audit kits, reusable water bottles and student workbooks.

In order to reach a wide range of audiences, the City has brochures and handouts available at various community centers and City offices. Bill inserts are included with utility bills to announce available programs and important water conservation reminders. The City has consistently reached out to customers using various methods, including through the WaterSmart customer portal, every quarter within the last five years. In coordination with SDCWA, the City promotes opportunities for residents to participate in regional programs such as Green Oceanside Business Network certification, California-Friendly landscape contest, Speaker Bureaus, and Citizens Water Academy.

The City and other agencies in the region host the WaterSmart Landscape Contest, an annual contest for residents in San Diego County. The contest recognizes residents who have swapped their grass for drought-tolerant landscaping and brings awareness to the benefits of sustainable landscaping.

Residential outreach includes, but is not limited to, leak identification services, possible rebates, and the annual Mayor's Challenge for Water Conservation. Additional outreach focuses on top CII water customers from each category, such as hotels, restaurants, stores, and schools.

Giveaways

At past community events and City-led workshops, the City had provided giveaways for high-efficiency faucet aerators, showerheads, soil moisture sensors, irrigation equipment, and spray to drip irrigation conversion kits.

Workshops

The City, often in coordination with SDCWA, provides landscape workshops and classes for residential customers and professional contractors. Workshop topics provided in the past include California Friendly Landscape Training and Fix-a-Leak. Workshops are offered for free and held at different locations throughout the City, with at least two workshops held in a City of Oceanside facility. Virtual Water Wise Landscape Workshops were hosted online from June through August

2020. Workshop topics included landscape installation and maintenance, irrigation, landscape design, and plant selection. Recordings and workshop materials are made available on the City's conservation website.

Workshop marketing includes strategically placed poster notices at various public locations such as libraries, community centers, and garden centers, and through email blasts and monthly bill inserts, on social media, presentations at HOA groups, and in coordination with local stakeholders (MainStreet Oceanside, Chamber, etc.).

School Education

The City offers two school education programs for local schools as well as educational materials to teachers upon request through SDCWA. The Splash Lab offers assembly presentations available to grades K-6 to educate students on water science. For Grades 4-6, students can participate in a mobile water lab for a hands-on experience learning water-related topics. The City also provides virtual school assemblies, educational video series, Green Oceanside Presentations, and the Water Use Lesson Plan.

The City holds a poster contest for 4th graders to compete for inclusion in the North San Diego County's regional water conservation calendar. The top posters are incorporated into the calendar that includes conservation tips and reminders. The poster is provided as a giveaway item to customers.

City staff plan to expand school outreach in FY 2022 with the development of several new programs. The City will increase outreach to the youth sector building partnerships with the YMCA, Boys and Girls Club, Boy Scouts, and Girl Scouts. Water refill stations have been installed at all public high schools and middle schools, with the goal of building awareness around tap water quality. The City is also developing lesson plans on water use, activities in connection with the Mayor's Challenge for Water Conservation, and educational videos for teacher use.

Residential Customer Rebates

In combination with the SoCal WaterSmart Program managed by MWD, rebates are available to upgrade water fixtures to be more water efficient. **Table 9-3** provides a list of all rebates available and associated rebate amounts for residential customers.

Rebates for clothes washers and premium high efficiency (HE) toilets continue to be popular programs gathering participation of 182 fixtures replaced in FY 2020. In addition, in FY 2020 the program provided rebates for a total of 379 outdoor water fixtures such as rain barrels, rotating sprinkler nozzles, and weather-based irrigation controllers, and removed approximately 73,500 square feet (sq. ft.) of turf.

Commercial Customer Rebates

The City, in combination with SoCal WaterSmart Program managed by MWD, provides rebates geared towards commercial customers to promote water efficiency. **Table 9-4** displays the rebates available grouped into market sectors with associated amounts available per rebate for commercial customers. The rebates most applied for by commercial customers in the last five years include premium HE toilets (209 in FY 2020) and weather-based irrigation controllers (22 in FY 2020).

Table 9-3: Residential Water Conservation Rebate

Rebate Program Name	Rebate Amount
Indoor Fixtures	
Clothes washer rebate	$85
Premium HE toilets	$40
Outdoor Fixtures	
Irrigation controllers	$35
Irrigation nozzles	$2/nozzle (minimum of 30)
Rain barrels	$35
Cisterns (50-199 gallons)	$35
Cisterns (200-500 gallons)	$250
Cisterns (501-999 gallons)	$300
Cisterns (1000+ gallons)	$350
Soil moisture sensors	$35/controller station
Turf removal rebate	$2/sqft up to $5,000

Table 9-4: Commercial Water Conservation Rebates

Rebate Name	Rebate Amount
Indoor Fixtures	
Premium HE toilet	$40
ULF Urinal	$200
Zero Water urinal	$200
Flow valve restrictions	$5/valve (minimum of 10)
Outdoor Fixtures	
Turf removal	$2/sqft up to $5,000
Irrigation controllers	$35/controller station
Irrigation nozzles	$2/nozzle (minimum of 30)
Large rotary nozzles	$13/set (minimum of 8)
Flow regulators	$1/regulator (minimum of 25)
Soil moisture sensors	$35/station
Restaurant Fixtures	
Connectionless food steamers	$485
Air-cooled ice machines	$1,000
Commercial Industrial	
Cooling tower conductivity controllers	$625
Cooling tower pH controllers	$1,750
Dry vacuum pump	$125/0.5 HP
Laminar flow restrictors	$10/restrictor (minimum of 10)

Water Smart Check-up Program

The City, in coordination with SDCWA, continues to offer the WaterSmart Checkup program to residential and CII customers. The program coordinates a property visit with a WaterSmart representative to provide water-saving recommendations and perform a water audit. The water audit includes an inventory of indoor and outdoor water fixtures, an evaluation of water use inefficiencies, and an adjustment of irrigation schedules where appropriate. A summary report with additional conservation advertising is left with the customer at the end of the appointment.

Planned Implementation to Achieve Water Use Targets

The City will continue to support numerous public outreach, education, and rebate programs to support demand management. The City's WCMP Update identifies the following suite of activities in the City's "toolbox" of conservation programs to be implemented to achieve water use targets:

1. Advanced Metering Infrastructure (AMI)
2. System Water Loss
3. Public Information
4. Public and School Education
5. CII Rebate Programs
6. CII Water Surveys
7. CII Self Surveys
8. CII Enhanced Outreach
9. Landscape Rebate Programs
10. Large Landscape Outdoor Water Audits
11. Large Landscape Water Budgeting/Monitoring
12. Landscape Workshops and Trainings
13. Agricultural Program
14. Recycled Water Retrofits
15. Residential Rebate Programs
16. Residential Water Surveys
17. Residential Enhanced Outreach
18. Residential Device Giveaways

9.1.5 Programs to Assess and Manage Distribution System Real Loss

Real water losses are physical water losses from the pressurized distribution system and a utility's storage tanks up to the point of customer consumption (e.g., the water meter). After Senate Bill (SB) 555 was passed in 2015, urban water suppliers have been required to submit an annual water loss audit to DWR. This audit attempts to quantify all inputs and outputs of a supplier's potable distribution system along with many other factors related to quantifying water losses. SB 555 also directed the SWRCB to develop performance standards for volumetric water loss by July 2020. As of November 2020, the SWRCB has not completed final rulemaking about performance standards but has proposed to use an MS Excel-based economic model to calculate a unique volumetric standard for each water supplier. The standard is proposed to be quantified in units of real losses per service connection per day (gallons per connection per day).

The City has completed three years of validated Water Loss Audit reports and has determined that water losses are within the acceptable industry standard range. The City is proactive in reducing unaccounted-for water by ensuring water meters are regularly maintained, evaluated for functionality, and replaced at industry standards. Reported leaks are investigated and recorded in a tracking database that collects the time of report, leak location, and type of leaking pipe or fitting. Leaks are repaired to the extent that is cost-effective and prioritized based on potential water loss. The City will continue to survey and correct its own infrastructure system and processes to reduce system real loss.

The City maintains an excel spreadsheet to track water production and sales. WaterSmart leak alerts provide notification of leaks to help reduce losses. As stated in *Section 9.1.2 Metering* (above) the City also maintains a schedule for meter replacement to ensure more accurate meter reads. In addition, an AMI program is being implemented to help facilitate early identification of water loss.

Planned Implementation to Achieve Water Use Targets

The City will continue to survey and correct its own infrastructure system and processes to reduce system real loss.

9.1.6 Water Conservation Program Coordination and Staffing Support

Water conservation staffing is performed by a full-time Environmental Specialist and supervised by the Senior Management Analyst appointed as the Water Conservation Coordinator. The City's current conservation coordinator is Ms. Sarah Davis, (760) 435-5830, SDavis@oceansideca.org. The City will maintain its Water Conservation Coordinator to serve as a program manager and point of contact for demand management activities.

Planned Implementation to Achieve Water Use Targets

The City maintains both a Water Conservation Coordinator and Program Manager as a point of contact for demand management activities.

9.1.7 Other Demand Management Measures

Additional demand management activities provided by the City that do not belong to the DMM categories listed above are described below.

Large Landscape Water Budgeting/Monitoring

The WaterSmart online customer portal provides feedback to customers on water use and strategies for monitoring use-efficiency.

Incentive for Recycled Water Conversions

The City offers reduced rates for recycled water users throughout its service area. The City has priced recycled water at rates that incentivize customers to convert approved uses from potable water to recycled water. The City is expanding its current non-potable recycled water system in phases, while at the same time implementing the new Pure Water Oceanside Program. Pure Water will serve to augment the Mission Basin groundwater supply to replenish local source water for the City's potable water system. In addition, it will be blended with non-potable recycled water to provide high-quality recycled water to meet the irrigation needs of agricultural and other customers in the City's Upper Conveyance System, at reduced rates as compared to potable water, saving customers money. The

City's Lower Conveyance System, fed primarily by non-potable recycled water, is priced to provide customers even greater savings over potable water.

Require Plan Review for New CII

The City's Building Department reviews all plans per Green Building Code Requirements. As part of the recycled water system expansion described above, the City has hired a consultant tasked with facilitating the recycled water conversions for the large-use customers targeted in the expansion of the system. This consultant is providing site evaluations and planning reports to these customers, which will outline the process for the private conversion, estimated costs, and support through the process.

Planned Implementation to Achieve Water Use Targets

The City will continue to offer the WaterSmart online customer portal, incentives for recycled water conversions, new CII plan reviews.

9.2 Water Use Objectives

SB 606 and AB 1668 lay out a new long-term water conservation framework for California. This new framework is far-reaching for both the urban and agricultural sectors of California and represents a major shift in focus. The legislation expands authority to implement a water budget-based approach to conservation and water use efficiency. New urban water use efficiency standards are anticipated to be adopted by the SWRCB, in coordination with DWR, in 2023. The first report will require information on what water conservation measures suppliers will implement to meet their stated objectives. Urban water suppliers are encouraged to consider aligning conservation management actions and the changing urban use patterns in order to consider these future obligations. With the completion of SB X7-7 requirements in 2020, the water use objectives will serve as the statewide water use targets for Oceanside moving forward.

SECTION 10: PLAN ADOPTION, SUBMITTAL, AND IMPLEMENTATION

CWC 10608.26(a); CWC 10621(b) through (c); CWC 10635(b); CWC 10642; Government Code 6066; CWC 10644(a)(1); CWC 10645

This section of the UWMP addresses the steps the City of Oceanside has taken to adopt this UWPM and submit it to DWR, along with the steps that will be taken should it prove necessary to amend this UWMP.

10.1 2020 Water Use Data

In order to demonstrate compliance with SBx7-7, this 2020 Plan contains water for use and planning data for the entire calendar year of 2020. Data from 2020 is documented whenever it appears throughout the plan.

10.2 Plan Noticing and Adoption

A 60-day notice of release of this 2020 Plan and the public hearing was sent to San Diego County and adjacent cities and other entities on March 8, 2021. The notification list is included in **Appendix I** and summarized in **Table 10-1**.

Table 10-1: Retail: Notification to Cities and Counties

DWR Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
City of Carlsbad City of Escondido	☑	☑
County Name	60 Day Notice	Notice of Public Hearing
San Diego County	☑	☑

The UWMP was made available for review and written comment from April 30, 2021 to May 30, 2021 on the City's website at http://www.ci.oceanside.ca.us/gov/water/admin/uwmp.asp. A Notice of Public Hearing was published in the San Diego Union Tribune on May 9, 2021 and May 16, 2021 to notify interested parties that the UWMP was available and the date/time of the public hearing.

A public hearing was held on June 16, 2021 via a web-based video conferencing platform to present, receive comments, and solicit feedback on this 2020 UWMP. The public hearing was open to the public and all interested parties were welcome to attend. No written comments were received on the 2020 UWMP, and no comments were heard at the public hearing or committee meetings that necessitated a revision to the 2020 UWMP. Following the public hearing, the City Council adopted the 2020 UWMP on June 16, 2021 by Resolution No. 21-R0469-1, as included in **Appendix J**.

10.3 Plan Submittal

Within 30 days of adoption, the City submitted copies to DWR, SDCWA, California State Library, and County of San Diego, in addition to placing the adopted 2020 UWMP on the City's website at http://www.ci.oceanside.ca.us/gov/water/admin/uwmp.asp. The submittal to DWR was electronic, completed through the WUEdata online submittal tool.

The City shall implement the adopted UWMP in accordance with the schedule described herein and as capital funding is available.

10.4 Plan Amendment

If an amendment to this UWMP is necessary due to changing water supply conditions within the City and/or comments from DWR, the City Council will recirculate all required public notices and host a public hearing to consider public comments prior to approval of the amendment.

10.5 WSCP Adoption, Submittal and Availability

The final WSCP was included in the adoption of the 2020 UWMP, as described in the previous sections.

However, because the WSCP is a stand-alone document, it can be amended, as needed, without amending outside of a UWMP update cycle. The processes for approving WSCP amendments and conducting required public hearings are similar to those required for UWMP adoption. The City released a 60-day notice of a public adoption hearing for the amended WSCP concurrent with the notification for the 2020 UWMP. The list of entities notified are provided in **Appendix I**. The public hearing to receive public comments on the amended WSCP was held immediately prior to the adoption of the amended WSCP by the Board of Directors. The amended WSCP was made available for the public on the City's website within 30 days of the adoption date.

SECTION 11: REFERENCES

California Department of Finance (DOF). 2015. *E-8 Historical Population and Housing Estimates for Cities, Counties, and the State.*

California Department of Finance (DOF). 2020. *E-8 Historical Population and Housing Estimates for Cities, Counties, and the State.*

California Department of Water Resources (DWR). 2021. *2021 UWMP Guidebook for Urban Water Suppliers*. March.

California Regional Water Quality Control Board San Diego Region (RWQCB). 2018. *Master Recycling Permit for the United State Marine Corps Base Camp Pendleton, Southern Regional Tertiary Treatment Plant, San Diego County (Order No. R9-2018-0023)*. May.

City of Oceanside. 2015a. *2015 Integrated Master Plans. Water Master Plan*. June.

City of Oceanside. 2015b. *2015 Integrated Master Plans. Recycled Water Facilities Plan.* December.

City of Oceanside. 2015c. *2015 Integrated Master Plans. Sewer Master Plan*. June.

City of Oceanside. 2021. *2020 Water Conservation Master Plan Update*. April.

City of Oceanside. 2018. *Upper and Lower San Luis Rey Water Reclamation Facility Recycled Water Conveyance System Planning Study*. May.

City of Oceanside. 2019. *Climate Action Plan*. April.

City of Oceanside. *Mission Basin IPR Feasibility Study.*

City of Oceanside. 2010. *2010 Seawater Desalination Pilot Facility and Feasibility Study*. October.

City of Oceanside. 2002. *Oceanside General Plan.*

County of San Diego. 2017. *Multi-Jurisdictional Hazard Mitigation Plan, San Diego County, California.* October.

Fallbrook Public Utility District. 2020. *Facilities Master Plan*. February.

National Oceanic and Atmospheric Administration (NOAA). 2015. *National Climatic Data Center – Custom Monthly Normals, City: US060019 (Oceanside, CA US)*. Accessed 28 March 2016.

National Oceanic and Atmospheric Administration (NOAA). 2020a. *NOWData – Monthly Total Precipitation for Oceanside Marina, CA*. Accessed 6 November 2020.

National Oceanic and Atmospheric Administration (NOAA). 2020b. *NOWData – Monthly Mean Average Temprarture for Oceanside Marina, CA*. Accessed 6 November 2020.

North San Diego Water Reuse Coalition ((NSDWRC). 2020. *Regional Recycled Water Program: 2020 Project Feasibility Study.*

North San Diego Water Reuse Coalition (NSDWRC). 2015. *Regional Recycled Water Project Environmental Impact Report*. September.

San Diego Association of Governments (SANDAG). 2020. *Series 14 2050 Regional Growth Forecast – City of Oceanside.*

San Diego Association of Governments (SANDAG). 2015. *Series 13 2050 Regional Growth Forecast – City of Oceanside.*

San Diego County Water Authority (SDCWA). 2021. *2020 Urban Water Management Plan – Public Draft.* February.

San Diego Regional Water Management Group (RWMG). 2019. *San Diego 2019 Integrated Regional Water Management Plan.* June.

U.S. Census American Community Survey (ACS). 2018. *2014-2018 American Community Survey 5-Year Estimates, City of Oceanside.*

U.S. Census. 2020. *QuickFacts: Oceanside, City of.*

Welch, Michael R. 1996. *Supplemental Groundwater Pumping Analysis, Expansion of Oceanside Mission Basin Brackish Groundwater Desalting Facility to a Potable Water Production Capacity of 6.37 MGD.* February.

Appendix A - DWR Checklist

Page intentionally left blank.

UWMP Checklist

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 1	10615	A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities.	Introduction and Overview	Executive Summary
x	x	Chapter 1	10630.5	Each plan shall include a simple description of the supplier's plan including water availability, future requirements, a strategy for meeting needs, and other pertinent information. Additionally, a supplier may also choose to include a simple description at the beginning of each chapter.	Summary	Executive Summary
x	x	Section 2.2	10620(b)	Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.	Plan Preparation	Section 2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 2.6	10620(d)(2)	Coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.	Plan Preparation	Section 2.1
x	x	Section 2.6.2	10642	Provide supporting documentation that the water supplier has encouraged active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan and contingency plan.	Plan Preparation	Section 2.1 and 2.2
x		Section 2.6, Section 6.1	10631(h)	Retail suppliers will include documentation that they have provided their wholesale supplier(s) - if any - with water use projections from that source.	System Supplies	Section 2.1

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
	x	Section 2.6	10631(h)	Wholesale suppliers will include documentation that they have provided their urban water suppliers with identification and quantification of the existing and planned sources of water available from the wholesale to the urban supplier during various water year types.	System Supplies	N/A
x	x	Section 3.1	10631(a)	Describe the water supplier service area.	System Description	Section 3.1
x	x	Section 3.3	10631(a)	Describe the climate of the service area of the supplier.	System Description	Section 3.1.2
x	x	Section 3.4	10631(a)	Provide population projections for 2025, 2030, 2035, 2040 and optionally 2045.	System Description	Section 3.2
x	x	Section 3.4.2	10631(a)	Describe other social, economic, and demographic factors affecting the supplier's water management planning.	System Description	Section 3.2
x	x	Sections 3.4 and 5.4	10631(a)	Indicate the current population of the service area.	System Description and Baselines and Targets	Section 3.2 (Table 3-4)
x	x	Section 3.5	10631(a)	Describe the land uses within the service area.	System Description	Section 3.1.3

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 4.2	10631(d)(1)	Quantify past, current, and projected water use, identifying the uses among water use sectors.	System Water Use	Section 4.2
x	x	Section 4.2.4	10631(d)(3)(C)	Retail suppliers shall provide data to show the distribution loss standards were met.	System Water Use	Section 4.2.2
x	x	Section 4.2.6	10631(d)(4)(A)	In projected water use, include estimates of water savings from adopted codes, plans, and other policies or laws.	System Water Use	Section 4.2.4
x	x	Section 4.2.6	10631(d)(4)(B)	Provide citations of codes, standards, ordinances, or plans used to make water use projections.	System Water Use	Section 4.2.4
x	optional	Section 4.3.2.4	10631(d)(3)(A)	Report the distribution system water loss for each of the 5 years preceding the plan update.	System Water Use	Section 4.2.2
x	optional	Section 4.4	10631.1(a)	Include projected water use needed for lower income housing projected in the service area of the supplier.	System Water Use	Section 4.2.3
x	x	Section 4.5	10635(b)	Demands under climate change considerations must be included as part of the drought risk assessment.	System Water Use	Section 3.3, Section 4.4

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Chapter 5	10608.20(e)	Retail suppliers shall provide baseline daily per capita water use, urban water use target, interim urban water use target, and compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.	Baselines and Targets	Sections 5.1 and 5.2; Table 5-2 and Table 5-2
x		Chapter 5	10608.24(a)	Retail suppliers shall meet their water use target by December 31, 2020.	Baselines and Targets	Section 5.3; Table 5-4
	x	Section 5.1	10608.36	Wholesale suppliers shall include an assessment of present and proposed future measures, programs, and policies to help their retail water suppliers achieve targeted water use reductions.	Baselines and Targets	N/A
x		Section 5.2	10608.24(d)(2)	If the retail supplier adjusts its compliance GPCD using weather normalization, economic adjustment, or extraordinary events, it shall provide the basis for, and data supporting the adjustment.	Baselines and Targets	N/A (no adjustments)

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 5.5	10608.22	Retail suppliers' per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use of the 5-year baseline. This does not apply if the suppliers base GPCD is at or below 100.	Baselines and Targets	Section 5.1.4
x		Section 5.5 and Appendix E	10608.4	Retail suppliers shall report on their compliance in meeting their water use targets. The data shall be reported using a standardized form in the SBX7-7 2020 Compliance Form.	Baselines and Targets	Section 5.3; Appendix B
x	x	Sections 6.1 and 6.2	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought.	System Supplies	Section 7
x	x	Sections 6.1	10631(b)(1)	Provide a discussion of anticipated supply availability under a normal, single dry year, and a drought lasting five years, as well as more frequent and severe periods of drought, *including changes in supply due to climate change.*	System Supplies	Section 6.10; Section 7

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.1	10631(b)(2)	When multiple sources of water supply are identified, describe the management of each supply in relationship to other identified supplies.	System Supplies	Section 6
x	x	Section 6.1.1	10631(b)(3)	Describe measures taken to acquire and develop planned sources of water.	System Supplies	Section 6.8.2 and Section 6.9
x	x	Section 6.2.8	10631(b)	Identify and quantify the existing and planned sources of water available for 2020, 2025, 2030, 2035, 2040 and optionally 2045.	System Supplies	Section 6.1 and Section 6.8; Table 6-3, Table 6-4, and Table 6-9
x	x	Section 6.2	10631(b)	Indicate whether groundwater is an existing or planned source of water available to the supplier.	System Supplies	Section 6.3
x	x	Section 6.2.2	10631(b)(4)(A)	Indicate whether a groundwater sustainability plan or groundwater management plan has been adopted by the water supplier or if there is any other specific authorization for groundwater management. Include a copy of the plan or authorization.	System Supplies	Section 6.3.1
x	x	Section 6.2.2	10631(b)(4)(B)	Describe the groundwater basin.	System Supplies	Section 6.3.1

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.2.2	10631(b)(4)(B)	Indicate if the basin has been adjudicated and include a copy of the court order or decree and a description of the amount of water the supplier has the legal right to pump.	System Supplies	N/A
x	x	Section 6.2.2.1	10631(b)(4)(B)	For unadjudicated basins, indicate whether or not the department has identified the basin as a high or medium priority. Describe efforts by the supplier to coordinate with sustainability or groundwater agencies to achieve sustainable groundwater conditions.	System Supplies	Section 6.3.1
x	x	Section 6.2.2.4	10631(b)(4)(C)	Provide a detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years	System Supplies	Section 6.3.2; Table 6-5
x	x	Section 6.2.2	10631(b)(4)(D)	Provide a detailed description and analysis of the amount and location of groundwater that is projected to be pumped.	System Supplies	N/A
x	x	Section 6.2.7	10631(c)	Describe the opportunities for exchanges or transfers of water on a short-term or long- term basis.	System Supplies	Section 6.6

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.2.5	10633(b)	Describe the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.	System Supplies (Recycled Water)	Section 6.8
x	x	Section 6.2.5	10633(c)	Describe the recycled water currently being used in the supplier's service area.	System Supplies (Recycled Water)	Section 6.8.2
x	x	Section 6.2.5	10633(d)	Describe and quantify the potential uses of recycled water and provide a determination of the technical and economic feasibility of those uses.	System Supplies (Recycled Water)	Section 6.8.2; Section 6.9
x	x	Section 6.2.5	10633(e)	Describe the projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected.	System Supplies (Recycled Water)	Table 6-9
x	x	Section 6.2.5	10633(f)	Describe the actions which may be taken to encourage the use of recycled water and the projected results of these actions in terms of acre-feet of recycled water used per year.	System Supplies (Recycled Water)	Section 6.8.3

Retai l	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 6.2.5	10633(g)	Provide a plan for optimizing the use of recycled water in the supplier's service area.	System Supplies (Recycled Water)	Section 6.8
x	x	Section 6.2.6	10631(g)	Describe desalinated water project opportunities for long-term supply.	System Supplies	Section 6.7
x	x	Section 6.2.5	10633(a)	Describe the wastewater collection and treatment systems in the supplier's service area with quantified amount of collection and treatment and the disposal methods.	System Supplies (Recycled Water)	Section 6.8.1
x	x	Section 6.2.8, Section 6.3.7	10631(f)	Describe the expected future water supply projects and programs that may be undertaken by the water supplier to address water supply reliability in average, single-dry, and for a period of drought lasting 5 consecutive water years.	System Supplies	Section 6.8.2; Section 6.8.3; Section 6.9
x	x	Section 6.4 and Appendix O	10631.2(a)	The UWMP must include energy information, as stated in the code, that a supplier can readily obtain.	System Suppliers, Energy Intensity	Section 6.11

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 7.2	10634	Provide information on the quality of existing sources of water available to the supplier and the manner in which water quality affects water management strategies and supply reliability	Water Supply Reliability Assessment	Section 7.1.2
x	x	Section 7.2.4	10620(f)	Describe water management tools and options to maximize resources and minimize the need to import water from other regions.	Water Supply Reliability Assessment	Section 6.8.2; Section 6.8.3; Section 6.9; Section 7.1.1; Section 7.4
x	x	Section 7.3	10635(a)	Service Reliability Assessment: Assess the water supply reliability during normal, dry, and a drought lasting five consecutive water years by comparing the total water supply sources available to the water supplier with the total projected water use over the next 20 years.	Water Supply Reliability Assessment	Section 7.3
x	x	Section 7.3	10635(b)	Provide a drought risk assessment as part of information considered in developing the demand management measures and water supply projects.	Water Supply Reliability Assessment	Section 7.5

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 7.3	10635(b)(1)	Include a description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts 5 consecutive years.	Water Supply Reliability Assessment	Section 7.5.1
x	x	Section 7.3	10635(b)(2)	Include a determination of the reliability of each source of supply under a variety of water shortage conditions.	Water Supply Reliability Assessment	Section 7.5.2
x	x	Section 7.3	10635(b)(3)	Include a comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period.	Water Supply Reliability Assessment	Section 7.5.2
x	x	Section 7.3	10635(b)(4)	Include considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.	Water Supply Reliability Assessment	Section 7.5.1 and Section 7.5.2
x	x	Chapter 8	10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Water Shortage Contingency Planning	Section 8

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Chapter 8	10632(a)(1)	Provide the analysis of water supply reliability (from Chapter 7 of Guidebook) in the WSCP	Water Shortage Contingency Planning	Section 8.1
x	x	Section 8.10	10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Water Shortage Contingency Planning	Section 8.7
x	x	Section 8.2	10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Water Shortage Contingency Planning	Section 8.2
x	x	Section 8.2	10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Water Shortage Contingency Planning	Section 8.2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.3	10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Water Shortage Contingency Planning	Section 8.4
x	x	Section 8.3	10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Water Shortage Contingency Planning	N/A
x	x	Section 8.4	10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Water Shortage Contingency Planning	Section 8.1
x	x	Section 8.4	10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Water Shortage Contingency Planning	Section 8.5

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.4	10632(a)(4)(C)	Specify locally appropriate operational changes.	Water Shortage Contingency Planning	Section 8.6
x	x	Section 8.4	10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions are appropriate to local conditions.	Water Shortage Contingency Planning	Section 8.4
x	x	Section 8.4	10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Water Shortage Contingency Planning	Section 8.5
x	x	Section 8.4.6	10632.5	The plan shall include a seismic risk assessment and mitigation plan.	Water Shortage Contingency Plan	Section 8.12; Appendix H
x	x	Section 8.5	10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Water Shortage Contingency Planning	Section 8.13
x	x	Section 8.5 and 8.6	10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Water Shortage Contingency Planning	Section 8.14

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 8.6	10632(a)(6)	Retail supplier must describe how it will ensure compliance with and enforce provisions of the WSCP.	Water Shortage Contingency Planning	Section 8.7
x	x	Section 8.7	10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Water Shortage Contingency Planning	Section 8.1
x	x	Section 8.7	10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Water Shortage Contingency Planning	Section 8.4
x	x	Section 8.7	10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Water Shortage Contingency Planning	Section 8.1; Section 8.4
x	x	Section 8.8	10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.9
x	x	Section 8.8	10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Water Shortage Contingency Planning	Section 8.9; Section 8.10

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x		Section 8.8	10632(a)(8)(C)	Retail suppliers must describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought	Water Shortage Contingency Planning	Section 8.9
x		Section 8.9	10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Water Shortage Contingency Planning	Section 8.7
x		Section 8.11	10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Water Shortage Contingency Planning	Section 8.4
x	x	Sections 8.12 and 10.4	10635(c)	Provide supporting documentation that Water Shortage Contingency Plan has been, or will be, provided to any city or county within which it provides water, no later than 30 days after the submission of the plan to DWR.	Plan Adoption, Submittal, and Implementation	Section 10.5

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 8.14	10632(c)	Make available the Water Shortage Contingency Plan to customers and any city or county where it provides water within 30 after adopted the plan.	Water Shortage Contingency Planning	Section 10.5
	x	Sections 9.1 and 9.3	10631(e)(2)	Wholesale suppliers shall describe specific demand management measures listed in code, their distribution system asset management program, and supplier assistance program.	Demand Management Measures	N/A
x		Sections 9.2 and 9.3	10631(e)(1)	Retail suppliers shall provide a description of the nature and extent of each demand management measure implemented over the past five years. The description will address specific measures listed in code.	Demand Management Measures	Section 8
x		Chapter 10	10608.26(a)	Retail suppliers shall conduct a public hearing to discuss adoption, implementation, and economic impact of water use targets (recommended to discuss compliance).	Plan Adoption, Submittal, and Implementation	Section 10.2

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.2.1	10621(b)	Notify, at least 60 days prior to the public hearing, any city or county within which the supplier provides water that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. Reported in Table 10-1.	Plan Adoption, Submittal, and Implementation	Section 10.2; Appendix I
x	x	Section 10.4	10621(f)	Each urban water supplier shall update and submit its 2020 plan to the department by July 1, 2021.	Plan Adoption, Submittal, and Implementation	Section 10.3
x	x	Sections 10.2.2, 10.3, and 10.5	10642	Provide supporting documentation that the urban water supplier made the plan and contingency plan available for public inspection, published notice of the public hearing, and held a public hearing about the plan and contingency plan.	Plan Adoption, Submittal, and Implementation	Section 10.2; Appendix I
x	x	Section 10.2.2	10642	The water supplier is to provide the time and place of the hearing to any city or county within which the supplier provides water.	Plan Adoption, Submittal, and Implementation	Section 10.2; Appendix I
x	x	Section 10.3.2	10642	Provide supporting documentation that the plan and contingency plan has been adopted as prepared or modified.	Plan Adoption, Submittal, and Implementation	Section 10.3; Appendix J

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.4	10644(a)	Provide supporting documentation that the urban water supplier has submitted this UWMP to the California State Library.	Plan Adoption, Submittal, and Implementation	Section 10.3; Appendix J
x	x	Section 10.4	10644(a)(1)	Provide supporting documentation that the urban water supplier has submitted this UWMP to any city or county within which the supplier provides water no later than 30 days after adoption.	Plan Adoption, Submittal, and Implementation	Section 10.3; Appendix J
x	x	Sections 10.4.1 and 10.4.2	10644(a)(2)	The plan, or amendments to the plan, submitted to the department shall be submitted electronically.	Plan Adoption, Submittal, and Implementation	Section 10.3
x	x	Section 10.5	10645(a)	Provide supporting documentation that, not later than 30 days after filing a copy of its plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.3
x	x	Section 10.5	10645(b)	Provide supporting documentation that, not later than 30 days after filing a copy of its water shortage contingency plan with the department, the supplier has or will make the plan available for public review during normal business hours.	Plan Adoption, Submittal, and Implementation	Section 10.5

Retail	Wholesale	2020 Guidebook Location	Water Code Section	Summary as Applies to UWMP	Subject	2020 UWMP Location (Optional Column for Agency Review Use)
x	x	Section 10.6	10621(c)	If supplier is regulated by the Public Utilities Commission, include its plan and contingency plan as part of its general rate case filings.	Plan Adoption, Submittal, and Implementation	N/A
x	x	Section 10.7.2	10644(b)	If revised, submit a copy of the water shortage contingency plan to DWR within 30 days of adoption.	Plan Adoption, Submittal, and Implementation	Section 10.5

Page intentionally left blank.

Appendix B - Required Tables: DWR Tables, SBx7-7 Verification Form, SBx7-7 Compliance Form

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 *
Add additional rows as needed			
CA3710014	City of Oceanside	44,378	24,212
	TOTAL	44,378	24,212

**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 2-2: Plan Identification

Select Only One	Type of Plan		Name of RUWMP or Regional Alliance *if applicable* (select from drop down list)
☑	**Individual UWMP**		
	☐	Water Supplier is also a member of a RUWMP	
	☐	Water Supplier is also a member of a Regional Alliance	
☐	**Regional Urban Water Management Plan (RUWMP)**		

NOTES:

Submittal Table 2-3: Supplier Identification	
Type of Supplier (select one or both)	
☐	Supplier is a wholesaler
☑	Supplier is a retailer
Fiscal or Calendar Year (select one)	
☑	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 (mm/dd)	
Units of measure used in UWMP * (select from drop down)	
Unit	AF
**** Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*	
NOTES:	

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
Add additional rows as needed
San Diego County Water Authority
NOTES:

Submittal Table 3-1 Retail: Population - Current and Projected

Population Served	2020	2025	2030	2035	2040	2045*(opt)*
	177,531	181,659	182,527	183,483	183,482	184,657

NOTES:

Submittal Table 4-1 Retail: Demands for Potable and Non-Potable[1] Water - Actual

Use Type	2020 Actual		
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool	Additional Description (as needed)	Level of Treatment When Delivered Drop down list	Volume[2]
Add additional rows as needed			
Single Family	Single family residential detached dwelling	Drinking Water	9,788
Multi-Family	More than one residential dwelling unit serviced by the meter: Duplex, townhome, condominium, apartments, mobile homes.	Drinking Water	4,172
Commercial	Non-residential domestic service	Drinking Water	1,818
Industrial	Businesses whose discharge to the wastewater system have high concentrations of BOD, TSS, and/or ammonia.	Drinking Water	749
Landscape	Water only account	Drinking Water	4,014
Agricultural irrigation	Irrigation of commercially grown crops or other dedicated agricultural connections	Drinking Water	804
Sales/Transfers/Exchanges to other Suppliers	VID: Fall/Olive Exchange	Drinking Water	9
Losses			2,609
		TOTAL	23,963

[1] *Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4.*

[2] *Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Governmental uses were converted to either Irrigation or Commercial beginning in January 2015. The AWWA Water Loss Audit included as Appendix D was completed for FY2020 and is used as an estimate for Calendar Year 2020 water losses.

Submittal Table 4-2 Retail: Use for Potable and Non-Potable[1] Water - Projected

Use Type	Additional Description (as needed)	Projected Water Use[2] *Report To the Extent that Records are Available*				
Drop down list May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool		2025	2030	2035	2040	2045 (opt)
Add additional rows as needed						
Single Family	Single family residential detached dwelling;	9,872	9,740	9,692	9,655	9,660
Multi-Family	More than one residential dwelling unit serviced by	4,298	4,316	4,377	4,379	4,431
Commercial	Non-residential domestic service	1,819	1,788	1,837	1,870	1,898
Industrial	Businesses whose	932	1,001	1,040	1,069	1,092
Landscape	Water only account	2,119	574	645	675	733
Agricultural irrigation	grown crops or other	557	232	232	232	233
Losses		1,444	1,447	1,448	1,447	1,453
	TOTAL	21,041	19,098	19,271	19,327	19,500

[1] Recycled water demands are NOT reported in this table. Recycled water demands are reported in Table 6-4. *[2] Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 4-3 Retail: Total Water Use (Potable and Non-Potable)

	2020	2025	2030	2035	2040	2045 (opt)
Potable Water, Raw, Other Non-potable *From Tables 4-1R and 4-2 R*	23,963	21,041	19,098	19,271	19,327	19,500
Recycled Water Demand[1] *From Table 6-4*	249	6,360	11,760	11,760	11,760	11,760
Optional Deduction of Recycled Water Put Into Long-Term Storage[2]						
TOTAL WATER USE	24,212	27,401	30,858	31,031	31,087	31,260

[1] Recycled water demand fields will be blank until Table 6-4 is complete

[2] Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier ***may*** *deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.*

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

Reporting Period Start Date (mm/yyyy)	Volume of Water Loss [1,2]
Jul-14	1,316
Jan-16	1,279
Jul-17	1,336
Jul-18	1,672
Jul-19	2,609

[1] Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.

*[2] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Reported water losses are reported as higher than previous years due to Supervisory Control and Data Acquisition (SCADA)

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) *Drop down list (y/n)*	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.	Location in UWMP: Section 4.2.4; Section 6.8.3
Are Lower Income Residential Demands Included In Projections? *Drop down list (y/n)*	Yes
NOTES:	

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	*1999*	*2008*	*171*	*137*
5 Year	*2004*	*2008*	*172*	

**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:

Submittal Table 5-2: 2020 Compliance From SB X7-7 2020 Compliance Form

Retail Supplier or Regional Alliance Only

2020 GPCD				
Actual 2020 GPCD*	2020 TOTAL Adjustments*	Adjusted 2020 GPCD* *(Adjusted if applicable)*	2020 Confirmed Target GPCD*	Did Supplier Achieve Targeted Reduction for 2020? Y/N
116	*0*	*116*	*137*	*Yes*

**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: The City was within its 2020 Target prior to adjustments made for extraordi

☑	All or part of the groundwater described below is desalinated.					
Groundwater Type **_Drop Down List_** _May use each category multiple times_	Location or Basin Name	2016*	2017*	2018*	2019*	2020*
Add additional rows as needed						
Alluvial Basin	Mission Basin	2,313	1,491	2,749	2,450	2,302
	TOTAL	2,313	1,491	2,749	2,450	2,302
*** Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES:						

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 *(optional)*
	Percentage of 2020 service area population covered by wastewater collection system *(optional)*

Wastewater Collection			**Recipient of Collected Wastewater**			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated? *Drop Down List*	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? *Drop Down List*	Is WWTP Operation Contracted to a Third Party? *(optional)* *Drop Down List*
City of Oceanside	Metered	8,866	City of Oceanside	SLRWRF	Yes	No
City of Oceanside	Metered	2,683	City of Oceanside	La Salina WWTP	Yes	No
USMC Camp Pend	Metered	950	USMC Camp Pend	SRTTP	Yes	Yes
Total Wastewater Collected from Service Area in 2020:		12,499				

**** Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3* **.**

NOTES: Volumes were monitored in million gallons and converted into acre-feet for purposes of this 2020 Plan.

Submittal Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020

☐ **No wastewater is treated or disposed of within the UWMP service area.** The supplier will not complete the table below.

Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Wastewater Discharge ID Number *(optional)* [2]	Method of Disposal *Drop down list*	Does This Plant Treat Wastewater Generated Outside the Service Area? *Drop down list*	Treatment Level *Drop down list*	**2020 volumes** [1]				
							Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area	Instream Flow Permit Requirement
SLRWRF	Oceanside			Ocean	Yes	Secondary,	8,682	8,089	-	-	-
SLRWRF	City of			Other	Yes	Tertiary	-	-	249	-	-
La Salina	Oceanside			Ocean	No	Secondary,	2,867	2,786	-	-	-
Camp Pendleton	Oceanside			Ocean	Yes	Tertiary	950	950	-	-	-
							Total	12,499	11,825	249	0	0

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

[2] If the **Wastewater Discharge ID Number** is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility

NOTES:

Submittal Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area

☐ Recycled water is not used and is not planned for use within the service area of the supplier.
The supplier will not complete the table below.

Name of Supplier Producing (Treating) the Recycled Water:	City of Oceanside
Name of Supplier Operating the Recycled Water Distribution System:	City of Oceanside
Supplemental Water Added in 2020 (volume) *Include units*	Not Applicable
Source of 2020 Supplemental Water	Not Applicable

Beneficial Use Type *Insert additional rows if needed.*	**Potential** Beneficial Uses of Recycled Water (Describe)	Amount of **Potential** Uses of Recycled Water (Quantity) *Include volume units* [1]	General Description of 2020 Uses	Level of Treatment *Drop down list*	2020 [1]	2025 [1]	2030[1]	2035[1]	2040[1]	2045[1] (opt)
Agricultural irrigation	Meet agricultural irrigation demands	773	irrigation	Tertiary		449	775	774	774	773
Landscape irrigation (exc golf courses)	Meet landscape irrigation demands	3728	irrigation	Tertiary		2,166	3,739	3,736	3,735	3,733
Golf course irrigation	Meet golf course irrigation demans	214	irrigation	Tertiary	249	195	199	203	204	207
Commercial use	Meet landscape irrigation demands on commercial parcels	326	irrigation	Tertiary		190	327	327	327	327
Industrial use										
Geothermal and other energy production										
Seawater intrusion barrier										
Recreational impoundment										
Wetlands or wildlife habitat										
Groundwater recharge (IPR)	Recharge of the Mission Groundwater Basin	6720	n/a	Advanced		3,360	6,720	6,720	6,720	6,720
Reservoir water augmentation (IPR)										
Direct potable reuse										
Other (Description Required)										
				Total:	249	6,360	11,760	11,760	11,760	11,760
				2020 Internal Reuse						

[1] ***Units of measure (AF, CCF, MG)*** *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: IPR - Indirect Potable Reuse. IPR is presented in this table, but will be used to meet potable demands presented in Table 4-3. Non-potable recycled water demands are projected to be 3,000 AF in 2025, and 5,040 AF for 2030 through 2045. Deliveries to Whelan Lake to support habitat are not metered, and generally not included in recycled water uses and projections. Therefore Whelan Lake tertiary water use is not included in this table. Tertiary water delivered to Whelan Lake in 2020 were estimated at 241 AF.

Submittal Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual

☐	Recycled water was not used in 2015 nor projected for use in 2020. The supplier will not complete the table below. If recycled water was not used in 2020, and was not predicted to be in 2015, then check the box and do not complete the table.

Beneficial Use Type	2015 Projection for 2020 [1]	2020 Actual Use[1]
Insert additional rows as needed.		
Agricultural irrigation		
Landscape irrigation (exc golf courses)	104	249
Golf course irrigation		
Commercial use		
Industrial use		
Geothermal and other energy production		
Seawater intrusion barrier		
Recreational impoundment		
Wetlands or wildlife habitat		241
Groundwater recharge (IPR)		
Reservoir water augmentation (IPR)		
Direct potable reuse		
Other (Description Required)		
Total	104	490

[1] **Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.

NOTE: Projected deliveries to Whelan Lake were not quantified in the 2015 UWMP.

Submittal Table 6-6 Retail: Methods to Expand Future Recycled Water Use

☐ Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.

Provide page location of narrative in UWMP

Name of Action	Description	Planned Implementation Year	Expected Increase in Recycled Water Use *
Add additional rows as needed			
Upper SLRWRF System - Phase 1	Morro Heights RW Reservoir and Pump Station, pipelines	2025	2,264
Lower SLRWRF System - Phase 1	Fire Mountain RW Reservoir and Pump Station, pipelines	2025	487
Lower SLRWRF System - Phase 2	Mesa RW Reservoir, Old Grove Reservoir, pipelines	2035	972
Lower SLRWRF System - Phase 3	Old Grove Pump Station, pipelines	2035	805
Mandatory Use Ordinance	Municipal Code Sec. 37.144	2014	-
		Total	4,528

Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 6-8 Retail: Water Supplies — Actual

Water Supply	Additional Detail on Water Supply	2020		
Drop down list May use each category multiple times.These are the only water supply categories that will be recognized by the WUEdata online submittal tool		Actual Volume*	Water Quality Drop Down List	Total Right or Safe Yield* (optional)
Add additional rows as needed				
Desalinated Water - Groundwater	Mission Basin	2,302	Drinking Water	
Purchased or Imported Water	SDCWA	21,662	Drinking Water	
Recycled Water	SLRWRF	249	Recycled Water	
	Total	24,213		0

Units of measure (AF, CCF, MG) *must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

Submittal Table 6-9 Retail: Water Supplies — Projected

Water Supply	Additional Detail on Water Supply	**Projected Water Supply *** Report To the Extent Practicable									
Drop down list May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool		**2025**		**2030**		**2035**		**2040**		**2045** (opt)	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed											
Purchased or Imported Water	SDCWA	14,881	0	9,578	0	9,750	0	9,808	0	9,980	0
Desalinated Water - Groundwater	Mission Basin	2,800	10,000	2,800	10,000	2,800	10,000	2,800	10,000	2,800	10,000
Other	Indirect Potable Reuse Water	3,360	0	6,720	0	6,720	0	6,720	0	6,720	0
Recycled Water	Non-Potable from SLRWRF	3,000	0	5,040	0	5,040	0	5,040	0	5,040	0
	Total	24,041	10,000	24,138	10,000	24,310	10,000	24,368	10,000	24,540	10,000

***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Assumes purchased water make up any demands not fulfilled by local supplies. Indirect potable reuse water is FAT water that is injected into the Mission Basin and extracted for potable use.

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

Year Type	**Base Year** If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020	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	1986-2018		100%
Single-Dry Year	2015		107%
Consecutive Dry Years 1st Year	2011		107%
Consecutive Dry Years 2nd Year	2012		108%
Consecutive Dry Years 3rd Year	2013		108%
Consecutive Dry Years 4th Year	2014		108%
Consecutive Dry Years 5th Year	2015		109%

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.

***Units of measure (AF, CCF, MG**) must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES: Average year was based on an average hydrology from 1968-2018, consistent with the City's wholesaler, San Diego County Water Authority.

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

	2025	2030	2035	2040	2045 *(Opt)*
Supply totals *(autofill from Table 6-9)*	24,041	24,138	24,310	24,368	24,540
Demand totals *(autofill from Table 4-3)*	27,401	30,858	31,031	31,087	31,260
Difference	(3,360)	(6,720)	(6,721)	(6,719)	(6,720)

NOTES: Indirect Potable Reuse is included in Table 6-3, and therefore is included in the "Recycled Water Demands" in Table 4-3. However, potable reuse water will be used to meet potable demands presented in Table 4-3. As such, potable reuse is included twice in the Demands totals.

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

	2025	2030	2035	2040	2045 (Opt)
Supply totals*	24,041	24,138	24,310	24,368	24,540
Demand totals*	24,041	24138	24,310	24,368	24,540
Difference	0	0	0	0	0

***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

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

		2025*	2030*	2035*	2040*	2045* (Opt)
First year	Supply totals	25,791	25,895	26,080	26,142	26,327
	Demand totals	25,791	25,895	26,080	26,142	26,327
	Difference	0	0	0	0	0
Second year	Supply totals	25,884	25,988	26,174	26,236	26,421
	Demand totals	25,884	25,988	26,174	26,236	26,421
	Difference	0	0	0	0	0
Third year	Supply totals	25,979	26,084	26,269	26,332	26,518
	Demand totals	25,979	26,084	26,269	26,332	26,518
	Difference	0	0	0	0	0
Fourth year	Supply totals	26,075	26,180	26,366	26,429	26,616
	Demand totals	26,075	26,180	26,366	26,429	26,616
	Difference	0	0	0	0	0
Fifth year	Supply totals	26,109	26,215	26,402	26,465	26,652
	Demand totals	26,109	26,215	26,402	26,465	26,652
	Difference	0	0	0	0	0
Sixth year *(optional)*	Supply totals					
	Demand totals					
	Difference	0	0	0	0	0

***Units of measure (AF, CCF, MG)** must remain consistent throughout the UWMP as reported in Table 2-3.*

NOTES:

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

2021	Total
Total Water Use	26,149
Total Supplies	26,149
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2022	Total
Total Water Use	27,118
Total Supplies	27,118
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2023	Total
Total Water Use	28,086
Total Supplies	28,086
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2024	Total
Total Water Use	29,054
Total Supplies	29,054
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

2025	Total
Total Water Use	30,265
Total Supplies	30,265
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Actions (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%

Submittal Table 8-1
Water Shortage Contingency Plan Levels

Shortage Level	Percent Shortage Range	Shortage Response Actions (*Narrative description)*
1	Up to 10%	Limited irrigation hours unless using drip/micro-irrigation. If not using irrigation system, irrigation with buckets, hand-held hose with shut-off nozzle, or low-volume non-spray irrigation. Repair water leaks within 5 days of notification, and use non-potable water for construction when available.
2	Up to 20%	All restrictions under Level 1 plus additional limits on landscape irrigation frequency and duration. Leaks must be repaired within 72 hours of notification, and use of decorative water features prohibited unless using recirculated water.
3	Up to 30%	All restrictions under Level 1 and Level 2 plus additional limits on landscape irrigation, prohibition on washing vehicles (with exceptions), and repair of leaks within 48 hours of notification. Consideration of annexations will be suspended.
4	Up to 40%	All restrictions under Levels 1, 2, and 3 plus prohibition on filling or re-filling ornamental lakes or ponds except as needed to sustain aquatic life of significant value.
5	Up to 50%	All restrictions under Levels 1, 2, 3, and 4, plus prohibition of all landscape irrigation except crops and products for nurseries and commercial growers, with some exception. All leaks must be repaired within 24 hours of notification. The City may establish water allocation at Level 5, and will
6	>50%	All restrictions under Levels 1, 2, 3, 4, and 5, plus prohibition of all landscape irrigation with exception of crops and landscape products of commercial growers and nurseries, as well as exceptions for fire protection, erosion control, threatened species, livestock, public works projects, and

NOTES:

Submittal Table 8-2: Demand Reduction Actions

Shortage Level	Demand Reduction Actions ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool. Select those that apply.*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? ***For Retail Suppliers Only*** *Drop Down List*
Add additional rows as needed				
1	Landscape - Limit landscape irrigation to specific times	6%	Irrigation must take place before 10 a.m. or after 6 p.m. Watering allowed when using drip/micro-irrigation system/equipment used.	No
1	Other - Require automatic shut of hoses	2%		No
1	CII - Other CII restriction or prohibition	0.10%	Limit landscape irrigation to specific times for nursery or commercial growers	No
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Leaks must be repaired within 5 days	No
1	Other	0.10%	Non-potable water must be used for construction purposed when available	
2	Landscape - Limit landscape irrigation to specific days	8%	Limited to three assigned days per week. Does not apply to commercial growers or nurseries unless under order from governor or State. F	Yes
2	Landscape - Other landscape restriction or prohibition	5%	Limit irrigation using sprinklers to no more than 10 minutes per day. Does not apply to systems using water efficient devices.	Yes
2	Other - Require automatic shut of hoses	2%		Yes
2	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	1%	Leaks must be repaired within 72 hours	Yes
2	Water Features - Restrict water use for decorative water features, such as fountains	1%	With the exception of features that use re-circulated water	Yes
3	Landscape - Limit landscape irrigation to specific days	16%	Residential and commercial landscape irrigation limited to two assigned days per week.	Yes
3	Other - Require automatic shut of hoses	2%		Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	1%		Yes
3	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	2%	Leaks must be repaired within 48 hours	Yes
4	Other water feature or swimming pool restriction	1%	Stop filling or re-filling ornamental lakes or ponds except to the extent needed to sustain aquatic life	Yes
5	Landscape - Prohibit all landscape irrigation	22%	With the exception of crops and landscape products of commercial growers and nurseries or other listed exceptions	Yes
5	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	5%	Leaks must be repaired within 24 hours	Yes
6	Landscape - Other landscape restriction or prohibition	25%	With the exception of crops and landscape products of commercial growers and nurseries or other listed exceptions	Yes

NOTES:

Submittal Table 8-3: Supply Augmentation and Other Actions

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier ***Drop down list*** *These are the only categories that will be accepted by the WUEdata online submittal tool*	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Add additional rows as needed			
1	Expand Public Information Campaign	2%	
3 to 6	Implement or Modify Drought Rate Structure or Surcharge	4%	
4 to 6	Moratorium or Net Zero Demand Increase on New Connections	4%	
6	Other Actions (describe)	10%	Water allocations may be established

NOTES:

Submittal Table 10-1 Retail: Notification to Cities and Counties

City Name	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
City of Carlsbad	Yes	Yes
City of Escondido	Yes	Yes
County Name *Drop Down List*	60 Day Notice	Notice of Public Hearing
Add additional rows as needed		
San Diego County	Yes	Yes

NOTES:

SB X7-7 Table 0: Units of Measure Used in UWMP*
Acre Feet
**The unit of measure must be consistent with Table 2-3*
NOTES:

SB X7-7 Table-1: Baseline Period Ranges

Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	30,927	Acre Feet
	2008 total volume of delivered recycled water	66	Acre Feet
	2008 recycled water as a percent of total deliveries	0.21%	Percent
	Number of years in baseline period[1]	10	Years
	Year beginning baseline period range	1999	▨
	Year ending baseline period range[2]	2008	▨
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2004	▨
	Year ending baseline period range[3]	2008	▨

[1] *If the 2008 recycled water percent is less than 10 percent, then the first baseline period is a continuous 10-year period. If the amount of recycled water delivered in 2008 is 10 percent or greater, the first baseline period is a continuous 10- to 15-year period.*

[2] *The ending year must be between December 31, 2004 and December 31, 2010.*

[3] *The ending year must be between December 31, 2007 and December 31, 2010.*

NOTES:

SB X7-7 Table 2: Method for Population Estimates	
Method Used to Determine Population	
☑	**1. Department of Finance** (DOF) DOF Table E-8 (1990 - 2000) and (2000-2010) and DOF Table E-5 (2011 - 2015) when available
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: Service Area Population

Year		Population
10 to 15 Year Baseline Population		
Year 1	1999	158,451
Year 2	2000	161,624
Year 3	2001	162,907
Year 4	2002	164,312
Year 5	2003	165,962
Year 6	2004	166,859
Year 7	2005	166,958
Year 8	2006	165,539
Year 9	2007	165,545
Year 10	2008	166,064
5 Year Baseline Population		
Year 1	2004	166,859
Year 2	2005	166,958
Year 3	2006	165,539
Year 4	2007	165,545
Year 5	2008	166,064
2015 Compliance Year Population		
2015		171,183
NOTES:		

SB X7-7 Table 4: Annual Gross Water Use *

	Baseline Year	**Volume Into Distribution System**	**Deductions**					**Annual Gross Water Use**
			Exported Water	Change in Dist. System Storage (+/-)	Indirect Recycled Water	Water Delivered for Agricultural Use	Process Water	
10 to 15 Year Baseline - Gross Water Use								
Year 1	1999	33,254			0	2,330	0	30,924
Year 2	2000	33,862			0	2,719	0	31,142
Year 3	2001	32,141			0	2,369	0	29,772
Year 4	2002	35,467			0	3,255	0	32,211
Year 5	2003	32,844			0	2,480	0	30,364
Year 6	2004	35,169			0	2,408	0	32,760
Year 7	2005	33,611			0	2,221	0	31,391
Year 8	2006	34,311			0	2,530	0	31,781
Year 9	2007	35,585			0	2,701	0	32,884
Year 10	2008	33,050			0	1,795	0	31,255
10 - 15 year baseline average gross water use								**31,448**
5 Year Baseline - Gross Water Use								
Year 1	2004	35,169			0	2,408	0	32,760
Year 2	2005	33,611			0	2,221	0	31,391
Year 3	2006	34,311			0	2,530	0	31,781
Year 4	2007	35,585			0	2,701	0	32,884
Year 5	2008	33,050			0	1,795	0	31,255
5 year baseline average gross water use								**32,014**
2015 Compliance Year - Gross Water Use								
2015		23,613			0	1,345	0	22,268

NOTES: In order to not artificially lower gross water use, recycled water was not reported here. The Water Code Section 10608.12(g) defines "Gross Water Use" as the total volume of water, whether treated or untreated, entering the water distribution system of an urban retail water supplier, excluding recycled water, the net volume of water that is placed into long-term storage, the volume of water that is conveyed for use by another water supplier, and the volume of water delivered for agricultural use.

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Name of Source	Wells

This water source is:

☑ The supplier's own water source
☐ A purchased or imported source

Baseline Year		Volume Entering Distribution System	Meter Error Adjustment * *Optional* (+/-)	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	2,769		2,769
Year 2	2000	2,421		2,421
Year 3	2001	2,077		2,077
Year 4	2002	2,463		2,463
Year 5	2003	3,085		3,085
Year 6	2004	2,684		2,684
Year 7	2005	2,304		2,304
Year 8	2006	2,126		2,126
Year 9	2007	2,219		2,219
Year 10	2008	1,677		1,677
5 Year Baseline - Water into Distribution System				
Year 1	2004	2,684		2,684
Year 2	2005	2,304		2,304
Year 3	2006	2,126		2,126
Year 4	2007	2,219		2,219
Year 5	2008	1,677		1,677
2015 Compliance Year - Water into Distribution System				
2015		3,213		3,213

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 4-A: Volume Entering the Distribution System(s)

Name of Source	SDCWA

This water source is:

☐ The supplier's own water source
☑ A purchased or imported source

Baseline Year		Volume Entering Distribution System	Meter Error Adjustment * *Optional* (+/-)	Corrected Volume Entering Distribution System
10 to 15 Year Baseline - Water into Distribution System				
Year 1	1999	30,485		30,485
Year 2	2000	31,441		31,441
Year 3	2001	30,064		30,064
Year 4	2002	33,004		33,004
Year 5	2003	29,759		29,759
Year 6	2004	32,484		32,484
Year 7	2005	31,307		31,307
Year 8	2006	32,185		32,185
Year 9	2007	33,366		33,366
Year 10	2008	31,373		31,373
5 Year Baseline - Water into Distribution System				
Year 1	2004	32,484		32,484
Year 2	2005	31,307		31,307
Year 3	2006	32,185		32,185
Year 4	2007	33,366		33,366
Year 5	2008	31,373		31,373
2015 Compliance Year - Water into Distribution System				
2015		20,400		20,400

** Meter Error Adjustment - See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

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

Baseline Year		Service Area Population	Annual Gross Water Use	Daily Per Capita Water Use (GPCD)
10 to 15 Year Baseline GPCD				
Year 1	1999	158,451	30,924	174
Year 2	2000	161,624	31,142	172
Year 3	2001	162,907	29,772	163
Year 4	2002	164,312	32,211	175
Year 5	2003	165,962	30,364	163
Year 6	2004	166,859	32,760	175
Year 7	2005	166,958	31,391	168
Year 8	2006	165,539	31,781	171
Year 9	2007	165,545	32,884	177
Year 10	2008	166,064	31,255	168
10-15 Year Average Baseline GPCD				**171**
5 Year Baseline GPCD				
Baseline Year		Service Area Population	Gross Water Use	Daily Per Capita Water Use
Year 1	2004	166,859	32,760	175
Year 2	2005	166,958	31,391	168
Year 3	2006	165,539	31,781	171
Year 4	2007	165,545	32,884	177
Year 5	2008	166,064	31,255	168
5 Year Average Baseline GPCD				**172**
2015 Compliance Year GPCD				
2015		171,183	22,268	116
NOTES:				

SB X7-7 Table 6: Gallons per Capita per Day

10-15 Year Baseline GPCD	171
5 Year Baseline GPCD	172
2015 Compliance Year GPCD	116

NOTES:

SB X7-7 Table 7: 2020 Target Method

Target Method		Supporting Documentation
☑	Method 1	SB X7-7 Table 7A
☐	Method 2	SB X7-7 Tables 7B, 7C, and 7D *Contact DWR for these tables*
☐	Method 3	SB X7-7 Table 7-E
☐	Method 4	Method 4 Calculator

NOTES:

SB X7-7 Table 7-A: Target Method 1 20% Reduction	
10-15 Year Baseline GPCD	2020 Target GPCD
171	137
NOTES:	

SB X7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target

5 Year Baseline GPCD	Maximum 2020 Target*	Calculated 2020 Target	Confirmed 2020 Target
172	163	137	137

** Maximum 2020 Target is 95% of the 5 Year Baseline GPCD*

NOTES:

SB X7-7 Table 8: 2015 Interim Target GPCD

Confirmed 2020 Target	10-15 year Baseline GPCD	2015 Interim Target GPCD
137	171	154

NOTES:

SB X7-7 Table 9: 2015 Compliance

Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments *(in GPCD)*		2015 GPCD *(Adjusted if applicable)*	Did Supplier Achieve Targeted Reduction for 2015?
		TOTAL Adjustments	Adjusted 2015 GPCD		
116	154	0	116	116	YES

NOTES:

SB X7-7 Table 0: Units of Measure Used in 2020 UWMP* *(select one from the drop down list)*
Acre Feet
**The unit of measure must be consistent throughout the UWMP, as reported in Submittal Table 2-3.*
NOTES:

SB X7-7 Table 2: Method for 2020 Population Estimate	
Method Used to Determine 2020 Population (may check more than one)	
☑	**1. Department of Finance** (DOF) or **American Community Survey** (ACS)
☐	**2. Persons-per-Connection Method**
☐	**3. DWR Population Tool**
☐	**4. Other** DWR recommends pre-review
NOTES:	

SB X7-7 Table 3: 2020 Service Area Population

2020 Compliance Year Population	
2020	177,531

NOTES:

SB X7-7 Table 4: 2020 Gross Water Use

Compliance Year 2020	2020 Volume Into Distribution System *This column will remain blank until SB X7-7 Table 4-A is completed.*	2020 Deductions					2020 Gross Water Use
		Exported Water *	Change in Dist. System Storage* (+/-)	Indirect Recycled Water *This column will remain blank until SB X7-7 Table 4-B is completed.*	Water Delivered for Agricultural Use*	Process Water *This column will remain blank until SB X7-7 Table 4-D is completed.*	
	23,964			-	804	-	**23,160**

* **Units of measure (AF, MG , or CCF)** must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.

NOTES:

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s), Meter Error Adjustment

Complete one table for each source.

Name of Source	Wells
This water source is *(check one)* **:**	
☑	The supplier's own water source
☐	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* *(+/-)*	Corrected Volume Entering Distribution System
	2,302	-	2,302

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES

SB X7-7 Table 4-A: 2020 Volume Entering the Distribution System(s) Meter Error Adjustment

Complete one table for each source.

Name of Source	SDCWA
This water source is *(check one)* **:**	
☐	The supplier's own water source
☑	A purchased or imported source

Compliance Year 2020	Volume Entering Distribution System [1]	Meter Error Adjustment [2] *Optional* *(+/-)*	Corrected Volume Entering Distribution System
	21,662		21,662

[1] ***Units of measure (AF, MG , or CCF)*** *must remain consistent throughout the UWMP, as reported in SB X7-7 Table 0 and Submittal Table 2-3.* [2] ***Meter Error Adjustment*** *- See guidance in Methodology 1, Step 3 of Methodologies Document*

NOTES:

SB X7-7 Table 5: 2020 Gallons Per Capita Per Day (GPCD)

2020 Gross Water ***Fm SB X7-7 Table 4***	**2020 Population** ***Fm SB X7-7 Table 3***	**2020 GPCD**
23,160	177,531	**116**

NOTES:

SB X7-7 Table 9: 2020 Compliance

Actual 2020 GPCD[1]	Optional Adjustments to 2020 GPCD Enter "0" if Adjustment Not Used Extraordinary Events[1]	Weather Normalization[1]	Economic Adjustment[1]	TOTAL Adjustments[1]	Adjusted 2020 GPCD [1] *(Adjusted if applicable)*	2020 Confirmed Target GPCD [1, 2]	**Did Supplier Achieve Targeted Reduction for 2020?**
116	-	-	-	-	116	137	**YES**

[1] *All values are reported in GPCD*

[2] ***2020 Confirmed Target GPCD*** *is taken from the Supplier's SB X7-7 Verification Form Table SB X7-7, 7-F.*

NOTES:

Page intentionally left blank.

Appendix C - Climate Change Vulnerability Analysis

Page intentionally left blank.

SAN DIEGO
Integrated Regional
Water Management

Appendix 7-D:
San Diego IRWM Climate Change Study




SAN DIEGO
Integrated Regional
Water Management

Climate Change Planning Study

Final

Prepared by:

RMC
Water and Environment

May 2013

Table of Contents

List of Tables

List of Figures

Appendices

Acknowledgements

Development of the San Diego IRWM Climate Change Study would not have been possible without the efforts of the San Diego IRWM Climate Change Workgroup and other contributors, including:

Tim Bombardier, San Diego County Water Authority

Donna Chralowicz, City of San Diego

Linda Flournoy, Sustainability Consultant and Climate Change Workgroup Chair

Sarah Harvey, Equinox Center

Lauma Jurkevics, California Department of Water Resources, Southern Region

Cheryl Laskowski, AECOM

Peter Livingston, County of San Diego

Anna Lowe, County of San Diego

Fiona Lyons, San Diego County Water Authority

Linda Pratt, City of San Diego

Brendan Reed, City of Chula Vista

Leslie Ryan, New School

Jack Simes, U.S. Bureau of Reclamation

Mark Stadler, San Diego County Water Authority

Ann Tartre, Equinox Center

Goldy Thach, City of San Diego

Kathy Weldon, City of Encinitas

List of Abbreviations

AB	Assembly Bill
AF	Acre-foot
CalEPA	California Environmental Protection Agency
CARB	California Air Resources Board
CAT	Climate Action Team
CCAR	California Climate Action Registry
CCAS	California Climate Action Strategy
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CH_4	Methane
CNRA	California Natural Resources Agency
CO_2	Carbon Dioxide
DWR	Department of Water Resources
EO	Executive Order
EPA	Environmental Protection Agency
GHG	Greenhouse Gas
HFCs	Hydrofluorocarbons
IRWM	Integrated Regional Water Management
kWh	kilowatt hours
$MMTCO_2E$	Million metric tons carbon dioxide equivalent
MSHCP	Multiple Species Habitat Conservation Plan
N_2O	Nitrous Oxide
NF_3	Nitrogen Trifluoride
OPC	Ocean Protection Council
OPR	Office of Planning and Research
PFCs	Perfluorocarbons
RMS	Resource Management Strategy
SB	Senate Bill
SDCWA	San Diego County Water Authority

SDG&E	San Diego Gas & Electric
SDRIP	San Diego River Improvement Project
SF_6	Sulfur Hexafluoride
SLR	Sea Level Rise
SWP	State Water Project
SWRCB	State Water Resources Control Board
TCR	The California Registry
TMDL	Total Maximum Daily Load
TDS	Total Dissolved Solids
USEPA	United States Environmental Protection Agency
WET-CAT	Water Energy Team of the Climate Action Team

1 Climate Change in Water Resources

This chapter addresses requirements set forth in the Resource Management Strategies (RMS) Standard in the *2012 IRWM Program Guidelines* (DWR 2012). As such, this chapter considers each RMS listed in the *California Water Plan (CWP) Update 2009* (DWR 2009), documents which RMS will help achieve the IRWM Plan Update objectives, presents all RMS considered for the IRWM Plan Update, and includes an evaluation of the adaptability of water management systems in the San Diego IRWM Region to climate change.

1.1 Introduction

Climate change projections have shown that California can expect to be impacted by changes to temperature and precipitation in the future, and even now California is beginning to experience the effects of these impacts. Water resource planners already face challenges interpreting new climate change information and discerning which response methods and approaches will be most appropriate for their planning needs. This Climate Change Planning Study (Study) examines current climate change science, policies, and regulations in terms of how they affect the San Diego Integrated Regional Water Management Region (Region). This Study serves as an initial guide for the Region to begin incorporating climate change adaptation and mitigation measures into its Integrated Regional Water Management (IRWM) Plan, where adaptation is how the Region can respond to climate change effects and mitigation is how the Region can reduce future climate change effects, and includes the following sections:

- Chapter 1: Climate Change in Water Resources
- Chapter 2: Climate Change in IRWM Planning
- Chapter 3: Effects of Climate Change on the Region
- Chapter 4: Vulnerability Analysis
- Chapter 5: Climate Change Management Strategies
- Chapter 6: Recommendations

1.2 Adaptation Relationship

Climate change is expected to directly impact a number of areas related to water resources, in particular temperature, precipitation, and sea level rise. As global temperature increases, seasonal precipitation patterns including the timing, intensity and form of precipitation, are projected to continue to change. Sea level rise, which has risen about seven inches over the last century due to warming, is expected to rise further in the future. In order for the Region to adapt to, or protect against, climate change, it must first identify the impacts climate change is expected to have on the Region.

These impacts are expected to further impact local water resources as follows (DWR, 2011):

- Temperature increases:
    - More winter precipitation falling as rain rather than snow, leading to reduced snowpack water storage, reduced long term soil humidity, reduced groundwater and downstream flows, and reduced imported water deliveries

  - Higher irrigation demands as temperatures alter evapotranspiration rates, and growing seasons become longer
  - Exacerbated water quality issues associated with dissolved oxygen levels, increased algal blooms and increased concentrations of salinity and other constituents
  - Impacted habitats for temperature-sensitive fish and other life forms, and increased susceptibility of aquatic habitats to eutrophication
- Precipitation pattern changes:
  - Increased flooding (both coastal and inland) caused by more intense storms
  - Changes to growth and life cycle patterns caused by shifting weather patterns
  - Threats to soil permeability, adding to increased flood threat and decreased water availability
  - Reduced water supply caused by the inability to capture precipitation from more intense storms, and a projected progressive reduction in average annual runoff (though some models suggest that there may be some offset from tropical moisture patterns increasingly moving northward)
  - Increased turbidity caused by more extreme storm events, leading to increased water treatment needs and impacts to habitat
  - Increased wildfires with less frequent, but more intense rainfall, and possibly differently timed rainfall through the year, potentially resulting in vegetation cover changes
  - Reduction in hydropower generation potential
- Sea level rise:
  - Inundation and erosion of coastal areas (coastal bluffs in particular), including coastal infrastructure
  - Saline intrusion of coastal aquifers
  - Increased risk of storm surges and coastal flooding and erosion during and after storms
  - Changes in near-shore protective biogeography such as loss of sand, tide pools and kelp beds

Although the extent of these changes is uncertain, scientists agree that some level of change is inevitable; therefore, it will be necessary to implement flexible adaptation measures that will allow natural and human systems to respond to these climate change impacts in timely and effective ways. Adaptation measures may be implemented in response to climate change impacts that have already occurred, or expected impacts that are projected to occur. It is important to take note that water resources decisions made in the future will impact the rate of climate change.

In addition to adapting to climate change, the Region has the opportunity to mitigate against climate change by minimizing greenhouse gas emissions emitted by water supply and wastewater activities. The relationship between water resources and greenhouse gas emissions is discussed further in the next section.

1.3 Water-Energy Nexus

To understand how water is related to climate change, it's helpful to understand the connection between water resources planning and energy, which is known as the water-energy nexus. Energy production accounts for between 30% and 40% of total GHG production in California, and can emit a number of different types of GHGs. California's Air Resources Board recognizes and inventories the following GHGs: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and nitrogen trifluoride (NF3). These GHGs vary in magnitude in terms of their GHG strength, and therefore are converted to be equivalent to CO2 for the purposes of measuring GHG emissions across the state. CO2 emissions (or the equivalent for other GHGs) are the common measurement for GHG emissions. (CARB, 2013). Currently, statewide water use accounts for nearly 20% of electricity use, and 30% of non-power plant related natural gas consumption (CEC, 2006). Water use and energy are linked in at least three critical ways (CEC, 2011):

1. Water pumping and purification: The amount of energy used to pump water will depend upon the source (e.g., surface versus groundwater), the distance and height the water must be moved, and the treatment requirements. For example, pumping water to San Diego County through the State Water Project, which accounts for nearly 80% of the County's water supply, uses about 4,600 kilowatt hours (kWh) per acre-foot of electricity (DWR, 2012a), while groundwater pumping typically uses 300 kWh/AF (Cohen, 2007).
2. Wastewater treatment: The amount of energy used in wastewater treatment plant typically ranges from 1,100 to 4,600 kWh per million gallons of wastewater treated (CEC, 2006).
3. Water heating: In an average California home, 41 percent of the water is used for dishwashing, faucets, laundry, and bathing water that is often heated.

These amounts, in total, are so significant that we must also count the amount of GHGs from the fossil fuels that are burned to produce the oil, gas, coal and other combustibles which are then burned to produce the electricity. Understanding the water-energy nexus in California provides opportunities to attain significant energy benefits through two primary strategies (CEC, 2006):

1. Conserving water saves the energy that would have been used to convey, treat, and distribute the water, and energy that may have been needed to collect, treat and dispose of the wastewater.
2. Reducing the energy intensity of water operations reduces the total amount of energy consumed in the water sector and ultimately reduces the value of energy embedded in saved water.

By reducing the energy used through the above strategies, GHG production can be reduced.

It should be noted that, at times, the above processes may also be used to generate energy, such as through cogeneration at wastewater treatment plants, or capturing energy as water flows downhill. Concurrently, energy production processes require water for steam production for thermoelectric power and to cool equipment by absorbing waste heat. Energy conservation in the Region can reduce this need.

These strategies are reflected in California's legislation and policy regarding climate change mitigation and greenhouse (GHG) emissions reduction discussed in the remainder of Chapter 1.

1.4 Legislative and Policy Context

In order to address currently-projected climate change impacts to California's water resources, the Department of Water Resources' (DWR's) 2012 IRWM Grant Program Guidelines require that IRWM Plans describe and consider climate change adaptation and mitigation. Below is a summary of State legislation and policy that were considered as part of this IRWM Plan.

Executive Order S-3-05

Executive Order (EO) S-3-05, signed on June 1, 2005 by Governor Arnold Schwarzenegger, is one of the key pieces of legislation that has laid the foundation for California's climate change policy. This piece of legislation recognizes California's vulnerabilities to the impacts of climate change, which include its water-related natural resources. EO S-3-05 established three GHG reduction targets for California:

- By 2010, reduce GHG emissions to 2000 California levels
- By 2020, reduce GHG emissions to 1990 California levels
- By 2050, reduce GHG emissions to 80 percent below 1990 California levels

In addition to establishing GHG reduction targets for California, EO S-3-05 dictates that the Secretary of the California Environmental Protection Agency (CalEPA) establish the Climate Action Team (CAT) for State agencies to coordinate oversight of efforts to meet these targets. As laid out in EO S-3-05, the CAT submits biannual reports to the governor and State legislature describing progress made toward reaching the targets.

There are currently 12 sub-groups within the CAT, one of which is the Water-Energy group (also known as WET-CAT). WET-CAT was tasked with coordinating the study of GHG effects on California's water supply system, including the development of GHG mitigation strategies for energy consumption related to water use. Since the adoption of the Assembly Bill 32 Scoping Plan (see the following section), WET-CAT has been working on the implementation and analyses of six water-related measures identified in the Scoping Plan:

- Water Use Efficiency
- Water Recycling
- Water System Energy Efficiency
- Reuse Urban Runoff
- Increase Renewable Energy Production
- Public Goods Charge for Water

Assembly Bill 32: The California Global Warming Solutions Act of 2006

Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006 was signed by Governor Schwarzenegger to codify the mid-term GHG reduction target established in EO S-3-05 (reduce GHG emissions to 1990 levels by 2020) through, among other mechanisms, imposing an enforceable cap on GHG emissions. AB 32 directed the California Air Resources Board (CARB) to develop discrete early actions to reduce GHG emissions by 2007, and to adopt regulations to implement early action measures by January 1, 2010.

Climate Change Scoping Plan

AB 32 also required CARB to prepare a Scoping Plan to identify and achieve reductions in GHG emissions in California. The approved Climate Change Scoping Plan, adopted by CARB in December 2008, recommends specific strategies for different business sectors, including water management, to achieve the 2020 GHG emissions limit. The Scoping Plan as it relates to water resources is discussed further in Section 0 below.

Senate Bill 97

Senate Bill 97 (SB 97) directed the Governor's Office of Planning and Research (OPR) to develop amendments to the California Environmental Quality Act (CEQA) Guidelines to determine how climate change is analyzed in documents required by CEQA. On December 31, 2009, the California Natural Resources Agency adopted amendments to the CEQA Guidelines and sent them to the California Office of Administrative Law for approval and filing with the Secretary of State. These CEQA Guideline amendments became effective on March 18, 2010. The CEQA Guidelines are not prescriptive; rather they encourage lead agencies to consider many factors in performing a CEQA analysis, and maintain discretion with lead agencies to make their own determinations based on substantial evidence.

Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water

DWR, in collaboration with the State Water Resources Control Board, other state agencies, and numerous stakeholders, has initiated a number of projects to begin climate change adaptation planning for the water sector. In October 2009, DWR released the first state-level climate change adaptation strategy for water resources in the U.S., and the first adaptation strategy for any sector in California. Entitled Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water, the report details how climate change is currently affecting the state's water supplies, and sets forth ten adaptation strategies to help avoid or reduce climate change impacts to water resources.

Central to these adaptation efforts will be the full implementation of IRWM plans, which address regionally-appropriate management practices that incorporate climate change adaptation. These plans will evaluate and provide a comprehensive, economical, and sustainable water use strategy at the watershed level for California.

Executive Order S-13-08

Given the potentially serious threat of sea level rise to California's water supply and coastal resources, and the subsequent impact it would have on our state's economy, population, and natural resources, Governor Schwarzenegger issued EO S-13-08 to enhance the state's management of climate impacts from sea level rise, increased temperatures, shifting precipitation, and extreme weather events. It requested a California Sea Level Rise Assessment Report to be conducted by the National Academy of Sciences, which was released in June 2012.

California Climate Adaptation Strategy

In response to the passage of EO S-13-08, the California Natural Resources Agency released the report entitled 2009 California Climate Adaptation Strategy that summarizes the best known science on climate change impacts in the state, assesses vulnerabilities, and outlines possible solutions that can be implemented within and across the state agencies to promote resilience to climate change.

GHG Reporting Rule

While California has taken the lead in climate change policy and legislation, there have been several recent important developments at the federal level. On September 22, 2009, the United States Environmental Protection Agency (USEPA) released its final GHG Reporting Rule (Reporting Rule). Starting in 2010, facility owners that emit 25,000 metric tons of CO2 emissions or more per year are required to submit an annual GHG emissions report with detailed calculations of facility GHG emissions. These activities will dovetail with the AB 32 reporting requirements in California.

Water Code Section 10541

California has included climate change in its water code to ensure that it is considered as part of water management. California Water Code Section 10541 contains requirements for considering climate change in IRWM Plans. Specifically, it states that the guidelines for IRWM Plans are required to include:

- Consideration of GHG emissions of identified programs and projects
- Evaluation of the adaptability to climate change of water management systems in the region

1.5 AB 32 Scoping Plan and CARB Strategies

As stated previously, AB 32 required CARB to prepare a Scoping Plan to identify and achieve reductions in GHG emissions in California, and recommended specific strategies for different business sectors to achieve the 2020 GHG emissions limit. This Scoping Plan was introduced in 2005, and adopted in 2008. Water use is identified in the AB 32 Scoping Plan as a sector requiring significant amounts of energy, and sets a goal to "continue efficiency programs and use cleaner energy sources to move and treat water." This goal recognizes that California has a history of advancing water efficiency and conservation programs.

The Scoping Plan identifies six greenhouse gas emissions reduction (mitigation) measures for the water sector that could reduce GHGs if implemented statewide (please note that not all of these measures may be applicable to the San Diego IRWM Region):

1. Water Use Efficiency: Through increases in water use efficiency measures, reduce total statewide emissions
2. Water Recycling: Through increases in water recycling, reduce total statewide emissions
3. Water system energy efficiency: Through increases in water system energy efficiency, reduce total statewide emissions
4. Reuse of urban runoff: Through reuse of urban runoff, reduce total statewide emissions
5. Increase renewable energy production: Through the increase in renewable energy production, reduce statewide emissions
6. Public goods charge: To be determined

The first three of the measures will reduce energy requirements associated with providing reliable water supplies. The next two measures will reduce the amount of non-renewable electricity associated with conveying and treating water. The final measure (public goods charge) focuses on providing sustainable funding for implementing these actions. Other sectors identified in the Scoping Plan, such as Agriculture and Green Building, recognize that water use efficiency measures will help to decrease GHG emissions as well, but do not calculate water use efficiency savings separately. The Scoping Plan states that to implement these GHG reduction measures, CARB and other State agencies will work with stakeholders and the public to develop regulatory measures and other programs.

1.6 California Climate Action Registry/The Climate Registry

The California Climate Action Registry (CCAR) was a program of the Climate Action Reserve which closed in December 2010. It served as a voluntary GHG registry to promote early actions to reduce GHG emissions by organizations. CCAR members voluntarily measured, verified, and publicly reported their GHG emissions. Members of the CCAR have been transitioned over to The Climate Registry (TCR), which is a nonprofit GHG emissions registry for North America that provides organizations with the tools to help them calculate, verify, report and manage their GHG emissions within a single registry. A number of agencies and organizations in the IRWM Region are voluntary members of TCR, including:

- San Diego County Water Authority
- City of San Diego
- County of San Diego
- Metropolitan Water District of Southern California

TCR's tools and database are particularly useful to those entities required to report their GHG emissions according to the EPA's Greenhouse Gas Reporting Rule (74 FR 56260) which requires reporting of GHG data and other relevant information from large sources and suppliers in the United States, and went into effect in January 2010. Though primarily affecting facilities that supply fossil fuels or industrial GHGs, manufacturers of vehicles and engines, this rule also applies to facilities that are responsible for the emission of 25,000 metric tons or more of GHG emissions per year, and therefore may apply to water and wastewater utilities, and large water purchasers. In addition to meeting USEPA requirements, by becoming a member of TCR, a utility, agency or company may better be able to respond to California's requirements for reporting and reducing GHG emissions.

1.7 Climate Action Plans and Climate Initiatives

Climate action plans are becoming more common among California's cities and counties. A climate action plan, which may also be referred to as a climate mitigation and adaptation plan, is a set of strategies intended to guide efforts for reducing GHG emissions, and typically covers a range of sectors such as energy, transportation, water, wastewater, solid waste, infrastructure, urban forestry and agriculture, and public health. Plans may also include strategies to guide efforts for reducing the impact of climate change effects on the area. Within the Region, the County and a number of cities and agencies have developed or are developing climate action plans and adaptation plans:

- County of San Diego Climate Action Plan
- San Diego County Water Authority Climate Action Plan and Climate Mitigation Plan
- City of San Diego Climate Mitigation and Adaptation Plan

- City of San Diego Long Range Water Resources Plan
- City of Chula Vista Adaptation and Mitigation Plan
- City of Encinitas Climate Action Plan
- City of Escondido Climate Action Plan
- City of San Marcos Climate Action Plan
- Port of San Diego Climate Mitigation and Adaptation Plan
- San Diego Association of Governments (SANDAG) Regional Energy Strategy and Climate Action Strategy
- San Diego Bay Sea Level Rise Adaptation Study
- San Diego Foundation Focus 2050 Study

In addition to the Climate Action Plans developed in the Region, the San Diego Foundation has developed a Climate Initiative to support community awareness about the local impacts of climate change. This initiative aims to educate the community about climate change, support climate change research, partner with local governments to address climate change, and provide technical assistance for climate action planning. As part of this initiative, every jurisdiction in the County has completed a GHG emissions inventory.

2 Climate Change in IRWM Planning

2.1 DWR Requirements

As previously discussed, the California Water Code contain language stating that IRWM Plan guidelines require climate change be considered as part of IRWM Plans. In line with this, DWR has included a Climate Change Standard in the IRWM Guidelines that requires IRWM plans to include a “cursory analysis of the effects on the region due to climate change, with the intent that a more refined analysis be required as additional guidance is made available.” To meet these guidelines, DWR has suggested that climate change be included in IRWM Plans as shown in Table 1.

Table 1: IRWM Plan Standards in Relation to Climate Change

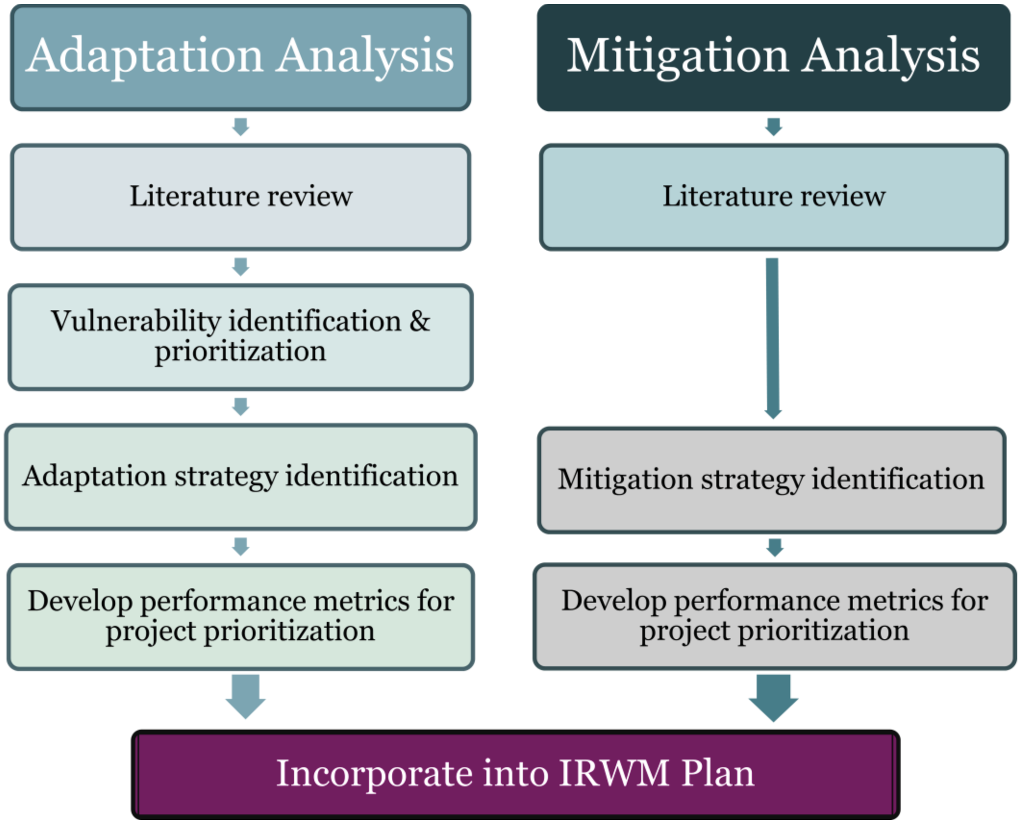
Plan Section According to IRWM Plan Standards	Climate Change Information to Include[1]
Region Description	Language that describes likely climate change impacts on the Region as determined from a vulnerability assessment
Plan Objectives	Adaptation to climate change: • Address adapting to changes in the amount, intensity, timing, quality and variability precipitation, runoff and recharge. • Consider sea level rise effects on water supply and other water resource conditions (e.g., recreation, habitat) and identify suitable adaptation measures. Consider OPC's Sea Level Rise Policy Reducing emissions (mitigation of greenhouse gasses) • Reduce carbon consumption, especially the energy embedded in water use, and ultimately reduce GHG emissions • Consider the strategies adopted by CARB in its AB 32 Scoping Plan, including innovative applications • Consider options for carbon sequestration where such options are integrally(directly or indirectly) tied to supporting IRWM Plan objectives
Resource Management Strategies	Identify and implement adaptation strategies that address region-specific or local climate change contributions or impacts
Project Review Process	Include the following factors: • Contribution of the project to adapting to climate change • Contribution of the project in reducing GHG emissions as compared to project alternatives
Relation to Local Water Planning	Consider and incorporate water management issues and climate change adaptation and mitigation strategies from local plans into the IRWM Plan.
Relation to Local Land Use Planning	Demonstrate information sharing and collaboration with regional land use planning in order to management multiple water demands through the state (as described in CWP Update 2009), adapt water management systems to climate change, and potentially offset climate change impacts to water supply.
Plan Performance and Monitoring	Contain policies and procedures that promote adaptive management.
Coordination	Consider the following: • Stay involved in CNRA's California Adaptation Strategy process • Consider joining The California Registry (www.theclimateregistry.org)

1. Based on information in DWR's 2012 Prop 84 and Prop 1E IRWM Guidelines, Appendix C, Table 7

2.2 Adaptation and Mitigation Analysis

In order to meet the IRWM Plan standards discussed in the previous section, the climate change analysis process shown in Figure 1 was followed. As previously discussed in this Study, climate change includes both adaptation (responding to climate change) and mitigation (reducing GHGs), and therefore is reflected in the analysis process below. While both the adaptation analysis and mitigation analysis include a literature review, strategy identification and performance metrics development, the adaptation analysis includes an extra step to identify and prioritize climate change vulnerabilities. The information gathered through this climate change analysis will be incorporated into the Region's IRWM Plan update. By working through each of these steps, the Region can meet the requirements contained in DWR's IRWM Plan Guidelines.

Figure 1: Climate Change Analysis Process



2.3 San Diego IRWM Region Climate Change Study

To fulfill DWR's requirements and work through the climate change analysis discussed above, the Region established a Climate Change Workgroup (Workgroup) comprised of various water resources and planning representatives that have experience in climate change planning within the Region to work with a consultant to develop this Climate Change Planning Study (Study). In addition, local climate change efforts, in particular the San Diego Foundation Regional Focus 2050 Study which defines Region-specific climate change impacts, were used in the climate change assessment.

3 Effects of Climate Change on Region

3.1 Impacts and Effects on Region

Estimating the impacts of climate change at a regional level is challenging due to the coarse spatial scale of models that project climate change impacts of temperature and rainfall, and due to the long time scale evaluated in many models (to the year 2100). Recently, state and local entities have been working to downscale climate models to allow for climate change planning at a level that can be useful for planning efforts. The timescale used for these models has also been downscaled to provide outputs for the year 2050, and though this is still a longer timescale than is used in IRWM planning, is still useful for assessing climate change.

To incorporate climate change into water resources management, downscaled temperature and precipitation projections are input into other models, such as hydrologic models, to project impacts to water supply, water demand, snow pack, sea level rise, and wildfires. The results of these models have been summarized in a variety of studies and planning documents at the state, regional, and local levels. As part of this Study, a number of these documents were reviewed to determine which best represented the impacts for the Region. These documents include:

- *Regional Focus 2050 Study* (San Diego Foundation, 2008a & 2008b)
- *2010 Urban Water Management Plan* (San Diego County Water Authority, 2011)
- *Using Future Climate Projections to Support Water Resources Decision Making in California,* (California Climate Change Center, 2009)
- *Reconciling Projections of Colorado River Streamflow, Southwest Hydrology* (Hoerling et al., 2009)

Climate change impacts and effects are based on very different climate change assumptions and analysis approaches. Table 2 summarizes the impacts and effects of climate change on the San Diego Region by 2050 (unless otherwise indicated), which are typically based on an average of various climate change analyses. Generally, climate change is expected to increase temperature in the region. Rainfall projections vary with some projections showing that the Region will receive as much as 35% less rainfall and some showing up to 17% more rainfall (San Diego Foundation, 2008a). It's generally accepted that storms will be less frequent, but more intense (San Diego Foundation, 2008a). With higher temperatures and changes in rainfall volume and frequency, additional impacts will be felt in the Region.

Imported water supply from the State Water Project is projected to decrease by up to 25% (California Climate Change Center, 2009), while Colorado River Aqueduct supply may decrease by up to 20% (Hoerling et al, 2009). An overall shortfall of 164,000 acre-feet per year (AFY) in imported water is expected by 2050 (San Diego Foundation, 2008b).

Preliminary analysis of regional water demand trends in the San Diego County Water Authority service area indicate that climate change impacts may result in a slight demand increase, between 0.6 and 1.8%, by the year 2035. (SDCWA, 2011).

In currently accepted models, sea level rise is projected to be at least 12 to 18 inches by 2050, which would both inundate the coast due to the average rise, and impact coastal flood control during storms (San Diego Foundation, 2008a).

The changes to climate are also expected to increase the frequency of wildfires. Studies suggest that there will be a 40% increase in Coastal Sage Scrub acreage burned (San Diego Foundation, 2008a), and that 54% more acreage in the Western U.S. will burn compared to present (San Diego Foundation, 2008a). Increases in wildfires have the potential to increase sedimentation and turbidity of surface waters, and increase flash flooding.

Knowing what climate change impacts and effects are projected to have on the Region, it's possible to determine what water resources in the Region are most vulnerable to climate change. The next sections identify and prioritize the vulnerabilities to determine how to best apply management practices. These effects were presented to and vetted by the Workgroup at a meeting held on June 12, 2012.

Table 2: Impacts and Effects of Climate Change on Region by 2050

Impact	Effect
Temperature	• 1.5°F to 4.5°F average temperature increase
Rainfall	• Variable projections predict between 35% drier and 17% wetter • Increase in variability between years
Supply	• Up to 25% decrease in SWP supply • Up to 20% decrease in Colorado River supply • 164,000 afy average shortfall in imported supply
Demand	• Potential 0.6% to 1.8% increase in demand by 2035
Sea level rise	• 12 to 18 inch rise in mean sea level rise
Wildfires	• 40% increase in California Coastal Shrub acreage burned in Southwestern U.S. • 54% increase in overall acreage burned in Western U.S.

3.2 Identification of Vulnerabilities

Understanding the potential impacts and effects that climate change is projected to have on the Region allows an informed vulnerability assessment to be conducted for the Region's water resources. A climate change vulnerability assessment helps a Region to assess its water resource sensitivity to climate change, prioritize climate change vulnerabilities, and ultimately guides decisions as to what strategies and projects would most effectively adapt to and mitigate against climate change. DWR has identified a series of questions to help regions identify key indicators of potential vulnerability, including (DWR, 2011):

- Currently observable climate change impacts (climate sensitivity)
- Presence of particularly climate sensitive features, such as specific habitats and flood control infrastructure (internal exposure)
- Resiliency of a region's resources (adaptive capacity)

The Workgroup developed an analysis of the Region's vulnerabilities to climate change at the June 12, 2012 climate change workshop by asking a series of questions suggested by DWR in its 2011 *Climate Change Handbook for Regional Water Planning.* Table 3 summarizes the analysis, which includes:

- Vulnerability Question: Taken from Box 4-1 of DWR's *Climate Change Handbook*

- Answer: Provided at June 12, 2012 workshop
- Justification: Why Y (yes) or N (no) was selected
- Vulnerability Issue: What is the climate change vulnerability issue that is identified by asking the question?

Following this analysis, the vulnerability issues were prioritized by the Workgroup. This activity and results are described in Chapter 4.

Table 3: Climate Change Vulnerability Indicator Questions

Vulnerability Question	Answer	Justification	Vulnerability Issue
Water Demand			
Are there major industries that require cooling/process water in your planning region?	Y	Electronics and aerospace manufacturing, energy generation, research development, pharmaceutical. Biotech and energy growing. Room for efficiency improvements	Increase in industrial demand
Are crops grown in your region climate-sensitive? Would shifts in daily heat patterns, such as how long heat lingers before night-time cooling, be prohibitive for some crops?	Y	Primary crops include avocados, nurseries and citrus which can be climate sensitive, but agricultural land use is expected to decrease. Rise in smaller agricultural/urban farms/residential gardens, and increased crop diversity. Decrease in larger agricultural users.	Increase in agricultural crop water demand per acre; small food production use of permaculture could decrease per acre use
Do groundwater supplies in your region lack resiliency after drought events?	Y	The small groundwater basins in the Region tend to decrease resiliency. Increasing impermeability reduces recharge. Sweetwater, Oceanside, Escondido/Vista. Salt water intrusion as water tables drop.	Lack of groundwater storage to buffer drought
Are water use curtailment measures effective in your region?	Y	Shortage management activities currently in place were effective in meeting demands during the last major drought which began in 2007. Management measures not previously considered, such as soil conditions, may provide additional opportunities.	Perceived limited ability to conserve further
Does water use vary by more than 50% seasonally in parts of your region?	Y	Water agencies have peaking factors ranging from 2:1 to 6:1. Some of the higher peaking agencies dependent on imported water will have reduced peaking as agricultural use declines and more development occurs.	Limited ability to meet summer demand
Are some in-stream flow requirements in your region either currently insufficient to support aquatic life, or occasionally unmet?	N	Most streams are intermittent; however, some agencies that move water between reservoirs via streams have in-stream requirements to protect species during certain times of the year which impacts when water can be moved.	Habitat demand would be impacted
Water Supply			
Does a portion of the water supply in your region come from snowmelt?	Y	Imported supplies (SWP, Colorado River) come from snowmelt.	Decrease in imported supply
Does part of your region rely on water diverted from the Delta, imported from the Colorado River, or imported from other climate-sensitive systems outside your region?	Y	Approximately 80% of the Region's supplies are imported.	Decrease in imported supply

Vulnerability Question	**Answer**	**Justification**	**Vulnerability Issue**
Would your region have difficulty in storing carryover supply surpluses from year to year?	N	No, the County has sufficient storage capacity, and is currently completing an emergency storage carryover project. It should be noted that there is little transfer market available in California, with a focus of storage in northern California.	Decrease in reliability
Does part of your region rely on coastal aquifers? Has salt intrusion been a problem in the past?	Y	Some brackish groundwater exists near the coast which limits the use of coastal aquifers.	Decrease in groundwater supply
Has your region faced a drought in the past during which it failed to meet local water demands?	Y	Drought management plans had to be put into effect. It should be noted that the Region has never failed to meet its customers' demands once drought measures were put into place. Development of additional supplies may reduce the Region's vulnerability to this issue.	Sensitivity due to higher drought potential
Does your region have invasive species management issues at your facilities, along conveyance structures, or in habitat areas?	Y	Quagga, Arundo, Tamarisk	Invasives can reduce supply available
Water Quality			
Are increased wildfires a threat in your region? If so, does your region include reservoirs with fire-susceptible vegetation nearby which could pose a water quality concern from increased erosion?	Y	Wildfires are a common occurrence in the area, and often cause increased erosion in the Region's watersheds.	Increased erosion and sedimentation
Does part of your region rely on surface water bodies with current or recurrent water quality issues related to eutrophication, such as low dissolved oxygen or algal blooms? Are there other water quality constituents potentially exacerbated by climate change?	Y	Several water bodies are 303(d) listed for water quality issues related to eutrophication including the Lake Hodges, Famosa Slough, Guajome Lake, Loma Alta Slough, Mission Bay at the mouths of Rose Creek and Tecolote Creek, lower San Diego River, Sal Elijo Lagoon, Santa Margarita Lagoon, Tijuana River, and the Tijuana River Estuary.	Increased eutrophication
Are seasonal low flows decreasing for some water bodies in your region? If so, are the reduced low flows limiting the water bodies' assimilative capacity?	Y	At times during the year, the only flow in some streams is irrigation overflow, which in turn increase the concentration of constituents.	Increased constituent concentration
Are there beneficial uses designated for some water bodies in your region that cannot always be met due to water quality issues?	Y	At times recreation use in some reservoirs is impacted, and beach closures occur. Wildlife habitat and freshwater habitat issues as well.	Decrease in recreational opportunity

Vulnerability Question	Answer	Justification	Vulnerability Issue
Does part of your region currently observe water quality shifts during rain events that impact treatment facility operation?	Y	Total dissolved solids (TDS), turbidity and nutrient levels in reservoirs may increase during storm events, impacting water treatment, particularly after fires. Oils and feces show up in reservoirs as well.	Increase in treatment needs and cost
Sea Level Rise			
Has coastal erosion already been observed in your region?	Y	Coastal erosion occurs at unstable bluffs along the coast, for example: Sunset cliff, bluffs along City of San Diego, Encinitas, military infrastructure at Coronado Island and Camp Pendleton..	Decrease in land due to erosion
Do tidal gauges along the coastal parts of your region show an increase over the past several decades?	Y	San Diego Bay Adaptation shows increasing levels	Damage to coastal recreation/tourism due to inundation
Is there land subsidence in the coastal areas of your region?	N	None noted	
Are there coastal structures, such as levees or breakwaters, in your region?	Y	Examples include Mission Bay, San Diego Harbor	
Is there significant coastal infrastructure, such as residences, recreation, water and wastewater treatment, tourism, and transportation) at less than six feet above mean sea level in your region?	Y	Beach community - wide-spread	
Are there climate-sensitive low-lying coastal habitats in your region?	Y	Habitat type - salt marsh	Damage to ecosystems/habitats
Are there areas in your region that currently flood during extreme high tides or storm surges?	Y	Mission Valley flooded from San Diego river during high tidal events	Storm drains and sewer systems will be inundated
Flooding			
Does critical infrastructure in your region lie within the 200-year floodplain?	Y	There is low-lying water and wastewater infrastructure. Pump stations.	Increases in inland flooding
Does aging critical flood protection infrastructure exist in your region?	Y	San Diego River Flood Improvement project. San Diego River Improvement Project (SDRIP) at Mission Valley.	

Vulnerability Question	Answer	Justification	Vulnerability Issue
Have flood control facilities (such as impoundment structures) been insufficient in the past?	Y	Flooding (and flash flooding in particular) has been a danger in certain areas of the Region due to overflowing drainage channels, low lying areas with poor drainage, and debris build-up in basins. Some areas identified by the County include localized areas in Mission Valley, Moreno Valley, Ocotillo Wells, Lemon Crest, below San Vicente Reservoir, Ramona, etc.	
Are wildfires a concern in parts of your region?	Y	Wildfires are a common occurrence in the Region.	Increases in flash flooding
Does part of your region lie within the Sacramento-San Joaquin Drainage District?	N	Not applicable	Not applicable
Ecosystem and Habitat			
Does your region include inland or coastal aquatic habitats vulnerable to erosion and sedimentation issues?	Y	Erosion and sedimentation issues in Penasquitos Canyon, San Onofre, Crest Canyon, San Dieguito lagoon, Del Mar area, Encinitas area,	Increased impacts to coastal species
Does your region include estuarine habitats which rely on seasonal freshwater flow patterns?	Y	A number of brackish lagoons exist along the coast including Batiquitos Lagoon, Buena Vista Lagoon, Agua Hedionda Lagoon, and San Elijo Lagoon.	
Do estuaries, coastal dunes, wetlands, marshes, or exposed beaches exist in your region? If so, are coastal storms possible/frequent in your region?	Y	Estuaries, coastal dunes, wetlands, marshes and exposed beaches exist along the entire coast of the region. Historically, coastal storms have caused erosion.	
Do climate-sensitive fauna or flora populations live in your region?	Y	Numerous species dependent upon the Mediterranean climate live in the Region	Decreases in ecosystem services
Do endangered or threatened species exist in your region? Are changes in species distribution already being observed in parts of your region?	Y	A number of endangered and threatened species exist in the Region.	Decrease in available, necessary habitat
Does the region rely on aquatic or water-dependent habitats for recreation or other economic activities?	Y	Beach tourism, reservoir recreation, river trails	
Are there areas of fragmented estuarine, aquatic, or wetland wildlife habitat within your region? Are there movement corridors for species to naturally migrate? Are there infrastructure projects planned that might preclude species movement?	Y	Multiple Species Habitat Conservation Plans (MSHCPs) working on ensuring corridors but some need to be created	

Vulnerability Question	Answer	Justification	Vulnerability Issue
Does your region include one or more of the habitats described in the Endangered Species Coalition's Top 10 habitats vulnerable to climate change?	N	No, the Region is not within any of the ten listed habitats.	
Are there rivers in your region with quantified environmental flow requirements or known water quality/quantity stressors to aquatic life?	Y	Some rivers and streams have quantified flow requirements but are primarily related to water rights. There is a bacteria Total Maximum Daily Load (TMDL) covers almost every water body in region. Nutrient TMDLs on lots of water bodies	Decrease in environmental flows
Hydropower			
Is hydropower a source of electricity in your region?	Y	Approximately 10% of electricity provided by SDG&E is hydropower. The Water Authority also produces hydroelectric power which is sold to San Diego Gas & Electric (SDG&E).	Decrease in hydropower potential
Are energy needs in your region expected to increase in the future? If so, are there future plans for hydropower generation facilities or conditions for hydropower generation in your region?	Y	Energy demand is expected to increase in the future with population increase and development. Additional hydropower was recently created at Lake Hodges/Olivenhain Reservoir, and an additional project is possible at the San Vicente Dam.	

4 Vulnerability Analysis

Once the Workgroup identified the Region's areas of concern in terms of climate change issues, it was able to begin examining the adaptability of its water resources to climate change by prioritizing the vulnerability issues. In prioritizing the vulnerability issues, the Workgroup identified those water resources that are of highest concern to the Region in terms of the significance of the impact of climate change and therefore the level of adaptation that will be needed.

4.1 Vulnerability Prioritization Process

The vulnerabilities identified were then prioritized during an exercise conducted with the Working group. Each member selected five vulnerability issues they determined should have the highest priority in being addressed. In total, the nine members of the Workgroup resulted in 45 votes. Votes were spread across nearly all of the categories, indicating the Workgroup perceived there to be a wide range of climate change vulnerabilities. The vulnerability issues were then grouped into five priority levels ranging from very high to very low according to the number of votes: very high (nine votes), high (three to four votes), medium (two to three votes), low (one to two votes), very low (no votes).

At a subsequent meeting held on July 26, 2012, the Workgroup reviewed the results and made suggestions for refinements that could be made to better align the prioritization with the vulnerabilities identified in planning documents. These suggestions were incorporated into the prioritized vulnerability issues which are shown in the next section.

4.2 Vulnerability Prioritization Results

The Region's list of prioritized vulnerabilities developed by the Workgroup is shown in Table 4, and discussed further below.

Table 4: Prioritized Climate Change Vulnerability Issues

Priority Level	Category and Vulnerability Issue
Very High	• Water Supply: Decrease in imported supply
High	• Water Supply: Sensitivity due to higher drought potential • Water Quality: Increased constituent concentrations • Flooding: Increases in flash flooding and inundation (extreme weather) • Sea Level Rise: Inundation of storm drains and sewer systems • Ecosystem/Habitat: Decrease in available necessary habitatEcosystem/Habitat: Decrease in ecosystem services
Medium	• Water Demand: Crop demand would increase • Water Demand: Industrial demand would increase • Water Supply: Decrease in groundwater supply • Water Quality: Increase in treatment cost • Sea Level Rise: Damage to coastal recreation / tourism due to inundation
Low	• Water Demand: Limited ability to conserve further • Water Supply: Lack of groundwater storage to buffer drought • Water Quality: Increased eutrophication • Flooding: Increases in inland flooding • Ecosystem/Habitat: Increased impacts to coastal species

Priority Level	Category and Vulnerability Issue
Very Low	• Water Demand: Limited ability to meet summer demand • Water Supply: Invasives can reduce supply available • Water Quality: Decrease in recreational opportunity • Sea Level Rise: Decrease in land • Sea Level Rise: Damage to ecosystem/habitat • Ecosystem/habitat: Decrease in environmental flows • Hydropower: Decrease in hydropower potential

Very High Prioritization

Water supply: Decrease in imported supply

The water supply vulnerability issue of "decrease in imported supply" was identified by the Workgroup as the highest priority issue. The Region is highly dependent on imported water with nearly 80% of its supplies currently coming from the State Water Project and the Colorado River aqueduct. Given the Region's limited local water supplies and the projected 20% to 25% decrease in imported water supply, a decrease in imported supply with climate change could have a significant impact on the Region and is an issue that needs to be addressed.

High Prioritization

Water Supply: Sensitivity due to higher drought potential

Climate change is expected to increase drought potential in the Region. In past years, water suppliers in the Region have successfully implemented drought management measures in order to lower demand. However, there are limits on the effectiveness of drought management measures. For example, tourists visiting the area are not likely to take part in drought management measures. Taking these issues into account, the Region is expected to be more susceptible to drought conditions. As drought is expected to increase in frequency and severity, more direct/long-term measures may be warranted as well as evaluation of revenue impacts to local water districts.

Water Quality: Increased constituent concentrations

The water quality vulnerability issue of increased constituent concentrations with climate change was ranked highly as water bodies in the area already require treatment to meet water quality standards, such as pathogens and nutrients. Climate change is expected to decrease local water resources in the future, which will increase constituent concentrations leading to difficulty in meeting water quality standards and increases to treatment cost.

Flooding: Increases in flash flooding and inundation (extreme weather)

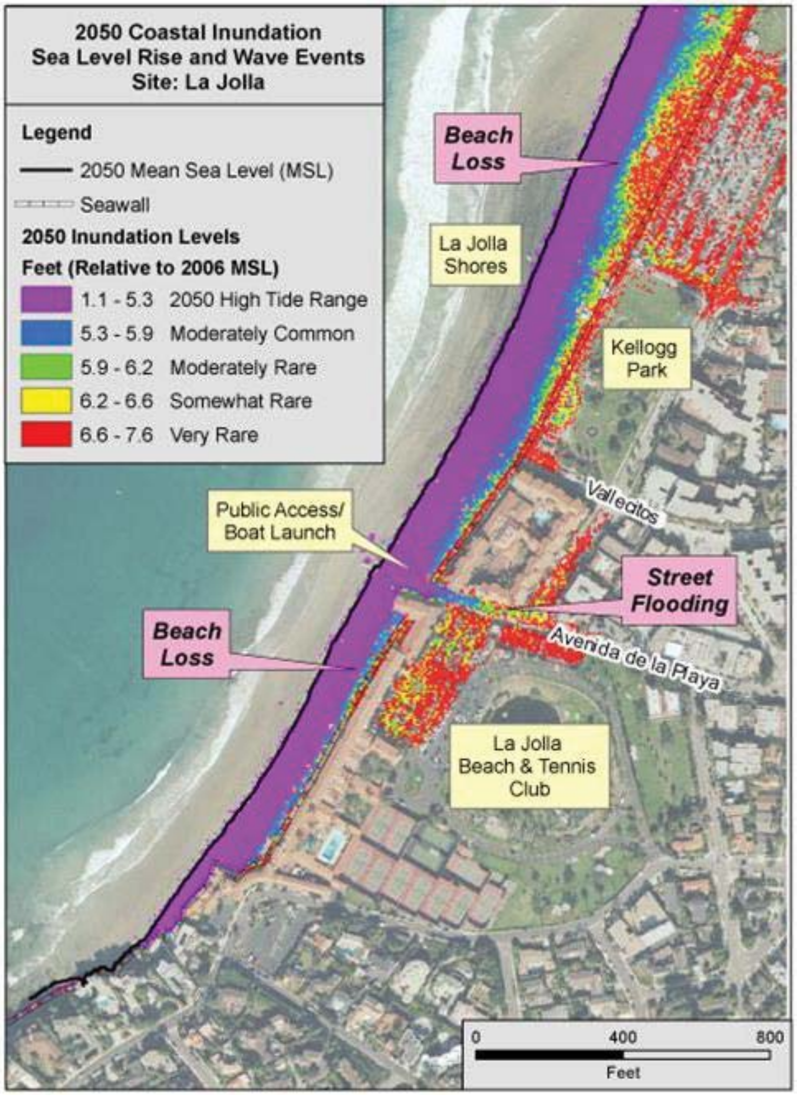
Flash flooding has been an issue for the Region in the past. Foothill areas are especially in danger from flash floods from large seasonal storms, which become a greater concern as the Region is prone to wildfires. Given that more frequent and intense storms are predicted as a consequence of climate change, in addition to increased wildfire risk, increases in flash flooding and inundation are of high concern.

Sea Level Rise: Inundation of storm drains and sewer systems

Regional studies have found that sea level rise is already occurring, and is expected to continue to rise an additional 12 and 18 inches by 2050. This new sea level will inundate a number of low-lying areas along the Region's coast such as Oceanside, La Jolla, Del Mar, Mission Beach, Coronado Island

and Camp Pendleton (Coastal Data Information Program, 2008), and impact their storm drains, wastewater systems, and other facilities and infrastructure. Coastal stormwater infrastructure and wastewater infrastructure that discharge to the ocean will be inundated with increased sea level rise, in particular during coastal storms, causing increased coastal flooding and sewer system overflows. An example of the extent of sea level rise on La Jolla is shown in Figure 2. Concern over aging systems and systems not designed for the increased capacity that will be needed with sea level rise led the group to give this issue a high-priority ranking

Figure 2: Projected 2050 Coastal Inundation with Sea Level Rise in La Jolla



(CDIP, 2008)

Ecosystem/Habitat: Decrease in available necessary habitat

The Region has numerous unique habitat areas extending from the mountains to the oceans which sensitive and endangered species are dependent upon. Anticipated higher temperatures, longer more frequent droughts, and more extreme precipitation events are projected to cause shifts and loss of habitat necessary for these species. Of particular concern to IRWM planning is the shift and loss of riparian and wetland habitat. Riparian habitat will be altered due to decreased flows, increased water temperatures and increased constituent concentrations. These reductions in habitat and associated loss of sensitive and endangered species will, in turn, create biodiversity shifts and increase invasive species.

Ecosystem/Habitat: Decrease in ecosystem services

Ecosystem services provide important functions, such as material cycling and treatment of stormwater runoff that, if decreased, may result in the need for additional water treatment. As discussed above, climate change is expected to decrease available necessary habitat. This reduction in habitat and associated biodiversity shift and increase in invasive species is expected to decrease ecosystem services in the Region, and could result in additional cost.

Medium Prioritization

Water Demand: Increase in agricultural crop water demand per acre

Crop water demands are expected to increase with the increased temperatures caused by climate change. Though the number of acres of agricultural land is expected to decrease slightly in the future, the net demand for irrigation supply on the remaining acres may exceed current demand under climate change conditions. Through current jurisdictional plans, notably the County of San Diego General Plan, it is apparent that agriculture is an important industry to the Region, particularly smaller agricultural productions and urban farms that provide an economic base and community character to the Region. Given that agricultural land is decreasing, the Workgroup has given this climate change vulnerability issue a medium prioritization.

Water Demand: Increase in industrial demand

Industrial demand is expected to increase with temperature increases due to the need for cooling and process water. This vulnerability issue is particularly of concern for industries such as electronics and aerospace manufacturing, energy generation, research development and the pharmaceutical industry. Industrial demand increases are of concern in particular as increased demand in the Region could impact companies' decision to locate their plants within the Region, which would impact economic development.

Water Supply: Decrease in groundwater supply

Groundwater supply is projected to decline by seven inches per year with climate change. In addition, sea water intrusion caused by rising sea levels also has the potential to impact groundwater supply quality, which will reduce the amount of groundwater available for pumping. Despite these impacts, this vulnerability issue was prioritized as medium since the Region only obtains a small portion of its supplies through groundwater due to the limited size of the groundwater basins. This issue may be of a higher priority in localized areas such as the community of Lakeside, the Marine Corps Base at Camp Pendleton, Pauma Valley, the San Luis Rey River area, and National City where groundwater is a greater portion of supply.

Water Quality: Increase in treatment cost

Total dissolved solids (TDS) levels in reservoirs may increase due to increases in precipitation intensity, particularly after fires, which would in turn increase the cost of water treatment. The Region has a number of reservoirs which are downstream of forested watersheds, and are susceptible to increased turbidity due to runoff from the surrounding area. However, this is not currently a large issues and therefore, the Workgroup rated this vulnerability issue as medium.

Sea Level Rise: Damage to coastal recreation / tourism due to inundation

As discussed previously, sea level rise is already documented as occurring, and is expected to continue to rise to between 12 and 18 inches by 2050. This rise in sea level is expected to cause damage to coastal recreation and tourism areas (such as beaches), though planning efforts such as the *Sea Level Rise Adaptation Strategy for San Diego Bay*, are ongoing. As the Region's economy relies partially on recreation and tourism, this vulnerability issue has been given a medium prioritization.

Low Prioritization

Water Demand: Limited ability to conserve further

The Region has already succeeded in implementing a large amount of water use efficiency measures. These measures have proven to be successful in mitigating against droughts such as in the severe drought that occurred in 2007. With this in mind, the Region may have difficulty in conserving further to meet greater drought frequency and intensity. However, additional savings measures are available and are being incorporated into Urban Water Management Plans and local climate action plans, which allow the Region to classify this issue as low.

Water Supply: Lack of groundwater storage to buffer drought

As mentioned under the water supply issue of decrease in groundwater supply, the Region's groundwater basins are limited in size, meaning there is very limited storage availability in the groundwater basins for use in buffering drought. Despite this, the Region's low reliability on groundwater makes this issue relatively less of a priority.

Water Quality: Increased eutrophication

Several water bodies in the Region are 303(d) listed for water quality issues related to eutrophication, including a number of lagoons, Tecolote Creek, lower San Diego River, and the Tijuana River Estuary. Consequently, it's probable that temperature increases caused by climate change could increase eutrophication of the Region's water bodies. This climate change vulnerability was ranked low, however, relative to other water quality vulnerability issues.

Flooding: Increases in inland flooding

Inland flooding was listed as a low priority for the Region, though there has been localized flooding in low-lying areas caused by insufficient and/or aging flood infrastructure. More extreme storms due to climate change could cause an increase in inland flooding, but as this is not a Region-wide issue, it has been prioritized as low as the Workgroup felt that this issue could best be addressed through local planning efforts.

Ecosystem/Habitat: Increased impacts to coastal species

Coastal dunes, wetlands, marshes and beaches provide unique habitats for the Region's species. Changes to temperature and precipitation have the potential to impact sensitive species. In addition, brackish lagoons provide estuarine habitat that depends on seasonal freshwater flow patterns. Habitat shifts and loss caused by climate change induced sea level rise, coastal erosion, and changes to freshwater flow patterns could also impact coastal species. Because coastal species are already protected and because this is a localized issue, the Workgroup decided to classify it as low priority.

Very Low Prioritization

Water Demand: Limited ability to meet summer demand

Increased seasonal temperatures associated with climate change may create a challenge for the Region in meeting summer demands. However, as this is an issue mainly caused by agricultural and urban irrigation, it is ranked low compared to other vulnerability issues.

Water Supply: Invasives can reduce supply available

Invasive species in the Region such as Arundo, Tamarisk and Quagga mussels have the potential to damage water conveyance facilities. Climate change is expected to increase invasive species in the region, which has the potential to impact water supplies in the future. However, this is not currently an issues affecting the Region's water supply infrastructure, and therefore is ranked very low.

Water Quality: Decrease in recreational opportunity

As previously discussed, climate change is expected to increase constituent concentrations in the Region's reservoirs and beaches, a number of which are frequently used for recreation. The Regional already experiences beach closures due to poor stormwater quality which deposits contaminants in near shore areas. A decrease in water quality could impact this beneficial use of these water resources. However, because this is a localized issue, it is ranked very low.

Sea Level Rise: Decrease in land

Coastal erosion is already occurring in the Region along bluffs and cliffs. The continued rise of sea level with climate change is expected to continue to erode land along the Region's coast, and could eventually begin to impact water and wastewater facilities near to the coast, but is a localized issue.

Sea Level Rise: Damage to ecosystem/habitat

As discussed under the vulnerability issue of *increased impacts to coastal species*, sea level rise can be expected to damage coastal ecosystems and habitats. This may occur both through loss of land and through alterations to freshwater flow patterns. Again though, this is a localized issue.

Ecosystem/habitat: Decrease in environmental flows

Aquatic and wetland species often depend upon a minimum flow to survive, and could be impacted with a decrease in minimum flow caused by climate change. In addition, a reduction in flows may increase constituent concentrations in the Region's waters that could stress aquatic life. There are a number of known water quality issues that have the potential to impact species should they worsen in the future, however, there are currently no minimum environmental flows in the Region's rivers and streams,

Hydropower: Decrease in hydropower potential

The Region currently generates 40 megawatts of peak hydropower at the Olivenhain Reservoir and additional hydropower at the Rancho Peñasquitos Pressure Control Hydroelectric Facility, and is examining potential for construction of hydropower facilities elsewhere. Alterations to the Region's hydrology could decrease hydropower generation potential, however, hydropower generation within the Region is not currently a major electricity source.

Vulnerabilities Summary

As can be seen in the above discussion, the Region is faced with a wide range of climate change vulnerability issues. Should the Region not implement strategies to adapt to these, it would face a number of risks, such as:

- Insufficient water supply if current dependence on imported supply is maintained
- Inability to meet demand during droughts given increased overall seasonal demands without increases in long-term operational storage
- Poorer water quality that further impacts beneficial uses and increases treatment needs
- Damage from increased flash flooding and inland flooding
- Coastal flooding and inundation of storm drains and sewer systems due to sea level rise
- Damage to coastal ecosystems and habitats, and associated impacts to sensitive species due to reduced terrestrial flows and sea level rise

5 Climate Change Management Strategies

The next step in conducting the Region's climate change analysis is to identify appropriate strategies for adapting to the climate change vulnerability issues identified and prioritized in Chapter 4. The strategies selected will help the region to respond to or prevent future impacts of climate change on water resources. These strategies also have the potential to mitigate against further climate change by reducing the energy used to treat or convey water supplies and reducing GHG emissions, and some have the potential to provide carbon sequestration. This chapter details how the Workgroup identified, evaluated and prioritized adaptation and mitigation strategies relevant to the Region.

5.1 Identification of Strategies

Strategies were identified through the review of relevant climate change related documents. These documents include:

- California Water Plan (DWR, 2009)
- Managing an Uncertain Future (DWR, 2008)
- Climate Change Scoping Plan (CARB, 2006)
- Climate Action Team Biennial Report (CalEPA, 2010)
- Resolution on Sea Level Rise (OPC, 2010)
- California Climate Extremes Workshop Report (Scripps, 2011)

The California Water Plan contains Resource Management Strategies (RMS) that provide the primary list of strategies used for this Study. The remaining documents in the above list were reviewed for additional and/or more detailed versions of the strategies. The Workgroup reviewed the strategies from the above documents, and discussed them relative to each strategy's potential for addressing the vulnerability issues prioritized above and mitigating GHG emissions.

5.2 Strategy Prioritization

A series of criteria were used by the Workgroup to refine and prioritize the list of strategies. The Workgroup first determined which strategies may be infeasible or not currently relevant to the Region at this time, or were determined not to be desired by the Region, and were not considered further in the strategy identification process.

Following the acceptance screening process, the strategies were analyzed further by evaluating each strategy according to the following questions:

- Is the strategy a "no regret" strategy?
- Does the strategy help to adapt to the vulnerability issues identified and evaluated in Chapters 3 and 4 of this Study?
- Does the strategy help the Region to mitigate GHGs?

By definition, "no regret" strategies are those strategies that would provide benefits today while also reducing vulnerability to climate change impacts. "No regret" strategies are desirable for immediate implementation as they will provide some benefit even under the uncertainty of climate change projections. The strategies were cross referenced with the vulnerability issues discussed in Chapters 2 and 3 to determine the number and type of climate change vulnerabilities that can be addressed. In addition, a strategy received a higher priority if it addresses vulnerability issues vulnerable determined to be high priority. Finally, the strategies were evaluated to determine whether they would mitigate GHG emissions through energy efficiency, emissions reduction, and/or carbon sequestration. Appendix A shows the results of this evaluation.

Using this evaluation, an initial prioritization was completed based on the criteria shown in Table 5.

Table 5: Initial Strategy Prioritization Criteria

Tier	Criteria
Tier 1	• Considered "no regret" • Mitigates GHGs/is GHG neutral • Addresses the imported water (very high) vulnerability
Tier 2	• Included in other local climate change documents • Mitigates GHGs/is GHG neutral • Addresses at least 3 vulnerability areas
Tier 3	• Addresses at least 1 vulnerability or mitigates GHGs

This initial prioritization was then presented to the Workgroup at the August 23, 2012 meeting where the listing of strategies and prioritization were further refined to best represent the needs of the Region. The final list of prioritized climate change management strategies and definitions is shown in Table 6, Table 7 and

Table 8 as Tier 1, 2, and 3 strategies. Strategies that were not prioritized as they were determined to be infeasible or irrelevant for the Region, or would have opposition, are shown Table 9. By prioritizing these strategies, the Region can better define the types of projects and targets that will help respond to climate change.

Table 6: Tier 1 Climate Change Management Strategies

Strategy	Description
Reduce Water Demand	
Urban water use efficiency	Technological and behavioral improvements that decrease indoor and outdoor residential, commercial, industrial and institutional water use.
Crop idling for water transfers	Remove lands from irrigation (with the aim of returning the lands to irrigation at a later time) in order to make water available for transfer.
Education	Implement outreach program to educate urban and agricultural water users in water demand reduction practices.
Gray water use	Implement gray water use systems to reduce water supply demand.
Rainfed agriculture	Transfer crop consumptive use to be supplied directly by rainfall.
Improve Operational Efficiency/Transfers	
Conveyance - Regional/local	Improvements to regional and local conveyance facilities that improve conveyance capacity, including locating and widening narrow points that constrict the movement of water to increase the water transmission capacity of the entire system, and improve operational flexibility.
System Reoperation	Change existing operation and management procedures for existing reservoirs and conveyance facilities to increase water related benefits from these facilities. May improve the efficiency of existing water uses or may increase the emphasis of one use over another.
Increase Water Supply	
Conjunctive Management & Groundwater Storage	Coordinate and plan use and management of both surface and groundwater resources to maximize the available and reliability of supplies.
Recycled Municipal Water	Increase supply of recycled water through additional wastewater treatment, and/or expand conveyance of recycled water to end users.
Improve Water Quality	
Drinking Water Treatment and Distribution	Develop and maintain adequate water treatment and distribution facilities, and protect the quality and safety of the raw water supply.
Groundwater/Aquifer Remediation	Remove contaminants that affect the beneficial use of groundwater. Can include passive or active methods.
Pollution Prevention	Prevent pollution of local surface waters and groundwater using tools that prevent point and non-point sources of pollution. Examples include water management actions and projects such as the increase of local flows, recharge area protection, etc.
Salt and Salinity Management	Manage salt and salinity in surface and/or groundwater. Examples of methods include dilution and displacement, desalination, and salt collection and storage. The Region is currently working to meet State Salinity/Nutrient Management Planning Guidelines, and will help to implement this strategy.
Urban Runoff Management	Prevent pollution of local surface waters by implementing best management practices (BMPs) designed to reduce the pollutant loading and reduce the volumes and velocities of urban runoff discharged to surface waters.
Improve Flood Management	
Flood Risk Management	Enhance flood protection through projects and programs that assist in the management of flood flows and to prepare for, respond to, and recover from a flood.
Practice Resource Stewardship	

Strategy	Description
Agricultural Lands Stewardship	Conserve natural resources and protect the environment by conserving and improving land for food, fiber and biofuels production, watershed functions, soil, air, energy, plant and other conservation purposes. Can also protect open space and the traditional characteristics of rural communities.
Economic Incentives (Loans, Grants, Water Pricing)	Provide incentives such as financial assistance, water pricing, and water market policies intended to influence water management in order to influence amount of use, time of use, wastewater volume, and source of supply.
Ecosystem Restoration	Improve the condition of modified natural landscapes and biological communities to provide for their sustainability and for their use and enjoyment by current and future generations.
Land Use Planning and Management	Integrate land use and water management for the planning of housing and economic development needs of a growing population while providing for the efficient use of water, water quality, energy and other resources.
Recharge area protection	Protect recharge areas to ensure that areas suitable for recharge continue to be capable of adequate recharge rather than covered by urban infrastructure, and prevent pollutants from entering groundwater.
Water-dependent recreation protection	Incorporate planning for water-dependent recreation activities in water project, and implement project that protect/create water-dependent recreation opportunities.
Watershed/Soils/Forest management	Create and implement plans, programs, projects and activities to restore, sustain, and enhance watershed functions, soil functions, and forests.
Water-dependent cultural resources and practices preservation	Create and implement plans, programs, projects and activities to preserve water-dependent cultural resources and practices
Increase urban forest management	Encourage the planting of trees in urban areas to improve urban water quality and local supplies.
Sea Level Rise	
Building water facilities in coordination with land use/sea level rise (SLR) planning	Integrate water/wastewater resources planning with land use/sea level rise planning.

Table 7: Tier 2 Climate Change Management Strategies

Strategy	Description
Improve Operational Efficiency/Transfers	
Conduct emissions inventory and target	Create inventory of all emission coming from water/wastewater operations, and develop a target for reduction of emissions.
Increase use of renewable energy sources	Use renewable energy sources for the treatment and conveyance of water and wastewater.
Increase Water Supply	
Surface Storage - Regional/local	Add or increase the storage capacity of surface storage reservoirs to increase carryover storage and optimize supplies in drought situations.
Improve Flood Management	
Protective Infrastructure	Construct flood management facilities to reduce the impact of climate change enhanced flooding.
Sediment Management	Implement sediment management practices to reduce the impact of climate change enhanced flash flooding.
Sea Level Rise	
Protect water facilities through the relocation or removal of vulnerable structures	Relocate or remove water/wastewater facilities that may be impacted by sea level rise.
Protect resources and facilities by constructing seawalls or levees	Construct seawalls or levees to protect from sea level rise caused by climate change.
Protect/restore/create coastal wetlands	Protect, restore or create coastal wetlands to prevent the loss of wetland due to sea level rise.

Table 8: Tier 3 Climate Change Management Strategies

Strategy	Description
Reduce Water Demand	
Water Meters Installation	Installation of water meters in order to bill customers volumetrically.
Improve Operational Efficiency/Transfers	
Treatment and Distribution Efficiency	Improve treatment and distribution efficiency or water/wastewater systems in order to reduce energy usage.
Water Transfers	Transfer or exchange of water or water rights that result in temporary or long-term change in the point of diversion, place of use, or purpose of use.
Localized Treatment	Implement localized (or decentralized) treatment of water/wastewater to reduce the energy required for conveyance.
Shift water use to off-peak hours	Implement policies that will shift water use (e.g. irrigation) to off-peak hours to reduce evaporative loss.
Optimize Sewer Systems	Optimize sewer systems (wastewater or stormwater) to adapt to increased precipitation caused by climate change.
Increase Water Supply	
Desalination (Seawater or Brackish Groundwater)	Construct desalination plant to treat seawater or brackish groundwater.
Indirect Potable Reuse/ Potable Reuse	Implement program that will use recycled water to recharge groundwater, or use advanced treated recycled water to augment drinking water supplies.

Table 9: Additionally Reviewed Climate Change Management Strategies

Strategy
Reduce Water Demand
Irrigated Land Retirement
Improve Operational Efficiency/Transfers
Conveyance - Delta
Increase Water Supply
Waterbag Transport/Storage Technology
Precipitation Enhancement
Surface Storage – CALFED
Dewvaporation or Atmospheric Pressure Desalination
Fog Collection
Matching Quality to Use
Sea Level Rise
Rolling Easements
Expendable/Movable Structures in Risk Areas

5.3 Performance Measures/Metrics for Adaptation and Mitigation Strategies

The set of strategies evaluated in the previous section were determined to be those that will best help the Region in responding to and reducing climate change impacts. When implementing these strategies, it will be necessary to develop performance measures or metrics to assess the effectiveness of a project in meeting the Region's goals. Though specific measures and metrics will be defined according a specific project or portfolio of projects, Table 10 provides examples of how these measures or metrics might be defined according to general water resource perspective. It should be noted that several of the strategies (the no regret strategies) may apply to additional objectives in the Region's IRWM Plan, and not solely to adapting to and/or mitigating climate change. Without specific metrics, it would be difficult to assess the effectiveness of strategies in responding to climate change. Moreover, some of the strategies implemented to adapt to climate change are "good planning" for future vulnerabilities and may not be immediately measurable. Many of the effects of climate change are anticipated past the planning horizon of the IRWM Plan. To respond to this uncertainty, the Region should update this climate change analysis during each IRWM Plan update, and implement adaptive management measures which will be discussed in the next chapter.

Table 10: Sample Performance Measures/Metrics

Strategy Category	Sample Performance Measures/Metrics
Reduce Water Demand	• Average (annual) water demand reduction • Peak (seasonal, monthly) water demand reduction
Improve Operational Efficiency	• Additional supply • Supply reliability
Increase Water Supply	• Additional supply • Potable demand offset • Supply reliability
Improve Water Quality	• Salt line migration • Stream temperature • Dissolved oxygen • Turbidity • Pollutant concentrations
Improve Flood Management	• Acres of a certain habitat or floodplain function restored/protected • Volume of natural flood storage provided • Storm return period used for planning • Expected damage resulting for a certain return period storm
Practice Resource Stewardship	• Presence/absence of key indicator species • Acres of a certain habitat or floodplain function restored/protected • Volume of natural flood storage provided • Acres of recharge area protected
Sea Level Rise	• Acres of coastal wetlands created/restored/protected • Miles of pipeline or number of facilities relocated away from coastlines • Length of coastline protected by seawalls or levees

6 Recommendations

The Region has taken the first steps in planning for climate change by examining current climate change projections to determine potential impacts, assessing water resource vulnerabilities, and developing a series of strategies that can be used in projects to adapt to climate change and mitigate GHGs. Chapter 6 discussed recommendations that may be used to successfully implement these strategies, including: use of adaptive management, objectives and targets for inclusion in the IRWM Plan, and project selection considerations for including climate change.

6.1 Adaptive Management

There is a level of uncertainty in projecting the effects and impacts of climate change. To respond to this, DWR recommends the use of adaptive management in implementing climate change strategies (DWR, 2011). Adaptive management consists of identifying and monitoring the most important uncertainties and translating them into risk triggers or early warning indicators. This allows for a flexible path of actions to take as triggers occur. DWR's *Climate Change Handbook* recommends the following steps in developing an adaptive management plan:

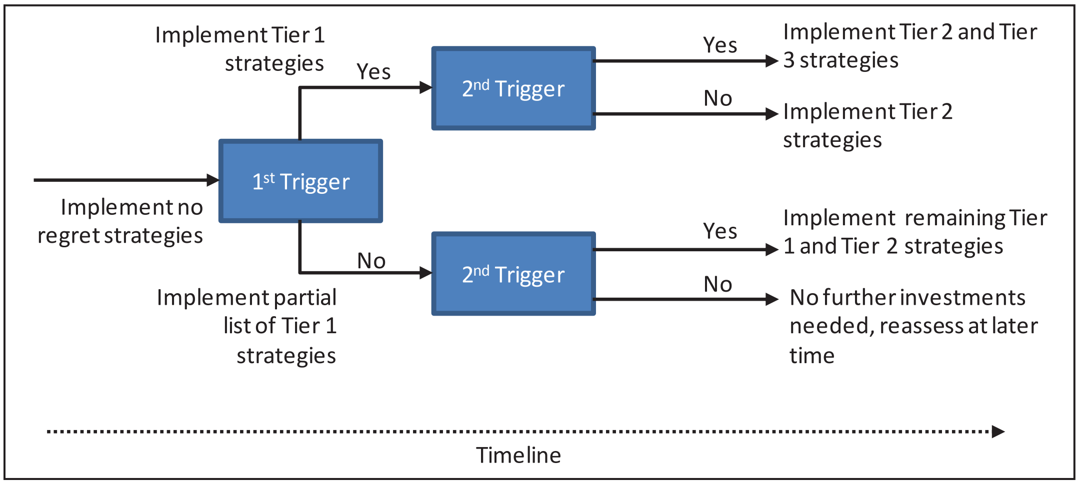
1. Identify risk triggers associated with important vulnerabilities or uncertainties
2. Quantify impacts and uncertainties
3. Evaluate strategies and define flexible implementation paths of action that allows for multiple options at specific triggers
4. Monitor performance and critical variables in the system
5. Implement or reevaluate strategies when triggers are reached

Under Step 1, the Region identifies risk triggers in order to monitor the Region's response to climate change. Risk triggers can be established deterministically (e.g., a threshold) or probabilistically (e.g. frequency of exceedance). The quantification of risk triggers are developed in Step 2, and serve as the basis for the definition of a path for plan implementation under Step 3.

Step 3 involves the definition of an implementation path for the evaluated strategies, and is central to the adaptive management process. The implementation path incorporates risk triggers over the course of time to allow the Region to determine what level of climate change adaptation/mitigation strategy should be implemented. Step 4 of the process, performance monitoring, incorporates performance measures and metrics used to evaluate water resources projects, and will help to define whether a risk trigger has been reached. Step 4 leads into the final step of implementing or reevaluating strategies, Step 5. The general structure of an adaptive management plan can be seen in Figure 3.

The key to successfully implementing the adaptive management process over time is continued active participation by stakeholders, and a clear understanding of project objectives. This should involve ongoing identification, monitoring, and updating of the most important impacts and uncertainties, and re-evaluation of the Region's vulnerabilities (DWR, 2011).

Figure 3: General Adaptive Management Plan



6.2 Climate Change Related Objectives and Targets

DWR requires that climate change be incorporated in the development of IRWM Plan objectives in terms of both climate change adaptation and GHG mitigation (DWR, 2012b). The strategies developed in Chapter 4 include both adaptation and mitigation, and therefore can be incorporated into climate change related objectives and targets that will meet DWR's requirement. The following objective and targets are recommended for inclusion in the IRWM Plan:

> **Objective: Effectively address climate change through adaptation and mitigation in water resource management.**
>
> Target 1: Encourage development of cost-effective carbon-efficient strategies for water management projects.
>
> Target 2: Incorporate adaptation strategies to respond to sea-level rise, rainfall variability, and temperature variability in planning for water and wastewater management.
>
> Target 3: Reduce or neutralize GHG emissions in all areas of water resource management.

6.3 Climate Change in Project Selection Considerations

In order for the Region to adapt to and mitigate against climate change, it will be necessary to ensure that projects utilize strategies identified in this study as helping the Region to adapt to and mitigate against climate change. It is recommended that the Region consider using the strategy priority levels discussed in Chapter 5 to assess the adaptation capacity of the project, and also consider whether the project helps the Region to mitigate GHGs. Oftentimes, a project that implements multiple strategies has the potential to increase the level of benefits provided while reducing the unit cost.

A recommended prioritization approach is presented in Table 11. In these prioritization criteria, projects are given higher priority for utilizing Tier 1 strategies and lower priority for Tier 3 strategies. Additionally, projects that contribute to two or more GHG measures, including energy efficiency, emissions reduction and carbon sequestration, are prioritized more highly. Projects that contribute to one of these mitigation measures receive higher prioritization, and projects that would increase GHGs receive reduce prioritization. In the future, it is recommended that the Region define a threshold for GHG production or remediation to be used in the prioritization of projects. A worksheet to assist the Region in scoring projects according to the number of strategies utilized can be found in Appendix B. In this way, the Region can ensure that projects will help it to both adapt to climate change vulnerabilities of high concern, and will mitigate against climate change.

Table 11: Climate Change Project Prioritization Criteria

Adaptation	Mitigation[1]	Priority
Tier 1 Strategy	Contributes to 2 out of 3 mitigation measures	High
	Contributes to 1 out of 3 mitigation measures	High
	Increases greenhouse gasses	Medium or Low
Tier 2 Strategy	Contributes to 2 out of 3 mitigation measures	High
	Contributes to 1 out of 3 mitigation measures	Medium
	Increases greenhouse gasses	Low
Tier 3 Strategy	Contributes to 2 out of 3 mitigation measures	Medium
	Contributes to 1 out of 3 mitigation measures	Low
	Increases greenhouse gasses	Low

1. Mitigation measures referred to are: energy efficiency, emissions reduction, and carbon sequestration

References

California Air Resources Board (CARB), 2006. *Climate Change Scoping Plan.*

CARB, 2013. *2008 to 2011 Emissions Trends, Mandatory Greenhouse Gas Emissions Reporting.*

California Climate Action Team (CO-CAT), 2010. *State of California Sea-Level Rise Interim Guidance Document.* Developed by the Sea-Level Rise Rask Force of the Coastal and Ocean Working Group of the California Climate Action Team.

California Climate Change Center, 2009. *Using Future Climate Projections to Support Water Resources Decision Making in California.* CEC-500-2009-052-F.

California Energy Commission (CEC), 2006. *Refining Estimates of Water-Related Energy Use in California*. California Energy Commission, PIER Industrial/Agricultural/Water End Use Energy Efficiency Program. CEC-500-2006-118.

California Environmental Protection Agency (CalEPA), 2010. *Climate Action Team Biennial Report*.

CEC, 2011. *Energy Aware Planning Guide: Water Use Strategies.*CEC-600-2009-013-F-VI-D.1.

Coastal Data Information Program , 2008. *Sea Level Rise Maps Developed for the Focus 2050 Regional Assessment.* http://www.sdfoundation.org/CivicLeadership/Programs/Environment/BlaskerRoseMiahforEnvironment/PublishedBlaskerResearch/SeaLevelRiseMaps.aspx

Cohen, Ronnie, 2007. "The Water-Energy Nexus"*. Southwest Hydrology*. September/October.

Department of Water Resources (DWR), 2012a. Management of the California State Water Project, Bulletin 132-08. http://www.water.ca.gov/swpao/docs/bulletin/08/Bulletin132-08.pdf.

DWR, 2012b. *Integrated Regional Water Management Proposition 84 & Proposition 1E Draft Guidelines.*

DWR, 2011. *Climate Change Handbook for Regional Planning*. Prepared for the US Environmental Protection Agency Region 9 and California Department of Water Resources.

DWR, 2009. *California Water Plan.*

DWR, 2008. *Managing an Uncertain Future: Climate Change Adaptation Strategies for California's Water.*

Hoerling, M., et al., 2009. "Reconciling Projections of Colorado River Streamflow." *Southwest Hydrology*. May/June.

Ocean Protection Council (OPC), 2010. *Resolution on Sea Level Rise.*

San Diego County Water Authority (SDCWA), 2011. 2010 Urban Water Management Plan.

ICLEI-Local Governments, 2012. *Sea Level Rise Adaptation Strategy for San Diego Bay*. Prepared with the support of The San Diego Foundation.

San Diego Foundation, 2008a. *Regional Focus 2050 Study Summary.* Summary prepared for the 2008 Climate Change Impacts Assessment, Second Biennial Science Report to the California Climate Action Team.

San Diego Foundation, 2008b. *Regional Focus 2050 Study Working Papers.* Working papers prepared for the 2008 Climate Change Impacts Assessment, Second Biennial Science Report to the California Climate Action Team.

Page intentionally left blank.

Appendix D - AWWA Water Loss Audit

Page intentionally left blank.

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

American Water Works Association.

? Click to access definition
\+ Click to add a comment

Water Audit Report for: City of Oceanisde (CA3710014)
Reporting Year: 2020 7/2019 - 6/2020

Please enter data in the white cells below. Where available, metered values should be used; if metered values are unavailable please estimate a value. Indicate your confidence in the accuracy of the input

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

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

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

	Grade	Value	Unit	Grade	Pcnt	Option	Value	Unit
Volume from own sources:	3	2,528.750	acre-ft/yr	3		● ○		acre-ft/yr
Water imported:	7	20,795.550	acre-ft/yr	8		● ○		acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr			● ○		acre-ft/yr
WATER SUPPLIED:		**23,324.300**	acre-ft/yr					

Enter negative % or value for under-registration
Enter positive % or value for over-registration

AUTHORIZED CONSUMPTION

	Grade	Value	Unit	Pcnt	Option	Value	Unit
Billed metered:	7	20,657.300	acre-ft/yr				
Billed unmetered:	n/a		acre-ft/yr				
Unbilled metered:	n/a		acre-ft/yr				
Unbilled unmetered:	5	58.311	acre-ft/yr		○ ●	58.311	acre-ft/yr
AUTHORIZED CONSUMPTION:		**20,715.611**	acre-ft/yr				

Click here: ? for help using option buttons

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

WATER LOSSES (Water Supplied - Authorized Consumption) **2,608.689** acre-ft/yr

Apparent Losses

	Grade	Value	Unit	Pcnt	Option	Value	Unit
Unauthorized consumption:		58.311	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

	Grade	Value	Unit	Pcnt	Option	Value	Unit
Customer metering inaccuracies:	3	421.578	acre-ft/yr	2.00%	● ○		acre-ft/yr
Systematic data handling errors:	5	51.643	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

Apparent Losses: **531.532** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: **2,077.158** acre-ft/yr

WATER LOSSES: **2,608.689** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: **2,667.000** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

	Grade	Value	Unit
Length of mains:	9	607.1	miles
Number of active AND inactive service connections:	8	44,609	
Service connection density:		73	conn./mile main

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

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

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

Average operating pressure: 9 96.0 psi

COST DATA

	Grade	Value	Unit
Total annual cost of operating water system:	10	$64,780,238	$/Year
Customer retail unit cost (applied to Apparent Losses):	8	$6.22	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	5	$1,430.93	$/acre-ft

☐ Use Customer Retail Unit Cost to value real

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 65 out of 100 *****

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

PRIORITY AREAS FOR ATTENTION:

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

1: Water imported

2: Customer metering inaccuracies

3: Variable production cost (applied to Real Losses)

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
\+ Click to add a comment

Water Audit Report for: City of Oceanside (CA3710014)
Reporting Year: 2019 7/2018 - 6/2019

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

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

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

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

	Grade	Value	Unit	Grade	Pcnt:		Value:	Unit
Volume from own sources:	3	2,447.500	acre-ft/yr	5		○ ●		acre-ft/yr
Water imported:	7	20,063.700	acre-ft/yr	8		● ○		acre-ft/yr
Water exported:	n/a	0.000	acre-ft/yr			● ○		acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 22,511.200 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

	Grade	Value	Unit	Pcnt:		Value:	Unit
Billed metered:	7	20,782.700	acre-ft/yr				
Billed unmetered:	n/a		acre-ft/yr				
Unbilled metered:	n/a		acre-ft/yr				
Unbilled unmetered:	5	56.278	acre-ft/yr		○ ●	56.278	acre-ft/yr

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

AUTHORIZED CONSUMPTION: 20,838.978 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) 1,672.222 acre-ft/yr

Apparent Losses

	Grade	Value	Unit	Pcnt:		Value:	Unit
Unauthorized consumption:		56.278	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

	Grade	Value	Unit	Pcnt:		Value:	Unit
Customer metering inaccuracies:	5	424.137	acre-ft/yr	2.00%	● ○		acre-ft/yr
Systematic data handling errors:	5	51.957	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

Apparent Losses: 532.371 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: 1,139.851 acre-ft/yr

WATER LOSSES: 1,672.222 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: 1,728.500 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

	Grade	Value	Unit
Length of mains:	9	591.0	miles
Number of active AND inactive service connections:	9	44,598	
Service connection density:		75	conn./mile main

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

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

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

Average operating pressure: 5 97.0 psi

COST DATA

	Grade	Value	Unit
Total annual cost of operating water system:	10	$60,354,905	$/Year
Customer retail unit cost (applied to Apparent Losses):	9	$8.01	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	7	$1,639.00	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 69 out of 100 *****

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

PRIORITY AREAS FOR ATTENTION:

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

1: Water imported

2: Customer metering inaccuracies

3: Billed metered

AWWA Free Water Audit Software:
Reporting Worksheet

WAS v5.0

? Click to access definition
\+ Click to add a comment

Water Audit Report for: City of Oceanside (CA3710014)
Reporting Year: 17/18 7/2017 - 6/2018

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

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

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

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

									Pcnt:		Value:	
Volume from own sources:	+	?	3	2,609.478	acre-ft/yr	+	?	8		○ ●	-7.580	acre-ft/yr
Water imported:	+	?	7	21,917.890	acre-ft/yr	+	?	8		● ○		acre-ft/yr
Water exported:	+	?	n/a	0.000	acre-ft/yr	+	?			● ○		acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: **24,534.948** acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

						Pcnt:		Value:	
Billed metered:	+	?	7	23,138.000	acre-ft/yr				
Billed unmetered:	+	?	n/a		acre-ft/yr				
Unbilled metered:	+	?	n/a		acre-ft/yr				
Unbilled unmetered:	+	?	5	61.337	acre-ft/yr		○ ●	61.337	acre-ft/yr

Use buttons to select percentage of water supplied
OR
value

AUTHORIZED CONSUMPTION: ? **23,199.337** acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption) **1,335.611** acre-ft/yr

Apparent Losses

						Pcnt:		Value:	
Unauthorized consumption:	+	?		61.337	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

Customer metering inaccuracies:	+	?	5	472.204	acre-ft/yr	2.00%	● ○		acre-ft/yr
Systematic data handling errors:	+	?		57.845	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

Apparent Losses: ? **591.386** acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? **744.224** acre-ft/yr

WATER LOSSES: **1,335.611** acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? **1,396.948** acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?	8	591.0	miles
Number of active AND inactive service connections:	+	?	8	44,450	
Service connection density:		?		75	conn./mile main

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

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

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

Average operating pressure: + ? 5 60.0 psi

COST DATA

Total annual cost of operating water system:	+	?	10	$51,901,710	$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	9	$7.90	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?	7	$1,457.00	$/acre-ft

☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 69 out of 100 *****

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

PRIORITY AREAS FOR ATTENTION:

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

1: Water imported

2: Customer metering inaccuracies

3: Billed metered

AWWA Free Water Audit Software:

Reporting Worksheet

WAS v5.0

? Click to access definition
\+ Click to add a comment

Water Audit Report for: City of Oceanside (CA3710014)
Reporting Year: 2016 1/2016 - 12/2016

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

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

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

Master Meter and Supply Error Adjustments

WATER SUPPLIED

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

								Pcnt:		Value:	
Volume from own sources:	+	?	2	2,313.000	acre-ft/yr	+ ?	3		● ○		acre-ft/yr
Water imported:	+	?	5	21,208.400	acre-ft/yr	+ ?	3		● ○		acre-ft/yr
Water exported:	+	?	n/a		acre-ft/yr	+ ?			● ○		acre-ft/yr

Enter negative % or value for under-registration
Enter positive % or value for over-registration

WATER SUPPLIED: 23,521.400 acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

						Pcnt:		Value:	
Billed metered:	+	?	4	22,183.400	acre-ft/yr				
Billed unmetered:	+	?	n/a		acre-ft/yr				
Unbilled metered:	+	?	n/a		acre-ft/yr				
Unbilled unmetered:	+	?	5	58.804	acre-ft/yr		○ ●	58.804	acre-ft/yr

Use buttons to select percentage of water supplied
OR
value

AUTHORIZED CONSUMPTION: ? 22,242.204 acre-ft/yr

WATER LOSSES (Water Supplied - Authorized Consumption)

1,279.197 acre-ft/yr

Apparent Losses

						Pcnt:		Value:	
Unauthorized consumption:	+	?		58.804	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

Customer metering inaccuracies:	+	?	3	686.085	acre-ft/yr	3.00%	● ○		acre-ft/yr
Systematic data handling errors:	+	?		55.459	acre-ft/yr	0.25%	● ○		acre-ft/yr

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

Apparent Losses: ? 800.347 acre-ft/yr

Real Losses (Current Annual Real Losses or CARL)

Real Losses = Water Losses - Apparent Losses: ? 478.850 acre-ft/yr

WATER LOSSES: 1,279.197 acre-ft/yr

NON-REVENUE WATER

NON-REVENUE WATER: ? 1,338.000 acre-ft/yr

= Water Losses + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

Length of mains:	+	?	7	591.0	miles
Number of active AND inactive service connections:	+	?	7	44,227	
Service connection density:		?		75	conn./mile main

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

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

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

Average operating pressure: + ? 7 60.0 psi

COST DATA

Total annual cost of operating water system:	+	?	10	$48,516,607	$/Year
Customer retail unit cost (applied to Apparent Losses):	+	?	9	$7.73	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	+	?	7	$1,535.00	$/acre-ft ☐ Use Customer Retail Unit Cost to value real losses

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 57 out of 100 *****

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

PRIORITY AREAS FOR ATTENTION:

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

1: Water imported

2: Billed metered

3: Customer metering inaccuracies

AWWA WLCC Free Water Audit Software: Reporting Worksheet

WAS v4.1

Back to Instructions

? Click to access definition

Water Audit Report for: CITY OF OCEANSIDE
Reporting Year: 2015 7/2014 - 6/2015

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

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

WATER SUPPLIED << Enter grading in column 'E'

		Grade	Value	Unit
Volume from own sources:	?	9	3,231.800	acre-ft/yr
Master meter error adjustment (enter positive value):	?	10	0.000	acre-ft/yr
Water imported:	?	9	23,081.700	acre-ft/yr
Water exported:	?			acre-ft/yr
WATER SUPPLIED:			26,313.500	acre-ft/yr

AUTHORIZED CONSUMPTION

Click here: ? for help using option buttons below

		Grade	Value	Unit	Pcnt:		Value:
Billed metered:	?	9	24,937.300	acre-ft/yr			
Billed unmetered:	?		0.000	acre-ft/yr			
Unbilled metered:	?		0.000	acre-ft/yr			
Unbilled unmetered:	?	8	60.300	acre-ft/yr		○ ●	60.300
AUTHORIZED CONSUMPTION:	?		24,997.600	acre-ft/yr			

Use buttons to select percentage of water supplied
OR
value

WATER LOSSES (Water Supplied - Authorized Consumption) 1,315.900 acre-ft/yr

Apparent Losses

		Grade	Value	Unit	Pcnt:		Value:
Unauthorized consumption:	?		65.784	acre-ft/yr	0.25%	● ○	

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

		Grade	Value	Unit	Pcnt:		Value:
Customer metering inaccuracies:	?	9	1,039.054	acre-ft/yr	4.00%	● ○	
Systematic data handling errors:	?	8	7.000	acre-ft/yr			
Apparent Losses:	?		1,111.838				

Choose this option to enter a percentage of billed metered consumption. This is NOT a default value ?

Real Losses (Current Annual Real Losses or CARL)

		Value	Unit
Real Losses = Water Losses - Apparent Losses:	?	204.062	acre-ft/yr
WATER LOSSES:		1,315.900	acre-ft/yr

NON-REVENUE WATER

		Value	Unit
NON-REVENUE WATER:	?	1,376.200	acre-ft/yr

= Total Water Loss + Unbilled Metered + Unbilled Unmetered

SYSTEM DATA

		Grade	Value	Unit
Length of mains:	?	9	591.0	miles
Number of active AND inactive service connections:	?	9	43,755	
Connection density:			74	conn./mile main
Average length of customer service line:	?	9	24.0	ft (pipe length between curbstop and customer meter or property boundary)
Average operating pressure:	?	9	60.0	psi

COST DATA

		Grade	Value	Unit
Total annual cost of operating water system:	?	8	$46,825,839	$/Year
Customer retail unit cost (applied to Apparent Losses):	?	10	$3.87	$/100 cubic feet (ccf)
Variable production cost (applied to Real Losses):	?	9	$1,208.00	$/acre-ft/yr

PERFORMANCE INDICATORS

Financial Indicators

Non-revenue water as percent by volume of Water Supplied:	5.2%
Non-revenue water as percent by cost of operating system:	4.7%
Annual cost of Apparent Losses:	$1,874,305
Annual cost of Real Losses:	$246,507

Operational Efficiency Indicators

Apparent Losses per service connection per day:	22.69	gallons/connection/day
Real Losses per service connection per day*:	4.16	gallons/connection/day
Real Losses per length of main per day*:	N/A	
Real Losses per service connection per day per psi pressure:	0.07	gallons/connection/day/psi
? Unavoidable Annual Real Losses (UARL):	246.42	million gallons/year
From Above, Real Losses = Current Annual Real Losses (CARL):	204.06	million gallons/year
? Infrastructure Leakage Index (ILI) [CARL/UARL]:	0.27	

* only the most applicable of these two indicators will be calculated

WATER AUDIT DATA VALIDITY SCORE:

***** YOUR SCORE IS: 87 out of 100 *****

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

PRIORITY AREAS FOR ATTENTION:

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

1: Water imported
2: Unauthorized consumption
3: Total annual cost of operating water system

For more information, click here to see the Grading Matrix worksheet

Page intentionally left blank.

Appendix E - Drought Ordinances

Page intentionally left blank.

ORDINANCE NO. 08-OR0439-1

AN ORDINANCE OF THE CITY OF OCEANSIDE AMENDING THE OCEANSIDE CITY CODE, CHAPTER 37, ARTICLE V., BY REVISING THE EXISTING WATER CONSERVATION PROGRAM AND ADDING DROUGHT RESPONSE CONSERVATION MEASURES TO BE IMPLEMENTED IN THE EVENT OF MANDATORY WATER REDUCTIONS

WHEREAS, on March 27, 1991, the City Council adopted Ordinance No. 091-15, which established a water conservation program for the City;

WHEREAS, article 10, section 2 of the California Constitution declares that waters of the State are to be put to beneficial use, that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare; and

WHEREAS, conservation of current water supplies and minimization of the effects of water supply shortages that are the result of drought are essential to the public health, safety and welfare; and

WHEREAS, regulation of the time of certain water use, manner of certain water use, design of rates, method of application of water for certain uses, installation and use of water-saving devices, provide an effective and immediately available means of conserving water; and

WHEREAS, adoption and enforcement of a comprehensive water conservation program will allow the City of Oceanside to delay or avoid implementing measures such as water rationing or more restrictive water use regulations pursuant to a declared water shortage emergency as authorized by California Water Code sections 350 et seq; and

WHEREAS, San Diego County is a semi-arid region and local water resources are scarce. The region is dependent upon imported water supplies provided by the San Diego County Water Authority, which obtains a substantial portion of its supplies from the Metropolitan Water District of Southern California. Because the region is dependent upon imported water supplies, weather and other conditions in other portions of this State and of the Southwestern United States affect the availability of water for use in San Diego County; and

WHEREAS, the San Diego County Water Authority has adopted an Urban Water Management Plan that includes water conservation as a necessary and effective component of the Water Authority's programs to provide a reliable supply of water to meet the needs of the Water Authority's 24 member public agencies, including the City of Oceanside. The Water Authority's Urban Water Management Plan also includes a contingency analysis of actions to be taken in response to water supply shortages. This ordinance is consistent with the Water Authority's Urban Water Management Plan; and

WHEREAS, as anticipated by its Urban Water Management Plan, the San Diego County Water Authority, in cooperation and consultation with its member public agencies, has adopted a Drought Management Plan, which establishes a progressive program for responding to water supply limitations resulting from drought conditions. This ordinance is intended to be consistent with and to implement the Water Authority's Drought Management Plan; and

WHEREAS, the Water Authority's Drought Management Plan contains three stages containing regional actions to be taken to lessen or avoid water supply shortages. This ordinance contains drought response levels that correspond with the Drought Management Plan stages; and

WHEREAS, the City of Oceanside, due to the geographic and climatic conditions within its territory and its dependence upon water imported and provided by the San Diego County Water Authority, may experience shortages due to drought conditions, regulatory restrictions enacted upon imported supplies and other factors. The City of Oceanside has adopted an Urban Water Management Plan and a Water Conservation Program (Oceanside City Code, Chapter 37, Article V) that includes water conservation as a necessary and effective component of its programs to provide a reliable supply of water to meet the needs of the public within its service territory. The City of Oceanside's Urban Water Management Plan and Water Conservation Program also include a contingency analysis of actions to be taken in response to water supply shortages. This ordinance is consistent with the Urban Water Management Plan and the Water Conservation Program adopted by the City of Oceanside; and

WHEREAS, the water conservation measures and progressive restrictions on water use and method of use identified by this ordinance provide certainty to water users and enable the City of Oceanside to control water use, provide water supplies, and plan and implement water management measures in a fair and orderly manner for the benefit of the public.

WHEREAS, the City Council has determined that the water conservation program shall be amended by including revised methods to reduce under certain circumstances potable water use and establishing a Drought Response Conservation Program to be implemented in the event of mandatory water reductions as determined by the Metropolitan Water District of Southern California and the San Diego County Water Authority, which are the City's external water providers.

NOW, THEREFORE, the City Council of the City of Oceanside DOES ORDAIN as follows:

SECTION 1. Sec. 37.101 of the Oceanside City Code shall be amended to read as follows:

"Sec. 37.101 Declaration of Necessity and Intent

"(a) This ordinance establishes water management requirements necessary to conserve water, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, prevent unreasonable use of water, prevent unreasonable method of use of water within the City of Oceanside in order to assure adequate supplies of water to meet the needs of the public, and further the public health, safety, and welfare, recognizing that water is a scarce natural resource that requires careful management in times of drought, but at all times.

(b) This ordinance establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes four levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies.

(c) Level 1 condition drought response measures are voluntary and will be reinforced through local and regional public education and awareness measures that may be funded in part by the City of Oceanside. During drought response conditions Levels 2 through 4, all conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals.

(d) During a Drought Response Level 2 condition or higher, the water conservation measures and water use restrictions established by this ordinance are mandatory and violations are subject to criminal, civil, and administrative penalties and remedies specified in this ordinance and as provided in the Oceanside City Code."

SECTION 2. Sec.37.101.1 shall be added and shall read as follows:

"Sec. 37.101.1 Application

(a) The provisions of this ordinance apply to any person in the use of any water provided by the City of Oceanside.

(b) This ordinance is intended solely to further the conservation of water. It is not intended to implement any provision of federal, State, or local statutes, ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to Chapter 40 of the Oceanside City Code or the Regional Water Quality Control Board for information on any urban runoff/stormwater ordinances or urban runoff/stormwater management plans.

(c) Nothing in this ordinance is intended to affect or limit the ability of the City of Oceanside to declare and respond to an emergency, including an emergency that affects the ability of the City of Oceanside to supply water.

(d) The provisions of this ordinance do not apply to use of water from private wells or to recycled water.

(e) Nothing in this ordinance shall apply to use of water that is subject to a special supply program, such as the Metropolitan Interim Agricultural Water Program or the Water Authority Special Agricultural Rate programs. Violations of the conditions of the special supply programs are subject to the penalties established under the applicable program. A person using water subject to a special supply program and other water provided by the City of Oceanside is subject to this ordinance in the use of the other water."

SECTION 3. Sec. 37.103 (c) shall be amended to read as follows:

"(c) Water users shall not let water leave the property by draining onto adjacent properties or public or private roadways due to irrigation or failure to correct known leaks. Spraying hard surfaces during irrigation activities is prohibited."

SECTION 4. **Sec. 37.105. Definitions** shall be amended by adding the following:

" (j) *DMP* means the Water Authority's Drought Management Plan in existence on the effective date of this ordinance and as readopted or amended from time to time, or an equivalent plan of the Water Authority to manage or allocate supplies during shortages.

(k) *Grower* refers to those engaged in the growing or raising, in conformity with recognized practices of husbandry, for the purpose of commerce, trade, or industry, or for use by public educational or correctional institutions, of agricultural, horticultural or floricultural products, and produced: (1) for human consumption or for the market, or (2) for the feeding of fowl or livestock produced for human consumption or for the market, or (3) for the feeding of fowl or livestock for the purpose of obtaining their products for human consumption or for the market. "Grower" does not refer to customers who purchase water subject to the Metropolitan Interim Agricultural Water Program or the Water Authority Special Agricultural Rate programs.

(l) *Metropolitan* means the Metropolitan Water District of Southern California.

(m) *Person* means any natural person, corporation, public or private entity, public or private association, public or private agency, government agency or institution, school district, college, university, or any other user of water provided by the City of Oceanside.

(n) *Water Authority* means the San Diego County Water Authority."

SECTION 5. Sec. 37.106 shall be amended to read as follows:

"Sec. 37.106. Conservation levels

(a) General conditions. Customers are always asked to use water wisely and to practice water conservation measures so that water is not wasted. Under these conditions, the City of

Oceanside has sufficient water supplies to meet normal and local emergency water supply needs. To protect and to enhance the city's overall use of local water supply, water treatment devices that waste potable water or that degrade wastewater so that it cannot be utilized for reclaimed water or local basin recharge will not be sold to or utilized by any users unless necessary for authorized medical reasons. The City encourages customers to follow the water conservation practices listed in Drought Response Level 1 at all times.

(b) Drought Response Level 1 – Drought Watch Condition

1. A Drought Response Level 1 condition is also referred to as a "Drought Watch" condition. A Level 1 condition applies when the Water Authority notifies its member agencies that due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a consumer demand reduction of up to 10 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. The Water Utilities Director shall declare the existence of a Drought Response Level 1 and take action to implement the Level 1 conservation practices indentified in this ordinance.

2. During a Level 1 Drought Watch condition, the City of Oceanside will increase its public education and outreach efforts to emphasize increased public awareness of the need to implement the following water conservation practices:

a. Stop washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.

b. Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.

c. Irrigate residential and commercial landscape before 10:00 a.m. and after 6:00 p.m. only.

d. Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.

e. Irrigate nursery and commercial grower's products before 10:00 a.m. and after 6:00 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.

f. Use re-circulated water to operate ornamental fountains.

g. Wash vehicles using a bucket and a hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Avoid washing during hot conditions when additional water is required due to evaporation.

h. Serve and refill water in restaurants and other food service establishments only upon request.

i. Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.

j. Repair all water leaks within five (5) days of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

k. Use recycled or non-potable water for construction purposes when available.

3. During a Drought Response Level 2 condition or higher, all persons shall be required to implement the conservation practices established in a Drought Response Level 1 condition.

(c) Drought Response Level 2 – Drought Alert Condition

1. A Drought Response Level 2 condition is also referred to as a "Drought Alert" condition. A Level 2 condition applies when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to 20 percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring the existence of a Drought Response Level 2 condition and implementing the mandatory Level 2 conservation measures indentified in this ordinance.

2. All persons using City of Oceanside water shall comply with Level 1 Drought Watch water conservation practices during a Level 2 Drought Alert, and shall also comply with the following additional conservation measures:

a. Limit residential and commercial landscape irrigation to no more than three (3) assigned days per week on a schedule established by the Water Utilities Director and posted by the City of Oceanside. During the months of November through May, landscape irrigation is limited to no more than once per week on a schedule established by the Water Utilities Director and posted by the City of Oceanside. This section shall not apply to commercial growers or nurseries.

b. Limit lawn watering and landscape irrigation using sprinklers to no more than ten (10) minutes per water station per assigned day. This provision does not apply to landscape irrigation systems using water efficient devices, including but not limited to: weather-based controllers, drip/micro/irrigation systems or stream rotor sprinklers.

c. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by subsection 37.106(c)2.a., on the same schedule set forth in subsection 37.106(c)2.a. by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.

d. Repair all leaks within seventy-two (72) hours of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

e. Stop operating ornamental fountains or similar decorative water features unless recycled water is used.

(d) Drought Response Level 3 – Drought Critical Condition

1. A Drought Response Level 3 condition is also referred to as a "Drought Critical" condition. A Level 3 condition applies when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to 40 percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring

the existence of a Drought Response Level 3 condition and implementing the Level 3 conservation measures identified in this ordinance.

2. All persons using City of Oceanside water shall comply with Level 1 Drought Watch and Level 2 Drought Alert water conservation practices during a Drought Response Level 3 condition, and shall also comply with the following additional mandatory conservation measures:

a. Limit residential and commercial landscape irrigation to no more than two (2) assigned days per week on a schedule established by the Water Utilities Director and posted by the City of Oceanside. During the months of November through May, landscape irrigation is limited to no more than once per week on a schedule established by the Water Utilities Director and posted by the City of Oceanside. This section shall not apply to commercial growers or nurseries.

b. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by subsection 37.106(d)2.a., on the same schedule set forth in subsection 37.106(d)2.a. by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.

c. Stop filling or re-filling ornamental lakes or ponds, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a drought response level under this ordinance.

d. Stop washing vehicles except at commercial carwashes that re-circulate water, or by high pressure/low volume wash systems.

e. Repair all leaks within forty-eight (48) hours of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

3. Upon the declaration of a Drought Response Level 3 condition, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided, and no statements of immediate ability to serve or provide potable water service (such as, will-serve

letters, certificates, or letters of availability) shall be issued, except under the following circumstances:

a. A valid, unexpired building permit has been issued for the project; or

b. The project is necessary to protect the public's health, safety, and welfare; or

c. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the City of Oceanside.

This provision shall not be construed to preclude the resetting or turn-on of meters to provide continuation of water service or to restore service that has been interrupted for a period of one year or less.

d. Upon declaration of a Drought Response Level 3 condition, the City of Oceanside will suspend consideration of annexations to its service area.

e. The City of Oceanside may establish a water allocation for property served by the City of Oceanside using a method that does not penalize persons for the implementation of conservation methods or the installation of water saving devices. If the City of Oceanside establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the City of Oceanside customarily mails the billing statement for the fees or charges for on-going water service. The notice of allocation may also include notice that water usage in excess of the allocation will be subject to a penalty in a specified amount for each billing unit of water used in excess of the allocation. The penalty for excess water use shall be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance.

(e) Drought Response Level 4 – Drought Emergency Condition

1. A Drought Response Level 4 condition is also referred to as a "Drought Emergency" condition. A Level 4 condition applies when the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies its member agencies that a Level 4 requires a demand reduction of more than 40 percent in order for the City of Oceanside to have maximum water supplies available to meet anticipated

demands. The City of Oceanside shall declare a Drought Emergency in the manner and on the grounds provided in California Water Code section 350.

2. Upon declaration of a Drought Emergency, all persons using City of Oceanside water shall comply with conservation measures required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical conditions and shall also comply with the following additional mandatory conservation measures:

a. Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries. This restriction shall not apply to the following categories of use unless the City of Oceanside has determined that recycled water is available and may be lawfully applied to the use.

(1) Maintenance of trees and shrubs that are watered on the same schedule set forth in subsection 37.106(d)2.a. by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation;

(2) Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshall of the local fire protection agency having jurisdiction over the property to be irrigated;

(3) Maintenance of existing landscaping for erosion control;

(4) Maintenance of plant materials identified to be rare or essential to the well-being of rare animals;

(5) Maintenance of landscaping within active public parks and playing fields, day care centers, school grounds, cemeteries, and golf course greens, provided that such irrigation does not exceed two (2) days per week according the schedule established under subsection 37.106(d)2.a.;

(6) Watering of livestock; and

(7) Public works projects and actively irrigated environmental mitigation projects.

b. Repair all leaks within twenty-four (24) hours of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

3. The City of Oceanside may establish a water allocation for property served by the City of Oceanside. If the City of Oceanside establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the City of Oceanside customarily mails the billing statement for the fees or charges for on-going water service. The notice of allocation may also include notice that water usage in excess of the allocation will be subject to a penalty in a specified amount for each billing unit of water used in excess of the allocation. The penalty for excess water use shall be cumulative to any other remedy or penalty that may be imposed for violation of this ordinance.

SECTION 6. Sec. 37.107 shall be amended to read as follows:

"Sec. 37.107. Correlation between Drought Management Plan and Drought Response Levels

(a) The correlation between the Water Authority's DMP stages and the City of Oceanside's drought response levels identified in this ordinance is described herein. Under DMP Stage 1, the City of Oceanside would implement Drought Response Level 1 actions. Under DMP Stage 2, the City of Oceanside would implement Drought Response Level 1 or Level 2 actions. Under DMP Stage 3, the City of Oceanside would implement Drought Response Level 2, Level 3, or Level 4 actions.

(b) The drought response levels identified in this ordinance correspond with the Water Authority DMP as identified in the following table:

Drought Response Levels	Use Restrictions	Conservation Target	DMP Stage
1 – Drought Watch	Voluntary	Up to 10%	Stage 1 or 2
2 – Drought Alert	Mandatory	Up to 20%	Stage 2 or 3
3 – Drought Critical	Mandatory	Up to 40%	Stage 3
4 – Drought Emergency	Mandatory	Above 40%	Stage 3

///

///

SECTION 7. Sec. 37.108 shall be amended to read as follows:

"Sec. 37.108. Procedures for Determination and Notification of Drought Response Level.

(a) The existence of a Drought Response Level 1 condition may be declared by the Water Utilities Director upon a written determination of the facts and circumstances supporting the determination. A copy of the written determination shall be filed with the Oceanside City Clerk and provided to the Oceanside City Council. The Water Utilities Director may publish a notice of the determination of existence of Drought Response Level 1 condition in one or more newspapers, including a newspaper of general circulation within the City of Oceanside. The City of Oceanside may also post notice of the condition on its website.

(b) The existence of Drought Response Level 2 or Level 3 conditions may be declared by resolution of the Oceanside City Council adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation measures applicable to Drought Response Level 2 or Level 3 conditions shall take effect on the tenth (10) day after the Oceanside City Council adopts a resolution declaring the response level. Within five (5) days following the declaration of the response level, the City of Oceanside shall publish a copy of the resolution in a newspaper used for publication of official notices.

(c) The existence of a Drought Response Level 4 condition may be declared in accordance with the procedures specified in California Water Code Sections 351 and 352. The mandatory conservation measures applicable to Drought Response Level 4 conditions shall take effect on the tenth (10) day after the date the response level is declared. Within five (5) days following the declaration of the response level, the City of Oceanside shall publish a copy of the resolution in a newspaper used for publication of official notices. If the City of Oceanside establishes a water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the City of Oceanside customarily mails the billing statement for the fees or charges for on-going water service. Water allocation shall be effective on the fifth (5) day following the date of the mailing or at such later date as specified in the notice.

(d) The Oceanside City Council may declare an end to the Drought Response Level by the adoption of a resolution at any regular or special meeting held in accordance with State law."

SECTION 8. Subsection (a) of 37.109 shall be amended to read as follows:

"Sec. 37.109. **Violation, remedies.**

(a) The penalties for violations of this article are set forth in Section 1.7 and Section 1.14 et seq. of the City Code."

SECTION 9. **Severability.**

If any section, sentence, clause or phrase of this ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance and adopted this ordinance and each section, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional."

SECTION 10. The City Clerk of the City of Oceanside is hereby directed to publish this ordinance, or the title hereof as a summary, pursuant to state statute, once within ten (10) days after its passage in the North County Times, a newspaper of general circulation published in the City of Oceanside.

///

///

///

SECTION 11. This ordinance shall take effect and be in force upon adoption.

INTRODUCED at a regular meeting of the City Council of the City of Oceanside held on the 18th day of June, 2008, and, thereafter,

PASSED, AND ADOPTED by the City Council of the City of Oceanside, California this 9th day of July, 2008, by the following vote:

AYES: WOOD, CHAVEZ, FELLER, KERN, SANCHEZ
NAYS: NONE
ABSENT: NONE
ABSTAIN: NONE

MAYOR, CITY OF OCEANSIDE

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

Barbara Hamilton, ASST.
CITY ATTORNEY

AN ORDINANCE OF THE CITY OF OCEANSIDE AMENDING THE OCEANSIDE CITY CODE, CHAPTER 37, ARTICLE V., BY REVISING THE EXISTING WATER CONSERVATION PROGRAM AND ADDING DROUGHT RESPONSE CONSERVATION MEASURES TO BE IMPLEMENTED IN THE EVENT OF MANDATORY WATER REDUCTIONS

///
///
///

G:\Administration\Council - Commission\Staff Reports\Staff Reports - 2008\Resolutions and Ordinances\6-18-2008 Water Conservation Drought Management Ordinance.doc

ORDINANCE NO. 15-OR0276-1

AN URGENCY ORDINANCE OF THE CITY OF OCEANSIDE AMENDING OCEANSIDE CITY CODE, CHAPTER 37, ARTICLE V REVISING AND UPDATING THE WATER CONSERVATION PROGRAM AND THE DROUGHT RESPONSE CONSERVATION MEASURES

WHEREAS, on March 27, 1991, the City Council adopted Ordinance No. O91-15, which established a water conservation program for the City; and

WHEREAS, Article 10, Section 2 of the California Constitution declares that waters of the State are to be put to beneficial use, that waste, unreasonable use, or unreasonable method of use of water be prevented, and that water be conserved for the public welfare; and

WHEREAS, conservation of current water supplies and minimization of the effects of water supply shortages that are the result of drought are essential to the public health, safety and welfare; and

WHEREAS, the State of California is experiencing unprecedented drought conditions with 2014 projected to become the driest year on record; and

WHEREAS, on January 17, 2014, the Governor issued a proclamation of a state of emergency under the California Emergency Services Act based on drought conditions; and

WHEREAS, on April 1, 2015, the Governor issued an Executive Order that, in part, directs the State Board to impose restrictions on water suppliers to achieve a statewide 25 percent reduction in potable urban usage through February, 2016; and

WHEREAS, the present year is critically dry and has been immediately preceded by two or more consecutive below normal, dry, or critically dry years; and

WHEREAS, the drought conditions will likely continue for the foreseeable future and additional action by both the State Water Resources Control Board and local water suppliers will likely be necessary to prevent waste and unreasonable use of water and to further promote conservation; and

Whereas, present conditions create an imminent threat to the public health and welfare, and must be addressed immediately. Failure to address present conditions may result in a shortage of water for the Citizens of Oceanside, and could subject the City to substantial fines and penalties.

NOW, THEREFORE, the City Council of the City of Oceanside DOES ORDAIN as follows:

SECTION 1. Section 37.101, subdivision (a) of the Oceanside City Code shall be amended to read as follows:

Sec. 37.101 Declaration of Necessity and Intent

(a) This article establishes water management requirements necessary to conserve water, enable effective water supply planning, assure reasonable and beneficial use of water, prevent waste of water, prevent unreasonable use of water, prevent unreasonable method of use of water within the City of Oceanside in order to assure adequate supplies of water to meet the needs of the public, and further the public health, safety, and welfare, recognizing that water is a scarce natural resource that requires careful management not only in times of drought, but at all times

SECTION 2. Sec.37.101.1, subdivisions (a) through (d) shall be amended to read as follows:

"Sec. 37.101.1 Application

(a) The provisions of this article apply to any person in the use of any water provided by the City of Oceanside, except that the provisions of this ordinance do not apply to use of recycled water.

(b) This article is intended solely to further the conservation of water. It is not intended to implement any provision of Federal, State, or local statutes ordinances, or regulations relating to protection of water quality or control of drainage or runoff. Refer to chapter 40 of the Oceanside City Code or the Regional Water Quality Control Board for information on any urban runoff/stormwater ordinances or urban runoff/stormwater management plans.

(c) Nothing in this article is intended to affect or limit the ability of the City of Oceanside to declare and respond to an emergency, including an emergency that affects the ability of the City of Oceanside to supply water.

(d) Nothing in this article shall apply to use of water that is subject to a special supply program, such as the Water Authority Special Agricultural Water Rate program. Violations of the conditions of the special supply program is subject to the penalties established under the applicable program. A person using water subject to a special supply program and other water provided by the City of Oceanside is subject to this ordinance in the use of other water.

SECTION 3. Sec.37.103, subdivision (c) shall be amended to read as follows:

"Sec. 37.103

"(c) Water users shall not let water leave the property by draining onto adjacent properties or public or private roadways for any reason. Spraying hard surfaces during irrigation activities is prohibited."

SECTION 4. Sec.37.105, subdivision (k) shall be amended by adding the following:

"Sec. 37.105 Definitions

(k) "Grower" refers to those engaged in the growing or raising in conformity with recognized practices of husbandry, for the purpose of commerce trade or industry, or for use by public educational or correctional institutions, of agricultural, horticultural or floricultural products, and produced (1) for human consumption or for the market, or (2) for the feeding of fowl or livestock produced for human consumption or for the market. *Grower* does not refer to customers who purchase water subject to the Water Authority Special Agricultural Rate program. All growers classified for agricultural use must be certified to meet the definition of Government Code section 51201, subdivision (b) and comply with the San Diego regional Agricultural Water Management Plan.

SECTION 5. Sec. 37.106, subdivisions (b) and (c) shall be amended to read as follows:

"Sec. 37.106. Conservation stages

(b) Drought Response Level 1 – Drought Watch Condition

1. A Drought Response Level 1 condition is also referred to as a "Drought Watch" condition. A Level 1 condition applies when the Water Authority notifies its member agencies that due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a consumer demand reduction of up to 10 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. The City of Oceanside never operates below a Level 1 condition in order to encourage water use efficiency and awareness.

2. During a Level 1 Drought Watch condition, the City of Oceanside actively promotes water efficiency through public education and outreach efforts to emphasize increased public awareness of the need to implement the following water conservation practices:

a. Stop washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.

b. Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways or structures.

c. Irrigate residential and commercial landscape before 10:00 a.m. and after 6:00 p.m. only.

d. Stop the application of potable water to driveways and sidewalks.

e . Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.

f. Irrigate nursery and commercial grower's products before 10:00 a.m. and after 6:00 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time. Use re-circulated water to operate ornamental fountains.

g. Use re-circulated water to operate ornamental fountains.

h. Wash vehicles using a bucket and a hand-held hose with positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Avoid washing during hot conditions when additional water is required due to evaporation.

i. Serve and refill water in restaurants and other food service establishments only upon request.

j. Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.

k. Repair all water leaks within five (5) days of notification by the City of Oceanside unless other arrangements are made with the water utilities director.

l. Use recycled or non-potable water for construction purposes when available

3. During a Drought Response Level 2 condition or higher, all persons shall be required to implement the conservation practices established in a Drought Response Level 1 condition.

(c) Drought Response Level 2 – Drought Alert Condition

1. A Drought Response Level 2 condition is also referred to as a "Drought Alert" condition. A level 2 condition applies when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to twenty (20) percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring the existence of a Drought Response Level 2 condition and implementing the mandatory Level 2 conservation measures identified in this ordinance.

2. All persons using City of Oceanside water shall comply with Level 1 Drought Watch water conservation practices during a Level 2 Drought Alert, and shall also comply with the following additional conservation measures:

a. Limit residential and commercial landscape irrigation to no more than two (2) assigned days per week on a schedule established by the Water Utilities Director and posted by the City of Oceanside. This section shall not apply to commercial growers or nurseries unless under direct order by the Governor or by a State agency acting on his behalf.

b. Limit lawn watering and landscape irrigation using sprinklers to no more than ten (10) minutes per water station per assigned day. This provision does not apply to landscape irrigation systems using water efficient devices, including but not limited to: weather-based controllers, drip/micro/irrigation systems or stream rotor sprinklers.

c. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by subsection 37.106(c)2.a., on the same schedule set forth in subsection 37.106(c)2.a. by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation

d. Stop irrigation with potable water of ornamental turf on public street medians when under direct order by the Governor, or by a State agency acting on his behalf.

e. Repair all leaks immediately upon notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

f. Stop operating ornamental fountains or similar decorative water features unless recirculated water is used.

g. Stop all watering during and forty-eight (48) hours after measureable precipitation.

h. Stop irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development when under direct order by the Governor or by a State agency acting on his behalf.

SECTION 6. Severability.

If any section, sentence, clause or phrase of the Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have adopted this Ordinance and each section, sentence, clause or phrase thereof, irrespective of the fact that any one or more section, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

Section 7. Effective Date.

This ordinance shall be effective immediately upon its adoption by 4/5ths vote of the City Council in accordance with Government Code section 36937.

///

///

///

///

///

///

INTRODUCED AND ADOPTED at a regular meeting of the City Council of the City of Oceanside held on the 20th day of May, 2015,

by the following vote:

AYES: WOOD, FELLER, KERN, LOWERY, SANCHEZ
NAYS: NONE
ABSENT: NONE
ABSTAIN: NONE

Jim Wood
MAYOR, CITY OF OCEANSIDE

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY

AN URGENCY ORDINANCE OF THE CITY OF OCEANSIDE AMENDING OCEANSIDE CITY CODE, CHAPTER 37, REVISING AND UPDATING THE WATER CONSERVATION PROGRAM AND THE DROUGHT RESPONSE CONSERVATION MEASURES

ORDINANCE NO. 21-OR0413-1

AN ORDINANCE OF THE CITY OF OCEANSIDE AMENDING OCEANSIDE CITY CODE, CHAPTER 37, BY ESTABLISHING SIX DROUGHT RESPONSE LEVELS

WHEREAS, on July 9, 2008, the City Council adopted Ordinance No. 08-OR0439-1 related to establishing drought response conservation measures to be implemented in the event of mandatory potable water reductions; and

WHEREAS, the City of Oceanside desires to adopt an ordinance to remain consistent with the San Diego County Water Authority Model Drought Ordinance

NOW, THEREFORE, the City Council of the City of Oceanside DOES ORDAIN as follows:

SECTION 1. Subsection (b) of Section 37.101 is hereby amended to establish six levels of drought and is to read as follows:

"This article establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes six (6) levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies."

SECTION 2. Subsection (c) of Section 37.101 is hereby amended to establish six levels of drought and is to read as follows:

"Level 1 condition drought response measures are voluntary and will be reinforced through local and regional public education and awareness measures that may be funded in part by the City of Oceanside. During drought response conditions Levels 2 through 6, all conservation measures and water-use restrictions are mandatory and become increasingly restrictive in order to attain escalating conservation goals."

SECTION 3. Subsection (j) of Section 37.105 is hereby amended by removing the definition for "*DMP*" and adding the definition of "*WSCP*", as follows:

"*WSCP* means the Water Authority's Water Shortage Contingency Plan in existence on the effective date of this ordinance and as readopted or amended from time to time, or an equivalent plan of the Water Authority to manage or allocate supplies during shortages."

SECTION 4. Section 37.106 of the Oceanside City Code is hereby amended to read as follows:

Sec. 37.106. - Conservation stages.

(a) *General conditions.*

1. Customers are always asked to use water wisely and to practice water conservation measures so that water is not wasted. Under these conditions, the City of Oceanside has sufficient water supplies to meet normal and local emergency water supply needs. To protect and to enhance the city's overall use of local water supply, water treatment devices that waste potable water or that degrade wastewater so that it cannot be utilized for reclaimed water or local basin recharge will not be sold to or utilized by any users unless necessary for authorized medical reasons. The city encourages customers to follow the water conservation practices listed in Drought Response Level 1 at all times.
2. At all times the following practices shall be in effect:
    a. Refrain from washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.
    b. Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, leaks in irrigation system, broken sprinkler heads, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways or structures.
    c. Use re-circulated water to operate ornamental fountains.

d. Wash vehicles using a bucket and a hand-held hose with a positive shut-off nozzle, mobile high pressure/low volume wash system, or at a commercial site that re-circulates (reclaims) water on-site. Avoid washing during hot conditions when additional water is required due to evaporation.

e. Serve and refill water in restaurants and other food service establishments only upon request.

f. Offer guests in hotels, motels, and other commercial lodging establishments the option of not laundering towels and linens daily.

(b) *Drought Response Level 1—Drought Watch Condition.*

1. A Drought Response Level 1 condition is also referred to as a "Drought Watch" condition. A Level 1 condition applies when the Water Authority notifies its member agencies that due to drought or other supply reductions, there is a reasonable probability there will be supply shortages and that a consumer demand reduction of up to ten (10) percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands.

2. During a Level 1 Drought Watch condition, the City of Oceanside actively promotes water efficiency through public education and outreach efforts to emphasize increased public awareness of the need to implement the following water conservation practices:

a. Irrigate residential and commercial landscape before 10:00 a.m. and after 6:00 p.m. only. Watering is permitted at any time when a drip/micro-irrigation system/equipment is used.

b. Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.

    - c. Irrigate nursery and commercial grower's products before 10:00 a.m. and after 6:00 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.
    - d. Repair all water leaks within five (5) days of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.
    - e. Use recycled or non-potable water for construction purposes when available.
3. During a Drought Response Level 2 condition or higher, all persons shall be required to implement the conservation practices established in a Drought Response Level 1 condition.

(c) *Drought Response Level 2—Drought Alert Condition.*

1. A Drought Response Level 2 condition is also referred to as a "Drought Alert" condition. A level 2 condition applies when the Water Authority notifies its member agencies that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to twenty (20) percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring the existence of a Drought Response Level 2 condition and implementing the mandatory Level 2 conservation measures identified in this ordinance.
2. All persons using City of Oceanside water shall comply with Level 1 Drought Watch water conservation practices during a Level 2 Drought Alert, and shall also comply with the following additional conservation measures:
    - a. Limit residential and commercial landscape irrigation to no more than three (3) assigned days per week on a schedule established by the

Water Utilities Director and posted by the City of Oceanside. This section shall not apply to commercial growers or nurseries unless under direct order by the governor or by a state agency acting on his behalf.

b. Limit lawn watering and landscape irrigation using sprinklers to no more than ten (10) minutes per water station per assigned day. This provision does not apply to landscape irrigation systems using water efficient devices, including but not limited to: weather-based controllers, drip/micro/irrigation systems or stream rotor sprinklers.

c. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by subsection 37.106(c)2.a., on the same schedule set forth in subsection 37.106(c)2.a. by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.

d. Repair all leaks within seventy-two (72) hours upon notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

e. Stop operating ornamental fountains or similar decorative water features unless recirculated water is used.

(d) *Drought Response Level 3—Drought Critical Condition.*

1. A Drought Response Level 3 condition is also referred to as a "Drought Critical" condition. A Level 3 condition applies when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to thirty (30) percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring the existence of a Drought Response Level 3 condition and implementing the Level 3 conservation measures identified in this article.

2. All persons using City of Oceanside water shall comply with Level 1 Drought Watch and Level 2 Drought Alert water conservation practices during a Drought Response Level 3 condition, and shall also comply with the following additional mandatory conservation measures:
    a. Limit residential and commercial landscape irrigation to no more than two (2) assigned days per week on a schedule established by the Water Utilities Director and posted by the City of Oceanside. This section shall not apply to commercial growers or nurseries.
    b. Water landscaped areas, including trees and shrubs located on residential and commercial properties, and not irrigated by a landscape irrigation system governed by subsection 37.106(d)2.a., on the same schedule set forth in subsection 37.106(d)2.a. by using a bucket, hand-held hose with positive shut-off nozzle, or low-volume non-spray irrigation.
    c. Stop washing vehicles except at commercial carwashes that re-circulate water, or by high pressure/low volume wash systems.
    d. Repair all leaks within forty-eight (48) hours of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.
    e. Upon the declaration of a Drought Response Level 3 condition, the City of Oceanside will suspend consideration of annexations to its service area.

(e) *Drought Response Level 4.*

1. A Level 4 condition applies when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to forty (40) percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring the

existence of a Drought Response Level 4 condition and implementing the Level 4 conservation measures identified in this article.

2. All persons using City of Oceanside water shall comply with conservation measures required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical conditions and shall also comply with the following additional mandatory conservation measures:

    a. Stop filling or re-filling ornamental lakes or ponds, except to the extent needed to sustain aquatic life, provided that such animals are of significant value and have been actively managed within the water feature prior to declaration of a drought response level under this ordinance.

(f) *Drought Response Level 5*

1. A Level 5 condition applies when the Water Authority notifies its member agencies that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to fifty (50) percent is required in order to have sufficient supplies available to meet anticipated demands. The Oceanside City Council shall adopt a resolution declaring the existence of a Drought Response Level 5 condition and implementing the Level 5 conservation measures identified in this article.

2. All persons using City of Oceanside water shall comply with conservation measures required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical, and Level 4 conditions and shall also comply with the following additional mandatory conservation measures:

    a. Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries. This restriction shall not apply to the following categories of use unless the City of Oceanside has determined that recycled water is available and may be lawfully applied to the use.

(1) Maintenance of trees and shrubs that are watered on the same schedule set forth in subsection 37.106(d)2.a. by using a bucket, hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation;

(2) Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshall of the local fire protection agency having jurisdiction over the property to be irrigated;

(3) Maintenance of existing landscaping for erosion control;

(4) Maintenance of plant materials identified to be rare or essential to the well-being of rare animals;

(5) Maintenance of landscaping within active public parks and playing fields, day care centers, school grounds, cemeteries, and golf course greens, provided that such irrigation does not exceed two (2) days per week according the schedule established under subsection 37.106(d)2.a.;

(6) Watering of livestock; and

(7) Public works projects and actively irrigated environmental mitigation projects.

b. Repair all leaks within twenty-four (24) hours of notification by the City of Oceanside unless other arrangements are made with the Water Utilities Director.

3. The City of Oceanside may establish a water allocation for property served by the City of Oceanside. If the City of Oceanside establishes a water allocation it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the City of Oceanside customarily mails the billing statement for the fees or charges for on-going water service. The notice of allocation may also include

notice that water usage in excess of the allocation will be subject to a penalty in a specified amount for each billing unit of water used in excess of the allocation. The penalty for excess water use shall be cumulative to any other remedy or penalty that may be imposed for violation of this article.

4. Upon the declaration of a Drought Response Level 5 condition, no new potable water service shall be provided, no new temporary meters or permanent meters shall be provided, and no statements of immediate ability to serve or provide potable water service (such as, will-serve letters, certificates, or letters of availability) shall be issued, except under the following circumstances:
    a. A valid, unexpired building permit has been issued for the project; or
    b. The project is necessary to protect the public's health, safety, and welfare; or
    c. The applicant provides substantial evidence of an enforceable commitment that water demands for the project will be offset prior to the provision of a new water meter(s) to the satisfaction of the City of Oceanside.

This provision shall not be construed to preclude the resetting or turn-on of meters to provide continuation of water service or to restore service that has been interrupted for a period of one (1) year or less.

(g) *Drought Response Level 6*

1. A Drought Response Level 6 condition applies when the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies its member agencies that a Level 6 requires a demand reduction of more than fifty (50) percent in order for the City of Oceanside to have maximum water supplies available to meet anticipated demands. The City of Oceanside shall declare a Drought

Emergency in the manner and on the grounds provided in California Water Code section 350.

2. All persons using City of Oceanside water shall comply with conservation measures required during Level 1 Drought Watch, Level 2 Drought Alert, and Level 3 Drought Critical, Level 4, and Level 5 conditions and shall also comply with the following additional mandatory conservation measures:
    a. Stop all landscape irrigation, except crops and landscape products of commercial growers and nurseries. This restriction shall not apply to the following categories of use unless the City has determined that recycled water is available and may be lawfully applied to the use.
        (1) Maintenance of existing landscaping necessary for fire protection as specified by the Fire Marshal of the local fire protection agency having jurisdiction over the property to be irrigated;
        (2) Maintenance of existing landscaping for erosion control;
        (3) Maintenance of plant materials identified to be rare or essential to the well-being of rare animals;
        (4) Watering of livestock; and
        (5) Public works projects and actively irrigated environmental mitigation projects.

SECTION 5. Section 37.107 of the Oceanside City Code is hereby amended to read as follows:

Section 37.107 – Correlation between water shortage contingency plan and drought response levels

(a) The correlation between the Water Authority's WSCP shortage levels and the City of Oceanside's drought response levels identified in this ordinance is described herein. Under WSCP Shortage Level 1, the City of Oceanside would implement Drought Response Level 1 actions. Under WSCP Shortage Level 2, the City of Oceanside would implement Drought Response Level 1 and Level 2 actions. Under WSCP

Shortage Levels 3, the City of Oceanside would implement Drought Response Level 1, Level 2, and Level 3 actions. Under WSCP Level 4, the City of Oceanside would implement Drought Response Level 1, Level 2, Level 3, and Level 4 actions. Under WSCP Level 5, the City of Oceanside would implement Drought Response Level 1, Level 2, Level 3, Level 4, and Level 5 actions. Under WSCP Level 6, the City of Oceanside would implement Drought Response Level 1, Level 2, Level 3, Level 4, Level 5, and Level 6 actions.

(b) The drought response levels identified in this ordinance correspond with the Water Authority WSCP as identified in the following table:

Drought Response/WSCP Shortage Levels	**Use Restrictions**	**Conservation Target**
1	Voluntary	Up to 10%
2	Mandatory	Up to 20%
3	Mandatory	Up to 30%
4	Mandatory	Up to 40%
5	Mandatory	Up to 50%
6	Mandatory	Above 50%

SECTION 6. Subsection (b) of Section 37.108 of the Oceanside City Code is hereby amended to read as follows:

"The existence of Drought Response Level 2, Level 3, Level 4, or Level 5 conditions may be declared by resolution of the Oceanside City Council adopted at a regular or special public meeting held in accordance with State law. The mandatory conservation measures applicable to Drought Response Level 2, Level 3, Level 4, or Level 5 conditions shall take effect on the tenth (10th) day after the Oceanside City Council adopts a resolution declaring the response level, or on such later date as may be set forth in the resolution. Within five (5) days following the declaration of the response level, the City of Oceanside shall publish a copy of the resolution in a newspaper used for publication of official notices. If the City of Oceanside establishes a water allocation, it shall provide notice of the allocation by including it in the regular billing statement for the fee or charge or by any other mailing to the address to which the City of Oceanside customarily mails the billing statement for the fees or charges for on-going water service. Water allocation shall be effective on the fifth (5th) day following the date of the mailing or at such later date as specified in the notice."

SECTION 6. Subsection (c) of Section 37.108 of the Oceanside City Code is hereby amended to read as follows:

"The existence of a Drought Response Level 6 condition may be declared in accordance with the procedures specified in California Water Code Sections 351 and 352. The mandatory conservation measures applicable to Drought Response Level 6 conditions shall take effect on the tenth (10th) day after the Oceanside City Council adopts a resolution declaring the response level, or on such later date as may be set forth in the resolution. Within five (5) days following the declaration of the response level, the City of Oceanside shall publish a copy of the resolution in a newspaper used for publication of official notices."

SECTION 7. Section 37.109.1 of the Oceanside City Code is hereby amended to read as follows:

Section 37.109.1 – Drought rates

Effective upon declaration by the San Diego County Water Authority that Drought Response Levels Three through Six water reductions are required in order to have sufficient supplies to meet anticipated demands and upon the adoption of a resolution at each level by the Oceanside City Council, the following Drought Level Three through Six rates may be implemented:

Level 3 Drought Alert Rates: Up to 30% Mandatory Reduction
Service Fee Surcharge (per account): 10% higher than the current monthly rate (per meter equivalent)

Commodity Charge: 1 unit = 748 gallons	*Range*	*Reduction up to 10%-Increase over Current Rate*	*Reduction up to 20%-Increase over Current Rate*
Single-family:			
First tier	0—13 units	0%	0%
Second tier	14—20 units	25%	60%
Third tier	21+ units	45%	100%
Multi-family:			
First tier	0—7 units	0%	0%
Second tier	8—14 units	20%	55%
Third tier	15+ units	40%	109%
Irrigation	per unit	20%	40%
Non-residential/ commercial agricultural	per unit	15%	25%

Level 4 Drought Critical: Up to 40% Mandatory Reduction		
Service Fee Surcharge (per account): 25% higher than the current monthly rate (per meter equivalent)		
Commodity Charge: 1 unit = 748 gallons	*Range*	*Increase over Current Rate*
Single-family:		
First tier	0—11 units	0%
Second tier	12—18 units	70%

Third tier	19+ units	120%
Multi-family:		
First tier	0—7 units	0%
Second tier	8—12 units	65%
Third tier	13+ units	115%
Irrigation	per unit	60%
Non-residential/ commercial agricultural	per unit	40%

Level 5 and 6 Drought Emergency: Above 40% Mandatory Reduction		
Service Fee Surcharge (per account): 30% higher than the current monthly rate (per meter equivalent)		
Commodity Charge: 1 unit = 748 gallons	*Range*	*Increase over Current Rate*
Single-family:		
First tier	0—5 units	0%
Second tier	6—10 units	80%
Third tier	11+ units	150%
Multi-family:		
First tier	0—4 units	0%
Second tier	5—8 units	75%
Third tier	9+ units	145%
Irrigation	per unit	80%

Non-residential/ commercial agricultural	per unit	50%

///

///

///

INTRODUCED at a regular meeting of the City Council of the City of Oceanside held on the 19th day of May, 2021, and, thereafter,

PASSED, AND ADOPTED by the City Council of the City of Oceanside, California this 2nd day of June, 2021, by the following vote: 5-0

AYES: SANCHEZ, KEIM, JENSEN, RODRIGUEZ, WEISS
NAYS: NONE
ABSENT: NONE
ABSTAIN: NONE

MAYOR, CITY OF OCEANSIDE

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY

Page intentionally left blank.

Appendix F - Water Efficient Landscape Ordinance

Page intentionally left blank.

ORDINANCE NO. 10-OR0412-1

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF OCEANSIDE, CALIFORNIA, AMENDING CHAPTER 37 OF THE OCEANSIDE CITY CODE BY ADDING A NEW ARTICLE VII PERTAINING TO WATER EFFICIENT LANDSCAPING

WHEREAS, Government Code section 65595 requires local agencies to adopt a water efficient landscape ordinance that is at least as effective in conserving water as the updated model ordinance described in subsection (a) of said Government Code section.

Now, THEREFORE, the City Council of the City of Oceanside does ordain as follows:

SECTION 1. Chapter 37 of the Oceanside City Code is hereby amended by adding a new Article VII, as follows:

ARTICLE VII. WATER EFFICIENT LANDSCAPE REGULATIONS

SEC. 37.114. Purpose.

The State Legislature determined in the Water Conservation in Landscaping Act (the "Act"), Government Code sections 65591 et seq., that the State's water resources are in limited supply. The Legislature also recognized that while landscaping is essential to the quality of life in California, landscape design, installation, maintenance and management must be water efficient. The general purpose of this Article is to establish water use standards for landscaping in the City of Oceanside that implement the 2006 development landscape design requirements established by the Act. Consistent with the Legislature's findings, the purpose of this ordinance is to:

(a) Promote the values and benefits of landscapes while recognizing the need to utilize water and other resources as efficiently as possible.

(b) Establish a structure for planning, designing, installing, maintaining and managing water efficient landscapes in new construction.

(c) Promote the use, when available, of tertiary treated recycled water, for irrigating landscaping.

//

(d) Use water efficiently without waste by setting a Maximum Applied Water Allowance (MAWA) as an upper limit for water use and reduce water use for landscaping to the lowest practical amount.

(e) Encourage water users of existing landscapes to use water efficiently and without waste.

SEC. 37.115. Findings.

This Article implements the Water Conservation in Landscaping Act. The requirements of this Article reduce water use associated with irrigation of outdoor landscaping by setting a maximum amount of water to be applied to landscaping and by designing, installing and maintaining water efficient landscapes consistent with the water allowance. The provisions of this ordinance are equivalent to and at least as effective as the provisions of the state Model Water Efficient Landscape Ordinance because the calculation of MAWA and the resulting restrictions on irrigation and process are similar, though tailored to the City of Oceanside's existing regulatory procedures.

SEC. 37.116. Definitions.

The following definitions shall apply to this Article:

(a) "Automatic irrigation controller" means an automatic timing device used to remotely control valves that operate an irrigation system. Automatic irrigation controllers shall schedule irrigation events using either evapotranspiration (ETo) (weather-based) or moisture sensor data.

(b) "Building permit" means a permit to engage in a certain type of construction on a specific location.

(c) Certified landscape irrigation auditor means a person certified to perform landscape irrigation audits by an accredited academic institution, a professional trade organization or other accredited certification program.

(d) "Developer" means a person who seeks or receives permits for or who undertakes land development activities' who is not a single-family homeowner. Developer includes a developer's partner, associate, employee, consultant, trustee or agent.

(e) “Director” means the person designated by the City Manager to direct the activities of the Development Services Department including planning, building, and engineering services or anyone to whom the Director has designated or hired to administer or enforce this Article.

(f) “Discretionary permit” means any permit requiring a decision making body to exercise judgment prior to its approval, conditional approval or denial.

(g) “Estimated total water use” (ETWU) means the estimated total water use in gallons per year for a landscaped area.

(h) “ET adjustment factor” (ETAF) means a factor that when applied to reference ETo, adjusts for plant water requirements and irrigation efficiency, two major influences on the amount of water that is required for a healthy landscape.

(i) “Evapotranspiration” (ETo) means the quantity of water evaporated from adjacent soil and other surfaces and transpired by plants during a specified time period. "Reference evapotranspiration” means a standard measurement of environmental parameters which affect the water use of plants. ETo is given in inches per day, month, or year and is an estimate of the ETo of a large field of four-inches to seven-inches tall, cool season turf that is well watered. Reference ETo is used as the basis of determining the MAWA so that regional differences in climate can be accommodated.

(j) “Grading” means any importation, excavation, movement, loosening or compaction of soil or rock.

(k) “Hardscape” means any durable surface material, pervious or non-pervious.

(l) “Homeowner-provided landscaping” means landscaping installed either by a private individual for a single-family residence or installed by a licensed contractor hired by a homeowner.

(m) “Hydrozone” means a portion of the landscape area having plants with similar water needs. A hydrozone may be irrigated or non-irrigated.

(n) “Invasive species” means species of plants not historically found in California that spread outside cultivated areas and may damage environmental or economic resources.

(o) "Irrigation audit" means an inspection which includes an in depth evaluation of the performance of an irrigation system conducted by a certified landscape irrigation auditor. An irrigation audit may include, but is not limited to, inspection, system tune up, system test with distribution uniformity or emission uniformity, reporting overspray or runoff that causes overland flow and preparation of an irrigation schedule.

(p) "Irrigation efficiency" means the measurement of the amount of water beneficially used divided by the water applied. Irrigation efficiency is derived from measurements and estimates of irrigation system characteristics and management practices.

(q) "Landscaped area" means an area with outdoor plants, turf and other vegetation. A landscaped area includes a water feature either in an area with vegetation or that stands alone. A landscaped area may also include design features adjacent to an area with vegetation when allowed under Section 37.128. A landscaped area does not include the footprint of a building, decks, patio, sidewalk, driveway, parking lot or other hardscape that does not meet the criteria in Section 37.128. A landscaped area also does not include an area without irrigation designated for non-development such as designated open space or area with existing native vegetation.

(r) "Landscape Design Manual" means the manual, approved by the City of Oceanside that establishes specific design criteria and guidance to implement the requirements of this Article.

(s) "Landscape Development Manual" means the manual, approved by the City of Oceanside that establishes specific design criteria, guidance, and construction details to implement the requirements of this Article and development within the City of Oceanside.

(t) "Licensed" means licensed by the State of California

(u) "Low *he*ad drainage" means a sprinkler head or other irrigation device that continues to emit water after the water to the zone in which the device is located has shut off.

(v) "Low volume irrigation" means the application of irrigation water at low pressure through a system of tubing or lateral lines and low volume emitters such as drip lines or bubblers.

(w) “Mass grading” means the movement of soil per the grading ordinance.

(x) “Maximum Applied Water Allowance” (MAWA) means the maximum allowed annual water use for a specific landscaped area based on the square footage of the area, the ETAF and the reference ETo.

(y) “Mulch” means an organic material such as leaves, bark, straw or inorganic mineral materials such as rocks, gravel or decomposed granite left loose and applied to the soil surface to reduce evaporation, suppress weeds, moderate soil temperature or prevent soil erosion.

(z) “Overspray” means the water from irrigation that is delivered outside an area targeted for the irrigation and makes contact with a surface not intended to be irrigated.

(aa) “Pervious” means any surface or material that allows the passage of water through the material and into underlying soil.

(bb) “Plant factor” means a factor when multiplied by the ETo, estimates the amount of water a plant needs.

(cc) “Public water purveyor” means a public utility, municipal water district, municipal irrigation district or municipality that delivers water to customers.

(dd) “Recycled water” means waste water that has been treated at the highest level required by the California Department of Health Services for water not intended for human consumption. "Tertiary treated recycled water," means water that has been through three levels of treatment including filtration and disinfection.

(ee) “Runoff” means water that is not absorbed by the soil or landscape to which it is applied and flows from the landscaped area.

(ff) “Special landscaped area” means an area of the landscape dedicated to edible plants, an area irrigated with recycled water, or an area dedicated as turf area within a park, sports field or golf course where turf provides a passive or active recreational surface.

(gg) “Subsurface irrigation” means an irrigation device with a delivery line and water emitters installed below the soil surface that slowly and frequently emit small amounts of water into the soil to irrigate plant roots.

(hh) "Transitional area" means a portion of a landscaped area that is adjacent to a natural or undisturbed area and is designated to ensure that the natural area remains unaffected by plantings and irrigation installed on the property.

(ii) "Turf" means a groundcover surface of mowed grass.

(jj) "Water feature" means a design element where open water performs an aesthetic or recreational function. A water feature includes a pond, lake, waterfall, fountain, artificial streams, spa and swimming pool. Constructed wetlands used for on-site wastewater treatment or stormwater best management practices are not water features.

(kk) "WUCOLS III" means Water Use Classification of Landscape Species and refers to the Department of Water Resources 1999 publication or the most current version.

SEC. 37.117. Applicability.

(a) This Article shall apply to the following projects which require a building permit or a discretionary permit:

(1) A project for an industrial, commercial, institutional, or multi-family residential use where the landscaped area is greater than or equal to 2,500 square feet.

(2) Developer installed residential and common area landscapes where the total landscaped area for the development is greater than or equal to 2,500 square feet.

(3) A new single-family residence with homeowner provided landscaping where the landscaped area is greater than or equal to 5,000 square feet.

(4) A model home that includes a landscaped area greater than or equal to 2,500 square feet.

(5) A public agency project that contains a landscaped area 2,500 square feet or more.

(6) A rehabilitated landscape for an existing industrial, commercial, institutional, public agency, or multifamily use where a building permit or discretionary permit is being issued and the applicant is installing or modifying 2,500 square feet or more of landscaping.

(7) A cemetery under limited requirements in Section 37.130.

(8) A new single-family residence with homeowner provided landscaping, where the landscape area is less than 5,000 square feet, under limited requirements in Section 37.129.

(b) This Article shall not apply to the following:

(1) A registered local, State or federal historical site.

(2) An ecological restoration project that does not require a permanent irrigation system.

(3) A mined land reclamation project that does not require a permanent irrigation system.

(4) A botanical garden or arboretum, open to the public.

(5) Any single-family residence that is being rebuilt after it was destroyed due to a natural disaster, such as a fire, earthquake, hurricane or tornado.

SEC. 37.118. Landscape Approval – Project Entitlement Phase

(a) No person shall install landscaping for a project subject to this Article without the review and approval required by this Article.

(b) A person constructing a project subject to the requirements of this Article shall obtain approval for the landscaped area as follows:

(1) A person applying for a building permit for a single-family residence shall obtain an approval of the landscaping from the City of Oceanside as part of the permitting process.

(2) A person applying for a discretionary permit described in section 37.117:

(i) Shall submit a landscape concept plan as required by the discretionary permit application. The concept plan shall include representation of the site features, proposed planting areas and the proposed method and type of irrigation.

//

//

(ii) Shall obtain approval for landscaping as part of the permitting process for each building permit for each project segment that requires installation of a water meter or connection to an existing water meter.

(iii) May use "typical" plans for Developer-installed landscaping for Single-family homes.

SEC. 37.119. Administration, Landscape Design and Development Manual.

(a) The Director shall administer and enforce this Article.

(b) The Director shall prepare a landscape design manual or may designate the current County of San Diego Landscape Design Manual as the City of Oceanside's Landscape Design Manual to provide guidance to applicants on how to comply with the requirements of this Article.

(c) The Director shall enforce the construction and installation of landscape items to be subject to the City of Oceanside guidelines and specifications for landscape development and in accordance with the current Landscape Development Manual.

SEC. 37.120. Landscape Documentation Package – Final Landscape Improvement Plans.

(a) Except as provided in subsection (b), building permit applications for projects subject to Section 37.117 shall include a landscape documentation package that complies with the provisions of this Article, with the Landscape Design Manual and the current City of Oceanside Landscape Development Manual.

(b) An applicant for a building permit for a single family residence with a landscaped area less than 5,000 square feet is not required to submit a landscape documentation package with the permit application, but shall comply with Section 37.129. An applicant for a permit for a cemetery is not required to submit a landscape documentation package, but shall comply with Section 37.130.

(c) The landscape documentation package required by subsection (a) shall contain the following:

//

//

(1) A soil management report and plan that complies with Section 37.121 that analyzes the soil within each landscaped area of the project and makes recommendations regarding soil additives.

(2) Planting and irrigation plans that comply with Section 37.122 that describe the landscaping and irrigation for the project.

(3) A water efficient landscape worksheet that complies with Section 37.123 that calculates the MAWA and the ETWU for the project.

(4) A grading design plan that complies with Section 37.124 that describes the grading of the project. If the project applicant has submitted a grading plan with the application for the project, the Director may accept that grading plan in lieu of the grading design plan required by this subsection if the grading plan complies with Section 37.124.

SEC. 37.121. Soil Management Report

(a) The soil management report required by Section 37.120 shall be prepared by a licensed landscape architect, licensed civil engineer, licensed architect, or other landscape professional licensed by the state to do this work and shall contain the following information:

(1) An analysis of the soil for the proposed landscaped areas of the project that includes information about the soil texture, soil infiltration rate, pH, total soluble salts, sodium, and percent organic matter.

(2) Recommendations about soil amendments that may be necessary to foster plant growth and plant survival in the landscaped area using efficient irrigation techniques.

(b) When a project involves mass grading of a site the applicant shall submit the soil management report that complies with subsection (a) above with the certificate of completion required by Section 37.136.

(c) The soil management report shall include information regarding proposed soil amendments and mulch:

//

(1) The report shall identify the type and amount of mulch for each area where mulch is applied. Mulch shall be used as follows:

(i) A minimum three-inch layer of mulch shall be applied on all exposed soil surfaces in each landscaped area except in turf areas, creeping or rooting ground covers or direct seeding applications where mulch is contraindicated.

(ii) Stabilizing mulch shall be applied on slopes.

(iii) The mulching portion of seed/mulch slurry in hydro-seeded applications shall comply with subsection (a) above.

(iv) Highly flammable mulch material shall not be used.

(2) The report shall identify any soil amendments and their type and quantity.

SEC. 37.122. Planting and Irrigation Plans

(a) The planting and irrigation plans required by Section 37.120 shall be prepared by a licensed landscape architect, or other professional licensed by the state to do this work. The plans shall:

(1) Include the MAWA for the plans, including the calculations used to determine the MAWA. The calculations shall be based on the formula in Section 37.126.

(2) Include the ETWU for the plans, including the calculations used to determine the ETWU. The calculations shall be based on the formula in Section 37.127.

(3) Include a statement signed under penalty of perjury by the person who prepared the plan that provides, "I am familiar with the requirements for landscape and irrigation plans contained in the City of Oceanside's Water Efficient Landscape Regulations. I have prepared this plan in compliance with those regulations, the Landscape Design Manual and the current City of Oceanside Landscape Development Manual. I certify that the plan implements those regulations to provide efficient use of water."

//

(4) Demonstrate compliance with best management practices required by *Watershed Protection, Stormwater Management and Discharge Control regulations*.

(5) Address fire safety issues and demonstrate compliance with applicable requirements for defensible space around buildings and structures and shall avoid the use of fire prone vegetation.

(b) The planting plan shall meet the following requirements:

(1) The plan shall include a list of all vegetation by common and botanical plant name, which exists in the proposed landscaped area. The plan shall state what vegetation will be retained and what will be removed.

(2) The plan shall include a list of all vegetation by common and botanical plant name, which will be added to each landscaped area. No invasive plant species shall be added to a landscaped area. The plan shall include the total quantities by container size and species. If the applicant intends to plant seeds, the plan shall describe the seed mixes, applicable purity, germination specifications, slurry mix specification and tackifier information.

(3) The plan shall include a detailed description of each water feature that will be included in the landscaped area.

(4) The plan shall be accompanied by a drawing showing on a page or pages, the specific location of all vegetation, retained or planted, the plant spacing and plant size, natural features, water features, and hardscape areas. The drawing shall include a legend listing the common and botanical plant name of each plant shown on the drawing.

(5) All plants shall be grouped in hydrozones and the irrigation shall be designed to deliver water to hydrozones based on the moisture requirements of the plant grouping. A hydrozone may mix plants of moderate and low water use or mix plants of high water use with plants of moderate water use. No high water

use plants shall be allowed in a low water use hydrozone. The plan shall also demonstrate how the plant groupings accomplish the most efficient use of water.

(6) The plan shall identify areas permanently and solely dedicated to edible plants.

(7) The plan shall demonstrate that landscaping when installed and at maturity will be positioned to avoid obstructing motorists' views of pedestrian crossings, driveways, roadways and other vehicular travel ways. If the landscaping will require maintenance to avoid obstructing motorist's views, the plan shall describe the maintenance and the frequency of the proposed maintenance.

(8) The plan shall avoid the use of landscaping with known surface root problems adjacent to a paved area, unless the plan provides for installation of root control barriers or other appropriate devices to control surface roots.

(9) Plants in a transitional area shall consist of a combination of site adaptive and compatible native and/or non-native species. No invasive species shall be introduced or tolerated in a transitional area. The irrigation in a transitional area shall be designed so that no overspray or runoff shall enter an adjacent area that is not irrigated.

(10) On a project other than a single-family residence, the plan shall identify passive and active recreational areas.

(c) The Irrigation Plan shall meet the following requirements:

(1) The plan shall show the location, type and size of all components of the irrigation system that will provide water to the landscaped area, including the controller, water lines, valves, sprinkler heads, moisture sensing devices, rain switches, quick couplers, pressure regulators, and backflow prevention devices.

(2) The plan shall show the static water pressure at the point of connection to the public water supply and the flow rate in gallons, the application rate in inches per hour and the design operating pressure in pressure per square inch for each station.

(3) The irrigation system shall be designed to prevent runoff, overspray, low-head drainage and other similar conditions where irrigation water flows or sprays onto areas not intended for irrigation. The plan shall also demonstrate how grading and drainage techniques promote healthy plant growth and prevent erosion and runoff.

(4) The plan shall identify each area irrigated with recycled water.

(5). The plan shall provide that any slope greater than 25 percent will be irrigated with an irrigation system with a precipitation rate of .75 inches per hour or less to prevent runoff and erosion. As used in this Article, 25 percent grade means one foot of vertical elevation change for every four feet of horizontal length. An applicant may employ an alternative design if the plan demonstrates that no runoff or erosion will occur.

(6) The plan shall provide that all wiring and piping under a paved area that a vehicle may use, such as a parking area, driveway or roadway, will be installed inside a PVC conduit.

(7) The plan shall provide that irrigation piping and irrigation devices that deliver water, such as sprinkler heads, shall be installed below grade if they are within 24 inches of a vehicle or pedestrian use area. The Director may allow on-grade piping where landform constraints make below grade piping infeasible.

(8) The plan shall provide that only low volume or subsurface irrigation shall be used to irrigate any vegetation within 24 inches of an impermeable surface unless the adjacent impermeable surfaces are designed and constructed to cause water to drain entirely into a landscaped area.

(9) The irrigation system shall provide for the installation of a manual shutoff valve as close as possible to the water supply. Additional manual shutoff valves shall be installed between each zone of the irrigation system and the water supply.

(10) The irrigation system shall provide that irrigation for any landscaped area will be regulated by an automatic irrigation controller.

(11) The irrigation system shall be designed with a landscape irrigation efficiency necessary to meet the MAWA.

(12) The plan shall describe each automatic irrigation controller the system uses to regulate the irrigation schedule and whether it is a weather based system or moisture detection system. The plan shall depict the location of electrical service for the automatic irrigation controller or describe the use of batteries or solar power that will power valves or a smart controller.

SEC. 37.123. Water Efficient Landscape Worksheet

The water efficient landscape worksheet required by Section 37.120 shall be prepared by a licensed landscape architect, or other professional licensed by the state to do this work and shall contain the following:

(a) A hydrozone information table that contains a list of each hydrozone in the landscaped area of the project and complies with the following requirements:

(1) For each hydrozone listed, the table shall identify the plant types and water features in the hydrozone, the irrigation methods used, the square footage and the percentage of the total landscaped area of the project that the hydrozone represents.

(2) The plant types shall be categorized as turf, high water use, moderate water use or low water use.

(b) Water budget calculations, which shall meet the following requirements:

(1) The plant factor used shall be from WUCOLS III. The plant factor shall be 0.1 for very low water use plants 0.3 for low water use plants, 0.5 for moderate water use plants and 0.8 for high water use plants. A plan that mixes plants in a hydrozone that require a different amount of water shall use the plant factor for the highest water using plant in the hydrozone.

(2) Temporarily irrigated areas shall be included in the low water use hydrozone. Temporarily irrigated as used in this Article means the period of time when plantings only receive water until they become established.

(3) The surface area of a water feature, including swimming pools, shall be included in a high water use hydrozone.

(4) The calculations shall use the formula for the MAWA in Section 37.126 and for the ETWU in Section 37.127.

(5) Each special landscaped area shall be identified on the worksheet and the area's water use calculated using an ETAF of 1.0.

SEC. 37.124. Grading Design Plan

The grading design plan required by Section 37.120 shall be prepared by a California licensed civil engineer, or other professional licensed by the state to do this work and shall comply with the following requirements:

(a) The grading on the project site shall be designed for the efficient use of water by minimizing soil erosion, runoff and water waste, resulting from precipitation and irrigation.

(b) The plan shall show the finished configurations and elevations of each landscaped area including the height of graded slopes, the drainage pattern, pad elevations, finish grade and any stormwater retention improvements.

SEC. 37.125. Irrigation Schedule

The irrigation schedule required by Section 37.120, shall be prepared by a licensed landscape architect, or other professional licensed by the state to do this work and provide the following information:

(a) A description of the automatic irrigation system that will be used for the project.

(b) The ETo data relied on to develop the irrigation schedule, including the source of the data.

(c) The time period when overhead irrigation will be scheduled and confirm that no overhead irrigation shall be used between 10:00 a.m. and 6:00 p.m.

(d) The parameters used for setting the irrigation system controller for watering times for:

(1) The plant establishment period.

(2) Established landscaping.

(3) Temporarily irrigated areas.

(4) Different seasons during the year.

(e) The consideration used for each station for the following factors:

(1) The days between irrigation.

(2) Station run time in minutes for each irrigation event, designed to avoid runoff.

(3) Number of cycle starts required for each irrigation event, designed to avoid runoff.

(4) Amount of water to be applied on a monthly basis.

(5) The root depth setting.

(6) The plant type setting.

(7) The soil type.

(8) The slope factor.

(9) The shade factor.

SEC. 37.126. Maximum Applied Water Use

(a) A landscape project subject to this Article shall not exceed the MAWA. The MAWA for a landscape project shall be determined by the following calculation:

MAWA = (ETo)(0.62)[0.7 x LA + 0.3 x SLA]

(b) The abbreviations used in the equation have the following meanings:

(1) MAWA = Maximum Applied Water Allowance in gallons per year.

(2) ETo = Evapotranspiration in inches per year.

(3) 0.62 = Conversion factor to gallons per square foot.

(4) 0.7= ET adjustment factor for plant factors and irrigation efficiency.

(5) LA = Landscaped area includes special landscaped area in square feet.

(6) 0.3 = the additional ET adjustment factor for a special landscaped area (1.0 - 0.7 = 0.3)

(7) SLA = Portion of the landscaped area identified as a special landscaped area in square feet.

SEC. 37.127. Estimated Total Water Use

(a) An applicant for a project subject to this Article shall calculate the ETWU for each landscaped area and the entire project using the following equation:

(1) ETWU = (ETo)(0.62)(PF x HA / IE + SLA)

(b) The abbreviations used in the equation have the following meanings:

(1) ETWU = Estimated total water use in gallons per year.

(2) ETo = Evapotranspiration in inches per year.

(3) 0.62 = Conversion factor to gallons per square foot.

(4) PF = Plant factor from WUCOLS

(5) HA = Hydrozone Area in square feet. Each HA shall be classified based upon the data included in the landscape and irrigation plan as high, medium or low water use.

(6) IE = Irrigation Efficiency of the irrigation method used in the hydrozone.

(7) SLA = Special landscaped area in square feet.

(c) The ETWU for a proposed project shall not exceed the MAWA.

SEC. 37.128. Adjustment to Landscaped Area For Non-Vegetated Area

Rock and stone or pervious design features, such as decomposed granite ground cover that are adjacent to a vegetated area may be included in the calculation of the MAWA and ETWU provided the features are integrated into the design of the landscape area and the primary purpose of the feature is decorative.

SEC. 37.129. New Single Family Residential Projects With Limited Landscaping

An applicant for a building permit for a new single-family residence subject to this Article where the landscaped area of the project is less than 5,000 square feet shall, as a condition of obtaining a building permit, submit an application (short form) to establish a MAWA and/or a best landscape design practices checklist for the property on the form approved by the Director.

SEC. 37.130. Cemeteries

(a) A person submitting an application for a cemetery shall include the following:

(1) A concept plan, as described in Section 37.118.

(2) A water efficient irrigation worksheet that calculated the MAWA for the project with the application that complies with Section 37.123.

(3) A landscape irrigation and maintenance schedule that complies with Section 37.135.

SEC. 37.131. Regulations Applicable to Use of Turf on Landscaped Areas

The following regulations shall apply to the use of turf on a project subject to this Article:

(a) Only low volume or subsurface irrigation shall be used for turf in a landscaped area:

(1) On a slope greater than 25 percent grade where the toe of the slope is adjacent to an impermeable hardscape.

(2) Where any dimension of the landscaped area is less than six feet wide.

(b) On a commercial, industrial, institutional or multi-family project, no turf shall be allowed on a center island median strip or on a parking lot island.

(c) A ball field, park, golf course, cemetery and other similar use shall be designed to limit turf in any portion of a landscaped area not essential for the operation of the facility.

(d) No turf shall be allowed in a landscaped area that cannot be efficiently irrigated, such as avoiding runoff or overspray.

SEC. 37.132. Projects With Model Homes

A person who obtains a permit to construct a single-family residential development that contains a model home or homes shall provide a summary of this Article to each adult visitor who visits a model home. If an adult visitor is accompanied by one or more adults during the visit, only one set of written materials is required to be provided. Each model home shall provide an educational sign in the front yard of the model home visible and readable from the roadway that the home faces that states in capital black lettering at least two inches high on a white sign, "THIS MODEL HOME USES WATER EFFICIENT LANDSCAPING AND IRRIGATION."

SEC.37.133. Recycled Water

(a) A person who obtains a permit for a project that is subject to this Article shall use recycled water for irrigation when tertiary treated recycled water is available from the water purveyor who supplies water to the property for which the City of Oceanside issues a permit.

(b) A person using recycled water shall install a dual distribution system for water received from a public water purveyor. Pipes carrying recycled water shall be purple.

(c) A person who uses recycled water under this section shall be entitled to an ETAF of 1.0.

(d) This section does not excuse a person using recycled water from complying with all State and local laws and regulations related to recycled water use.

SEC. 37.134. Landscaping and Irrigation Installation

A person issued a landscape approval for a project, other than a single-family residence where the landscaped area of the project is less than 5,000 square feet, shall install the approved landscaping and irrigation system before final inspection of the project.

SEC. 37.135. Landscaping and Irrigation Maintenance

(a) A property owner using water on property subject to a landscape approval other than a single-family residence with a total landscaped area less than 5,000 square feet, shall prepare a maintenance schedule for the landscaping and irrigation system on the project. The schedule shall provide for (1) routine inspection to guard against runoff and erosion and to detect plant or irrigation system failure, (2) replacement of dead, dying and diseased vegetation, (3) eradication of invasive species, (4) repairing the irrigation system and its components, (5) replenishing mulch, (6) soil amendment when necessary to support and maintain healthy plant growth, (7) fertilizing, pruning and weeding and maintaining turf areas, and (8) maintenance to avoid obstruction of motorists' view. The schedule shall also identify who will be responsible for maintenance.

(b) After approval of a landscape plan, the owner is required to:

(1) Maintain and operate the landscaping and irrigation system on the property consistent with the MAWA.

(2) Maintain the irrigation system to meet or exceed an irrigation efficiency necessary to meet MAWA.

(3) Replace broken or malfunctioning irrigation system components with components of the same materials and specifications, their equivalent or better.

(4) Ensure that when vegetation is replaced, replacement plantings are representative of the hydrozone in which the plants were removed and are typical of the water use requirements of the plants removed, provided that the replaced vegetation does not result in mixing high water use plants with low water use plants in the same hydrozone.

SEC. 37.136. Certificate of Completion

Prior to receiving final approval for completion of the project, each applicant, other than for a single family residence with a total landscaped area less than 5,000 square feet, shall submit a signed certificate of completion and final documentation for the project under penalty of perjury within 10 days after installation.

(a) The certificate of completion shall:

(1) Be submitted on a form provided by the City of Oceanside.

(2) Include a statement verifying that the landscaping and irrigation were installed as allowed in the approved landscape and irrigation plan, all approved soil amendments were implemented, the installed irrigation system is functioning as designed and approved, the irrigation control system was properly programmed in accordance with the irrigation schedule, and the person operating the system has received all required maintenance and irrigation plans, and

(3) Be signed by the professional of record for the landscape design.

(b) The final submittal shall include:

(1) Irrigation schedule that complies with Section 37.125, that describes the irrigation times and water usage for the project

(2) A landscaping and irrigation system maintenance schedule that complies with Section 37.135, and

(3) A soil management report that complies with Section 37.121, if the applicant did not submit the report with the landscape documentation package.

(4) Final "as built" plans, submitted by the professional of record, where there have been significant changes to the landscape plan during the installation of landscaping or irrigation devices or irrigation system components.

SEC. 37.137. Waste Water Prevention

(a) No person shall use water for irrigation that due to runoff, low head drainage, overspray or other similar condition, water flows onto adjacent property, non-irrigated areas, structures, walkways, roadways or other paved areas.

(b) No person whose landscape is subject to a landscape approval pursuant to this Article shall apply water to the landscape in excess of the MAWA.

SEC. 37.138. Enforcement

(a) The City Manager shall administer and enforce the provisions of this Article. Any City authorized personnel or enforcement officer may exercise any enforcement powers as set forth in the Code.

(b) The City may delegate to or enter into a contract with a local agency or other person to implement and administer any of the provisions of this Article on behalf of the City.

SEC. 37.139. Fees

An applicant for a project subject to this Article shall include with the application, all fees established by the City of Oceanside to cover the City of Oceanside's cost to review an application, any required landscape documentation package and any other documents the City of Oceanside reviews pursuant to the requirements of this Article.

SECTION 2. If any section, sentence, clause or phrase of this Article is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Article.

The City Council hereby declares that it would have passed this ordinance and adopted this Article and each section, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

SECTION 3. The City Clerk of the City of Oceanside is hereby directed to publish this ordinance, or the title hereof as a summary, pursuant to state statute, once within fifteen (15) days after its passage in the North County Times, a newspaper of general circulation published in the City of Oceanside.

SECTION 4. This ordinance shall take effect and be in force on the thirtieth (30th) day from and after its final passage.

INTRODUCED at a regular meeting of the City Council of the City of Oceanside, California held on the 21st day of April, 2010, and thereafter,

PASSED AND ADOPTED by the City Council of the City of Oceanside, California, this 26th day of May, 2010, by the following vote:

AYES: WOOD, FELLER, KERN, SANCHEZ
NAYS: NONE
ABSENT: NONE
ABSTAIN: NONE

Jim Wood
MAYOR OF THE CITY OF OCEANSIDE

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

Barbara Hamilton, ASST.
CITY ATTORNEY

Appendix G - Recycled Water Ordinance

Page intentionally left blank.

ORDINANCE NO. 14-OR0565-1

AN ORDINANCE OF THE CITY OF OCEANSIDE AMENDING CHAPTER 37 OF THE OCEANSIDE CITY CODE BY DELETING SUBSECTION 37.102(d) AND ADDING ARTICLE VIII, RECYCLED WATER

WHEREAS, the City Council has determined the necessity of establishing general regulations for the installation and connection of service, cross connection control program, meters, mains and main extensions for the recycled water system within the City of Oceanside; and

WHEREAS, the City Council has determined that such regulations provide for the protection and maximum beneficial public use of the City's recycled water system.

WHEREAS, on March 27, 1991, the City Council approved Ordinance No. 91-15 related to water conservation;

WHEREAS, Ordinance No. 91-15, Section 37.102 (d) does not comply with current requirements;

NOW, THEREFORE, the City Council of the City of Oceanside DOES ORDAIN as follows:

SECTION 1. Subsection (d) of Section 37.102 of the Oceanside City Code is hereby deleted.

SECTION 2. Article VIII is hereby added to Chapter 37 of the Oceanside City Code and shall read as follows:

"ARTICLE VIII. RECYCLED WATER"

Section 37.140 Intent and Purpose.

It is the intent of this Article to promote the conservation and establish regulations for the installation and connection of service, cross connection control program, meters, mains and main extensions for the recycled water system within the City. The City Council, in enacting the ordinance codified in this article, intends to provide for the protection and maximum beneficial public use of the City's recycled water system, to enable the proper installations of the recycled water system, to ensure the correct uses of the recycled water within the City, and to promote public health and safety.

The City shall provide recycled water wherever the City determines its use is economically and technically feasible and consistent with the City's Recycled Water Master Plan, developed to meet the projected economic, regulatory and facility needs of the City's recycled program.

Section 37.141 Definitions.

As used in this Article, the following terms are defined in this section.

"Administrative Authority" means the director of the Water Utilities Department or his or her designated representative.

"Applicant" means any person or entity that may request recycled water service.

"Authorized Enforcement Officials" means the Water Utilities Director of the Water Utilities Department or his or her designated representative.

"Authorized Enforcement Staff" means any city employee supervised by an authorized enforcement official, assigned to duties involving permits and other city approvals, inspections, and enforcement related to this chapter.

"Authorized Inspector" means the director of the Water Utilities Department or his or her designated representative.

"*Customer*" means any person to whom the City supplies recycled water service under contract, either expressed or implied, to make payment therefor.

"*Delivery Charge*" means the minimum monthly charge to a customer for the availability of service, the revenue from which enables the City to maintain and operate the recycled water system ready to deliver to a customer. The delivery charge shall be based on the size of the water meter that is appropriate to provide service for the customer.

"*Design Manual*" means the latest edition of the City of Oceanside's Water, Sewer and Recycled Water Design and Construction Manual adopted by Resolution 04-R940-1.

"*Dwelling Unit*" is one (1) or more habitable rooms which are occupied or which are intended or designed to be occupied by one (1) or more individuals with facilities for living, sleeping, cooking, and eating and includes a mobile home and manufactured home.

"*Extension*" means recycled water pipeline extension.

"*Grey Water*" means untreated waste water which has not come into contact with toilet waste. Grey water includes waste water from bathtubs, showers, bathroom wash basins, clothes washing machines, and laundry tubs.

"*Industrial or Commercial*" means any customer using recycled water for landscape irrigation on the site that is not a residential unit, but used for the purpose of producing either goods or services.

"*Landscape Impoundment*" means a body of water used for aesthetic or irrigation purposes and not intended for public contact or ingestion, which may contain recycled water.

"*Meter*" means a device to measure the amount of recycled water the customer uses in units, where one unit is 748 gallons.

"*Pipeline*" means an existing or proposed recycled water pipeline in the recycled water distribution system.

"*Off-Site Recycled Water Facilities*" means facilities under the control of the City generally located between the supply main and the recycled water meter.

"*On-Site Recycled Water Facilities*" means the customer-operated portion of the recycled water system located within private property, between the recycled water meter and the point of use.

"*Recycled Water,*" sometimes referred to as reclaimed water, means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and also meets the highest level of conformance with California Code of Regulations, Title 22, Division 4, Chapter 3 (use of recycled water for irrigation and for impoundments), currently section 60304 and section 60305. The meaning of recycled water in this definition does not include grey water.

"*Recycled Water Connection Fee*" means the fee paid for the planning, design and construction of capacity improvements and/or new facilities required for the delivery, distribution and storage or recycled water.

"*Water Utilities Director*" shall mean the person designated by the City Manager to have charge of the administration and supervision of the Water Utilities Department and such other duties as the City Manager may prescribe.

Section 37.142 Recycled Water Mains

All new commercial, industrial, multi-family and residential developments of four (4) units or more are required to install a dual recycled water system for the purposes of irrigation of landscape and all common areas.

A. All new and extensions to recycled water mains shall be a minimum of six inches in diameter.

B. All sub-dividers shall be required to install recycled water pipelines within the property subdivision and extend this system to the external limits of the subdivision, or to the nearest recycled water main if one exists within a maximum of seventy-five (75) feet.

C. All off-site recycled water facilities and services shall be planned, designed and installed in accordance with the City's design manual and all applicable federal, state and local laws.

D. All services shall be metered with meters purchased from the City and installed by a City-approved contractor at developers' expense.

E. The City's ownership and maintenance responsibilities shall terminate at the valve on the customer's side of the meter assembly.

All plans and necessary specifications associated with the installation or extension of new recycled water mains within the City must be submitted to the Administrative Authority for review and approval prior to such installation or extension.

Section 37.143 Determination of Feasible and Authorized Uses

The uses of recycled water may include but are not limited to, landscape irrigation, agricultural irrigation, natural treatment system irrigation, construction water, industrial process water, cooling tower makeup water, water for flushing toilets and urinals, trap primers in dual-plumbed buildings, and public and private recreational impoundment. The Administrative Authority is authorized to consider on a case-by-case basis each use for approval by the City, and the Administrative Authority may determine in its discretion whether it is feasible to furnish recycled water for the specific use involved. Prior to approving such uses, the Administrative Authority may, in its discretion, set forth specific requirements as conditions to providing such services and/or require specific prior approval from the appropriate regulatory agencies. The City's determination of feasibility will be based on the following factors:

1) Whether recycled water may be furnished for the intended use at a reasonable cost to the customer and the City;
2) Whether recycled water use is in accordance with the standards of treatment and water quality requirements set forth in Title 22, Division 4, of the Code of California Regulations and all other applicable federal, state and local laws and regulations including Health and Safety Code Chapter 5, Article 2, Title 17, Division 1 and California Water Code Division 7;
3) Whether the use of recycled water can be made in a manner not detrimental to public health.

Section 37.144 Requirement to Use Recycled Water

The Administrative Authority will identify customers who are located within the City's service area and within an area identified in the Recycled Water Master Plan as an area capable of receiving service from the City's recycled water system and will determine the feasibility of providing recycled water service to these customers. The Administrative Authority will also review applications for new Recycled Water permits to determine the feasibility of providing recycled water service to these applicants. If recycled water service is determined by the Administrative Authority to be feasible, applicants for new water service shall be required to install onsite facilities to accommodate both potable water and recycled water service in accordance with the latest Water, Sewer, and Reclaimed Water Design and Construction Manual. The Administrative Authority may also require existing customers to retrofit existing onsite water service facilities to accommodate recycled water service. When an existing customer is required by the City to convert to recycled water service, the customer will pay the reasonable capital costs of retrofitting the onsite water service facilities and the City will provide the offsite facilities necessary to deliver recycled water to the customer. The City will provide a minimum of 6 months notification prior to commencement of recycled water deliveries.

Existing customers of potable water service who are directed to retrofit onsite water service facilities to permit the extension of recycled water infrastructure may appeal the final decision of the Administrative Authority to require retrofit to the City Council where such extension of recycled water service was not sought by the customer. The City Council may grant an appeal where the existing customer makes a showing based on substantial evidence that the Administrative Authority's decision would:

1) impose disproportionate cost on the customer compared to the potential benefits to be received by the customer as a result of the retrofit; or
2) constitute a threat to public health or safety at the location to be retrofitted; or
3) would be technically infeasible to implement.

Where the Council makes one or more of the above findings, the Council may disapprove the final decision of the Administrative Authority, in whole or in part, and may place such conditions on the requirement to retrofit as it deems appropriate and fair. The requirement to administratively appeal shall be a prerequisite to the initiation of any legal challenge to the Administrative Authority's final decision.

Section 37.145 Determination of Potential Recycled Water Customer Conversion

The Administrative Authority will identify potential sites where recycled water may be used based on historical water demands or projected demands from similar uses. The identified potential recycled water use sites must meet the following criteria:

1) The City's recycled water distribution system is in a street adjacent to the subject property;
2) The City can provide recycled water in the needed volume, quality, pressure and flow rate;
3) The anticipated use(s) at the subject site are allowed per Title 22 of the California Code of Regulations;

4) The construction/retrofit can be accomplished in compliance with Federal, State, County, and City requirements.
5) The anticipated use(s) will not negatively impact public health;
6) The use of recycled water will not diminish water rights; and
7) Recycled water is available at a reasonable cost, meaning:
    a. The commodity cost for recycled water is less than the commodity cost for a like quantity of non-interruptible potable water; and
    b. The net customer cost of facilities and appurtenances required to be installed can be amortized by the difference in potable and recycled water rates of a period of not more than one-hundred and twenty (120) months.

The Administrative Authority will contact the potential recycled water customer site representative to discuss the use of recycled water. If the potential recycled water customer contends recycled water is not feasible, the customer shall provide written documentation supporting their position to the Administrative Authority for review.

Section 37.146 Determination of Adequate Size and Reimbursement

For new developments where recycled water is anticipated and incorporated into the plans and conditions of approval, the Administrative Authority is authorized to determine if the size of any proposed recycled water pipeline is adequate to serve the intended use of the applicant. Further, the Administrative Authority is authorized to determine if there is other property within the City not being served with recycled water which could be served by the proposed recycled water pipeline. If the Administrative Authority determines that the proposed recycled water pipeline and appurtenant facilities should be constructed to a greater capacity than the immediate needs of the applicant, then the Administrative Authority may require the applicant to enter into a reimbursement agreement with the City providing for the construction of such recycled water pipeline with excess capacity.

The reimbursement agreement shall set forth a description of the project the applicant wishes to construct or have constructed, including complete specifications as to the type of pipe and other appurtenances, a map showing accurately the proposed route and size of such facility, the estimated cost of construction of such facility, and the allocation of such cost between the applicant and the City. The reimbursement agreement shall be finalized and executed prior to commencement of construction on the project.

Section 37.147 Conversion of Facilities

Prior to the conversion of existing potable water systems or irrigation systems to a recycled water system, the applicant shall submit the record drawings to the City to review and determine the necessary measures to bring the recycled water system into full compliance with all applicable federal, state and local laws. If record drawings for a site do not exist, the applicant is responsible to locate the existing irrigation system and provide adequate as-built plans for the system prior to requesting a conversion of facilities. No existing potable water facilities shall be converted or incorporated into the recycled water system without proper testing and approval by the City and other regulatory agencies.

Section 37.148 Cross-Connection Control

All sites being served by both potable and recycled water services shall have an approved backflow assembly installed in compliance with all applicable laws.

A. Backflow Assemblies are required at every potable water service connection. The customer, at his or her sole expense, shall install, test and maintain an approved backflow assembly in accordance with California Code of Regulations Title 17, Section 7605.

B. Recycled water use site inspections will be performed per the requirements of the State of California Department of Public Health, County of San Diego Department of Environmental Health, California Regional Water Quality Control Board, San Diego Region, or other regulatory agency as determined by the City.

C. As required by the State Department of Health Services and the County of San Diego Department of Environmental Health Services, the City will periodically conduct a cross-connection control test of the integrity of the on-site recycled water system at those facilities having both potable and recycled water service.

D. The recycled water user shall provide the City with an accurate set of controller charts. The chart is to be a reduced drawing of the as-built system. The chart shall use a different color to show the area of coverage for each station.

Section 37.149 Unlawful Use of Recycled Water Facilities and Appurtenances

It is unlawful for any person to turn on/off a recycled water pipeline of the City or to tap, break, or injure any recycled water pipelines within the City, or to tamper with or tap any recycled water service pipe.

Section 37.150 Interference with Inspection; Stoppage of Service

If any authorized employee or agent of the City is refused access to any premises supplied with recycled water by the City, or on being admitted is hindered or prevented from examining or inspecting the premises by any person, or for any reason, including but not limited to the maintenance on such premises of a vicious dog or animal, the Administrative Authority may provide written notice to the owner or occupant of the premises that the City intends to discontinue the service of recycled water to such premises. The notice shall provide the owner or occupant a reasonable opportunity to allow access so as to avoid discontinuance of service. The Administrative Authority may cause recycled water service to the premises to be discontinued if access is not allowed or restored within the time set forth in said written notice.

Section 37.151 Irrigation Recycled Water Meters

A meter and service connection used for landscape irrigation shall be installed in accordance with the Design Manual Standard Specifications and Drawings in effect at the time the connection is made. The size of the irrigation meter(s) and service connection(s) shall be determined by the landscape architect based on the flow demand in gallons per minute (gpm) for the area to be irrigated.

Only the City's Recycled Water Buy-in fees and meter fees shall be applied for any new recycled water meter.

Section 37.152 Interfering with Meter

It is unlawful for any person to interfere with or cut off or remove a recycled water meter from any service connection where it has been installed, without first receiving written permission from the City's Water Utilities Department. Such permission shall be granted only for the purpose of tests, repairs or replacement to customer service, readjustment of service or similar emergencies.

Section 37.153 Rate Structure

The City rate structure for recycled water service shall be approved by the City Council. Rates shall be set at a level sufficient to pay for water treatment, maintenance and operations, debt service, replacement funding and to meet the objectives established by the Administrative Authority.

Recycled Water Rate - Recycled water is a flat rate per unit of recycled water used where one unit equals 748 gallons and applies only to the delivery of recycled water to the customer.

Section 37.154 Recycled Water System Buy-In Fees

Each new connection to the city's recycled water system shall be assessed a fee based on the meter size to pay the costs for a new meter and installation equipment provided by the city. Such fee shall be established hereafter by resolution of the Oceanside City Council. Customers shall pay only for the new meter and installation costs. Costs associated with the San Diego County Water Authority Capacity and Treatment charges and the City's buy-in costs, shall not apply to new recycled water system connections.

Section 37.155 Recycled Water System Meter Exchanges.

When converting to recycled water services, current potable water customers may exchange potable irrigation meters at no cost to the customer, provided the recycled meter required is of the same size as the existing meter. There shall be no refunds of buy-in fees as a result of this exchange.

SECTION 3. Severability.

If any section, sentence, clause or phrase of the Ordinance is for any reason held to be invalid or unconstitutional by a decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council hereby declares that it would have adopted this Ordinance and each section, sentence, clause or phrase thereof, irrespective of the fact that any one or more section, subsections, sentences, clauses or phrases be declared invalid or unconstitutional.

SECTION 4. The City Clerk of the City of Oceanside is hereby directed to publish this ordinance, or the title hereof as a summary, pursuant to state statute, once within fifteen (15) days after its passage in the San Diego Union Tribune, North County edition, a newspaper of general circulation published in the City of Oceanside.

SECTION 5. This ordinance shall take effect and be in force on the thirtieth (30th) day from and after its final passage.

INTRODUCED at a regular meeting of the City Council of the City of Oceanside held on the 6th day of August, 2014, and, thereafter,

PASSED, AND ADOPTED by the City Council of the City of Oceanside, California this 10th day of September, 2014, by the following vote:

AYES: WOOD, FELIEN, FELLER, KERN, SANCHEZ
NAYS: NONE
ABSENT: NONE
ABSTAIN: NONE

Jim Wood
MAYOR, CITY OF OCEANSIDE

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

Barbara Hamilton, ASST.
CITY ATTORNEY

AN ORDINANCE OF THE CITY OF OCEANSIDE AMENDING CHAPTER 37 OF THE OCEANSIDE CITY CODE BY ADDING ARTICLE VIII, RECYCLED WATER

Page intentionally left blank.

Appendix H - Multi-Jurisdictional Hazard Mitigation Plan

Page intentionally left blank.

1.1 City of Oceanside

The City of Oceanside (Oceanside) reviewed a set of jurisdictional-level hazard maps including detailed critical facility information and localized potential hazard exposure/loss estimates to help identify the top hazards threatening their jurisdiction. In addition, LPGs were supplied with exposure/loss estimates for Oceanside summarized in Table 5.14-1. See Section 4.0 for additional details.

Table 5.14-1
Summary of Potential Hazard-Related Exposure/Loss in Oceanside

		Residential		Commercial		Critical Facilities	
Hazard Type	**Exposed Population**	**Number of Residential Buildings**	**Potential Exposure/ Loss for Residential Buildings (x$1,000)**	**Number of Commercial Buildings**	**Potential Exposure/Loss for Commercial Buildings (x$1,000)**	**Number of Critical Facilities**	**Potential Exposure for Critical Facilities (x$1,000)**
Coastal Storm / Erosion	46	0	0	0	0	0	16
Sea level Rise	580	111	31,247	264	92,509	11	13,316
Dam Failure	32,035	9,905	2,788,258	2,888	1,010,957	30	280,134
Earthquake (Annualized Loss - Includes shaking, liquefaction and landslide components)	101,574*	37,543*	10,568,355*	9,054*	3,169,007*	292*	867,938*
Flood (Loss)							
100 Year	14,471	3,443	969,205	2,976	1,041,529	114	184,623
500 Year	35,078	11,034	3,106,071	4,337	1,517,783	161	384,977
Rain-Induced Landslide							
High Risk	0	0	0	0	0	0	0
Moderate Risk	1	0	0	0	0	0	0
Tsunami	790	1,265	356,098	198	69,371	13	12,031
Wildfire / Structure Fire							
Fire Regime II & IV	157,029	60,356	16,990,214	2,976	6,239,477	498	1,403,261

* Represents 250-year earthquake value under three earthquake scenarios (shake only, shake and liquefaction, and shake and landslide).

After reviewing the localized hazard maps and exposure/loss table above, the following hazards were identified by the Oceanside LPG as their top five.

- **Coastal Storms/Erosion/Severe Weather**: Constant and historical, history
- **Human caused hazards**: Spills, releases, accidents, criminal activity, terrorist activity, history
- **Earthquake and Tsunami**: Proximity to local faults and Pacific Ocean, history
- **Flooding**: 25, 50 & 100 year storms and vegetation clogged river/creek channels, history
- **Wildfire**: Climate, location, and natural vegetation types, history

1.1.1 Capabilities Assessment

The LPG identified current capabilities available for implementing hazard mitigation activities. The Capability Assessment (Assessment) portion of the jurisdictional mitigation plan identifies administrative, technical, legal and fiscal capabilities. This includes a summary of departments and their responsibilities associated to hazard mitigation planning as well as codes, ordinances, and plans already in place associated to hazard mitigation planning. The second part of the Assessment provides Oceanside’s fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

1.1.2 Existing Institutions, Plans, Policies and Ordinances

The following is a summary of existing departments in Oceanside and their responsibilities related to hazard mitigation planning and implementation, as well as existing planning documents and regulations related to mitigation efforts within the community. The administrative and technical capabilities of Oceanside, as shown in Table 5.14-2, provides an identification of the staff, personnel, and department resources available to implement the actions identified in the mitigation section of the Plan. Specific resources reviewed include those involving technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or manmade hazards, floodplain managers, surveyors, personnel with GIS skills and scientists familiar with hazards in the community.

- City of Oceanside Fire Department
  - Emergency Response and Rescue services
  - Development Plans Review
  - Disaster preparedness and Public Education
  - Fire & Life Safety Inspection
  - Hazardous Materials Response and Evaluation
  - Lifeguard Services
- City of Oceanside Police Department

  - Police Services
  - Crime Prevention
  - Emergency Public Notification
  - Evacuation Coordination
- City of Oceanside Public Works Department
  - Low Level Hazardous Waste clean up
  - Streets and Sidewalks
  - Lighting District
  - Fleet Management
  - Harbor/Beach Maintenance
  - Harbor Management
- City of Oceanside Administrative Services
  - Finance Services
  - Human Services
  - Information Technology Division
- City of Oceanside Water Utilities Department
  - Water Services and Quality
  - Wastewater management
  - GIS Services
  - Solid Waste and Recycling
- City of Oceanside Development Services
  - Building Division
  - Building Inspection
  - Engineering Division
  - Storm Water Control and Monitoring
  - Planning Division
  - Zoning and Environmental Planning
- City of Oceanside City Manager’s Office
  - Property Management
  - Economic Development
- Neighborhood Services Department

  - Code Enforcement
  - Housing Division
  - Parks and Recreation Division
- Library Services

Table 5.14-2
City of Oceanside: Administrative and Technical Capacity

Staff/Personnel Resources	Y/N	Department/Agency and Position
A. Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Planning & Engineering Divisions
B. Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Engineering, Building & Fire Prevention Divisions
C. Planners or Engineer(s) with an understanding of natural and/or manmade hazards	Y	Planning & Engineering
D. Floodplain manager	Y	Engineering Division
E. Surveyors	N	Contracted as needed
F. Staff with education or expertise to assess the community's vulnerability to hazards	Y	Fire & Police Departments; Building Division
G. Personnel skilled in GIS and/or HAZUS	Y	Water Utilities Department
H. Scientists familiar with the hazards of the community	N	
I. Emergency manager	Y	Fire Department
J. Grant writers	N	Multiple Departments

The legal and regulatory capabilities of Oceanside are shown in Table 5.14-3, which presents the existing ordinances and codes that affect the physical or built environment of Oceanside. Examples of legal and/or regulatory capabilities can include: the City's building codes, zoning ordinances, subdivision ordnances, special purpose ordinances, growth management ordinances, site plan review, general plans, capital improvement plans, economic development plans, emergency response plans, and real estate disclosure plans.

Table 5.14-3
City of Oceanside: Legal and Regulatory Capability

Regulatory Tools (ordinances, codes, plans)	Local Authority (Y/N0	Does State Prohibit? (Y/N)
A. Building code	Y	N
B. Zoning ordinance	Y	N
C. Subdivision ordinance or regulations	Y	N
D. Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	N
E. Growth management ordinances (also called “smart growth” or anti-sprawl programs)	Y	N
F. Site plan review requirements	Y	N
G. General or comprehensive plan	Y	N
H. A capital improvements plan	Y	N
I. An economic development plan	Y	N
J. An emergency response plan	Y	N
K. A post-disaster recovery plan	Y	N
L. A post-disaster recovery ordinance	N	N

1.1.3 Fiscal Resources

Table 5.14-4 shows specific financial and budgetary tools available to Oceanside such as community development block grants; capital improvements project funding; authority to levy taxes for specific purposes; fees for water, sewer, gas, or electric services; impact fees for homebuyers or developers for new development; ability to incur debt through general obligations bonds; and withholding spending in hazard-prone areas.

Table 5.14-4
City of Oceanside: Fiscal Capability

Financial Resources	Accessible or Eligible to Use (Yes/No)
A. Community Development Block Grants (CDBG)	Y
B. Capital improvements project funding	Y
C. Authority to levy taxes for specific purposes	Y – 2/3 Majority popular vote required
D. Fees for water, sewer, gas, or electric service	Y
E. Impact fees for homebuyers or developers for new developments/homes	Y
F. Incur debt through general obligation bonds	Y
G. Incur debt through special tax and revenue bonds	Y – Majority popular vote required
H. Incur debt through private activity bonds	N
I. Withhold spending in hazard-prone areas	N

1.1.4 Goals, Objectives and Actions

Need note about plan update process

Listed below are Oceanside's updated specific hazard mitigation goals, objectives and related potential actions. For each goal, one or more objectives have been identified that provide strategies to attain the goal. Where appropriate, the City has identified a range of specific actions to achieve the objective and goal.

The updated goals and objectives were developed by considering the risk assessment findings, localized hazard identification and loss/exposure estimates, and an analysis of the jurisdiction's current capabilities assessment. These goals, objectives and actions were developed to represent a vision of long-term hazard reduction or enhancement of capabilities. To help in further development of these goals and objectives, the LPG compiled and reviewed current jurisdictional sources including the City's planning documents, codes, and ordinances. In addition, City representatives met with consultant staff and/or OES to specifically discuss these hazard-related goals, objectives and actions as they related to the overall Plan. Representatives of numerous City departments involved in hazard mitigation planning, including Fire, Police, and Public Works provided input to the Oceanside LPG. The Oceanside LPG update members were:

- Fred Armijo, Police Captain
- David Gans, Chief Building Official
- Robert Gutierrez, Water Distribution Supervisor
- Kiel Koger, Public Works Division Manager
- Yukari Krause-Brown, Information Technologies Division Manager
- Mo Lahsaiezadeh, Environmental Officer
- Bruce Barrette, Interim Harbor Manager
- Marisa Lundstedt, City Planner
- Bill Kogerman, Deputy Chief / Fire Marshal
- Steve Strapac, City Engineer
- Greg Van Voorhees, Assistant Fire Marshal

Once completed, City staff will submit the final plan to CalOES and FEMA for approval. Once approved by FEMA the plan will be taken to the City Council for adoption.

The draft plan was posted on the Office of Emergency Services Website to present these preliminary goals, objectives and actions to citizens and to receive public input. Specific questions were asked and the public was requested to provide comments and suggestions regarding the draft plan and the proposed mitigation actions. An email address was provided for the public to send comments and suggestions to. This email address was checked daily for public input. All comments were reviewed and were incorporated into the draft plan as appropriate. The following sections present the hazard-related goals, objectives and actions as prepared by the City of Oceanside's LPG in conjunction with the Hazard Mitigation Working Group, locally elected officials and local citizens.

1.1.4.1 Goals

The City of Oceanside has developed the following 10 Goals for their Hazard Mitigation Plan

Goal 1. Promote disaster-resistant future development.

Goal 2. Increase public understanding, support, and demand for effective hazard mitigation.

Goal 3. Build and support local capacity and commitment to continuously become less vulnerable to hazards.

Goal 4. Improve coordination and communication with federal, state, local and tribal governments and other jurisdictions.

Reduce the possibility of damage and losses to life, property and the environment, particularly critical facilities or infrastructure and City of Oceanside owned facilities, due to:

Goal 5. Earthquakes and Tsunamis

Goal 6. Flooding and sea level rise

. Goal 7. Wildfires

Goal 8. Coastal storms, erosion and severe weather (e.g., drought and extreme temperatures)

Goal 9. Human caused hazards

1.1.4.2 Objectives and Actions

The City of Oceanside developed the following broad list of objectives and actions to assist in the implementation of each of their nine identified goals. The City of Oceanside developed objectives to assist in achieving their hazard mitigation goals. For each of these objectives, specific actions were developed that would assist in their implementation. A discussion of the prioritization and implementation of the action items is provided in Section 5.14.5.

Goal 1: Promote disaster-resistant future development.		**New, Existing or Both**
Objective 1.A: Facilitate the adoption, development or updating of Building, Engineering and Fire Codes and zoning ordinances to improve resistance to hazards and control development in high-hazard areas.		
Action 1.A.1	Adoption of most current Building, Engineering and Fire Codes, and zoning ordinances.	Both
Action 1.A.2	Adoption of the City's subarea plan and associated implementing ordinances.	Both

Goal 2: Promote public understanding, support and demand for hazard mitigation.		**New, Existing or Both**
Objective 2.A: Educate the public to increase awareness of hazards and opportunities for mitigation actions.		
Action 2.A.1	Enhance public awareness of hazard mitigation efforts through a full-time Disaster preparedness Coordinator and by utilizing Oceanside's local public access channel (KOCT – Oceanside Ca.) and available print medias	Both
Action 2.A.2	Increase awareness of individual homeowners, other property owners, the business community, and others in the importance of taking proactive steps to mitigate the risk of hazards through use of the City's quarterly magazine	Both
Action 2.A.3	Promote "Personal Preparedness" by production and distribution of video and print materials through public access television and local libraries. Continued development and increase of local CERT Team members and capabilities.	Both

Goal 3: Build and support local capacity and commitment to continuously become less vulnerable to hazards		**New, Existing or Both**
Objective 3.A: Increase awareness and knowledge of hazard mitigation principles and practice among state, local and tribal officials.		
Action 3.A.1	Build and support local partnerships, such as the Unified Disaster Council (UDC) and Homeland Preparedness Coordination Council (HPCC), and the	Both

Goal 3: Build and support local capacity and commitment to continuously become less vulnerable to hazards		**New, Existing or Both**
	coordination of mutual aid agreements to reduce vulnerability to hazards and improve post-incident recovery	
Action 3.A.2	Build hazard mitigation concerns into the City's planning process	New
Action 3.A.3	Work with Federal and State agencies to implement a comprehensive vegetation management plan to reduce the overall vegetative mass that currently exists within in the San Luis Rey River channel.	Both
Objective 3.B: Increase capabilities by upgrading existing City-owned infrastructure to improve overall resilience.		
Action 3.B.1	Install backup power generator for existing Emergency Operations Center.	Existing
Action 3.B.2	Replacement of Police Department Headquarters with a modern hazard-resistant, self-contained and self-supported facility, to include a public safety training center.	New
Action 3.B.3	Connect the police department investigations building and IDF computer closet to a generator.	Existing
Action 3.B.4	Move Fire Station 1 from its current unreinforced masonry building into a modern hazard-resistant self-contained structure and include a separate standalone EOC. Construct Fire Station 8 in the Rancho Del Oro commercial area.	New

Goal 4: Improve hazard mitigation coordination and communication with federal, state, local and tribal governments and with other jurisdictions.		**New, Existing or Both**
Objective 4.A: Establish and maintain closer working relationships with state agencies, local and tribal governments and with other jurisdictions.		
Action 4.A.1	Plan, practice, exercise, and operate the City's Emergency Operations Center (EOC) following the National Incident Management System (NIMS) and the Standardized Emergency Management System (SEMS).	Both
Action 4.A.2	Encourage further refinement and updating of the City's Emergency Operations Plan coordinated with bordering community's emergency plans and the County-wide Emergency Operations Plan.	Both

Objective 4.B

Goal 4: (Continued)

Objective 4.B: Continue to improve Hazard Mitigation capabilities by strengthening existing policies and programs previously adopted by the City.

Action 4.B.1	Plan, practice and train to City employee’s responsibilities germane to staff action and training in the event of Emergency.	Both
Action 4.B.2	Train multiple staff members by Groups for each position in the Emergency Operations Center.	Both

Goal 5: Reduce the possibility of damage and losses to life, property and the environment, particularly to critical facilities or infrastructure, and City of Oceanside owned facilities, due to earthquakes and tsunamis		**New, Existing or Both**
Objective 5.A: Develop a comprehensive approach to reducing the possibility of damage and losses due to earthquakes and tsunamis.		
Action 5.A.1	Develop an integrated communication/notification plan utilizing Geographic Information Systems (GIS) technology and the Emergency Broadcast System (EBS) including information about road closures, evacuation routes, shelters, emergency medical access and updated event information. Includes development of a countywide damage assessment team.	Both
Action 5.A.2	Install a notification and siren system for the Oceanside coastal areas and the harbor.	New
Action 5.A.3	Retrofit five existing water storage reservoirs to seismic standards.	Existing
Action 5.A.4	Develop an audio warning system along city coast and at the Marina to notify residents and tourist of coastal tsunamis or flooding.	New

Goal 6: Reduce the possibility of damage and losses to life, property, and the environment, particularly critical facilities or infrastructure and City of Oceanside owned facilities, due to flooding and sea level rise.		**New, Existing or Both**
Objective 6.A: Protect existing assets with the highest relative vulnerability to the effects of floods within the 100-year floodplain and sea level rise.		
Action 6.A.1	Seek State and Federal agency cooperation in the control and management of vegetation within local creek and river channels.	Existing
Action 6.A.2	Identify federal and state programs which provide financial assistance to help attract funds for flood mitigation projects and programs.	Both
Action 6.A.3	Continue to participate in the National Flood Insurance Program (NFIP) and requirement to review applications for conformance with NFIP standards.	Both
Objective 6.B: Protect existing assets with high relative vulnerability from the effects of sea level rise.		
Action 6.B.1	Seek State and Federal funding for a sea level rise vulnerability assessment.	Both

Goal 7: Reduce the possibility of damage and losses to life, property, and the environment, particularly critical facilities or infrastructure and City of Oceanside owned facilities, due to wildfires.		**New, Existing or Both**
Objective 7.A: Develop a comprehensive approach to reducing the possibility of damage and losses due to wildfires.		
Action 7.A.1	Utilize aggressive vegetation management programs to provide buffer zones between unimproved wildland and development	Both
Action 7.A.2	Adopt local building ordinances which improve building standards in urban/wildland interface (UWI) areas including defensible space, non-combustible fencing, boxed eaves, extruded metal window frames, Class-A non-combustible roofs and exterior wall coverings, and protected attic venting	Both
Action 7.A.3	Coordinate with federal, state and local wildlife agency representatives to develop regulations regarding brush management within sensitive areas and incorporate the regulations into the City's Subarea Plan.	Both

Goal 8: Reduce the possibility of damage and losses to life, property, and the environment, particularly critical facilities or infrastructure and City of Oceanside owned facilities, due to coastal storms, erosion, and severe weather (e.g., drought and extreme temperatures).		**New, Existing or Both**
Objective 8.A: Develop a comprehensive approach to reducing the possibility of damage and losses due to severe weather.		
Action 8.A.1	Coordinate with other County agencies in the utilization of SANDAG and special districts to develop GIS-based severe weather zone mapping.	Both
Action 8.A.2	Provide public education regarding weather-related processes, such as water conservation and dry vegetation hazards.	Both

Goal 9: Reduce the possibility of damage and losses to life, property, and the environment, particularly critical facilities or infrastructure and City of Oceanside owned facilities, due to human caused hazards.		**New, Existing or Both**
Objective 9.A: Develop a comprehensive approach to reducing the possibility of damage and losses due to human caused hazards.		
Action 9.A.1	Harden information technologies processes to prevent cyber-attacks.	Both
Action 9.A.2	Upgrade the Supervisory Control and Data Acquisition (SCADA) system to enhance operability and mitigate cyber-attacks.	Both
Action 9.A.3	Continue agreement with San Diego Hazardous Incident Response Team for Hazardous Materials incident mitigation.	Both
Action 9.A.4	Provide public education regarding the Eight Signs of Terrorism.	Both

1.1.5 Prioritization and Implementation of Action Items

Once the comprehensive list of jurisdictional goals, objectives, and action items listed above was developed, the proposed mitigation actions were prioritized. This step resulted in a list of acceptable and realistic actions that address the hazards identified in each jurisdiction. This prioritized list of action items was formed by the LPG weighing STAPLEE criteria.

S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)			E (Economic)				E (Environmental)				
Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	Effect on Land/ Water	Effect on Endangered Species	Effect on HAZMAT/ Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws

The prioritized actions below reflect progress in local mitigation efforts as well as changes in development.

The Disaster Mitigation Action of 2000 (at 44 CFR Parts 201 and 206) requires the development of an action plan that not only includes prioritized actions but one that includes information on how the prioritized actions will be implemented. Implementation consists of identifying who is responsible for which action, what kind of funding mechanisms and other resources are available or will be pursued, and when the action will be completed.

The top nine prioritized mitigation actions as well as an implementation strategy for each are:

Action Item #1:	Action 2.A.1 Enhance public awareness of hazard mitigation efforts through a full-time Disaster Preparedness Coordinator.
Coordinating Individual/Organization:	Fire Department
Potential Funding Source:	City of Oceanside General Fund / Grants
Implementation Timeline:	2015-2020

Action Item #2:	Action 3.A.3 Work with Federal and State agencies to implement a comprehensive vegetation management plan to reduce the overall vegetative mass that currently exists within in the San Luis Rey River channel.

Coordinating Individual/Organization:	Public Works Department
Potential Funding Source:	City of Oceanside CIP / Federal Grant
Implementation Timeline:	2015-2020

Action Item #3:	Action 3.B.1 Install backup power generator for existing Emergency Operations Center.
Coordinating Individual/Organization:	Engineering Division / Fire Department
Potential Funding Source:	City of Oceanside CIP / Grants
Implementation Timeline:	2015-2020 (In progress) 3/2017 Generator installed and operational.

Action Item #4:	Action 3.B.2 Replacement of Police Department Headquarters with a modern hazard-resistant, self-contained and self-supported facility, to include a public safety training center.
Coordinating Individual/Organization:	Police Department
Potential Funding Source:	City of Oceanside CIP / Bonds / Assessment / Tax
Implementation Timeline:	2015-2020

Action Item #5:	Action 3.B.3 Connect the police department investigations building and IDF computer closet to a generator.
Coordinating Individual/Organization:	Police Department
Potential Funding Source:	City of Oceanside CIP / Grants
Implementation Timeline:	2015-2020

Action Item #6:	Action 3.B.4 Move Fire Station 1 from its current unreinforced masonry building into a modern hazard-resistant self-contained structure and include a separate standalone EOC at the site. Construct Fire Station 8 in the Rancho Del Oro commercial area.
Coordinating Individual/Organization:	Fire Department
Potential Funding Source:	City of Oceanside CIP / Bonds / Assessment / Tax
Implementation Timeline:	2015-2020

Action Item #7:	Action 5.A.3 Retrofit five existing water storage reservoirs to meet current seismic standards.
Coordinating Individual/Organization:	Water Utilities Department
Potential Funding Source:	City Water Utilities/CIP
Implementation Timeline:	2015-2020

Action Item #8:	Action 5.A.4 Develop an audio warning system along city coast and at the Marina to notify residents and tourist of coastal tsunamis or flooding.
Coordinating Individual/Organization:	Fire Department
Potential Funding Source:	City of Oceanside CIP / Bonds / Assessment / Tax
Implementation Timeline:	2015-2020

Action Item #9:	Action 7.A.3 Coordinate with federal, state and local wildlife agency representatives to develop regulations regarding brush management within sensitive areas and incorporate the regulations into the City's Subarea Plan.
Coordinating Individual/Organization:	Planning Division
Potential Funding Source:	City Development Services
Implementation Timeline:	2015-2020

Appendix I - Notification

Page intentionally left blank.

Agencies Notified by the City for its Preparation of the 2020 UWMP
Camp Pendleton
City of Carlsbad/Carlsbad Municipal Water District
City of Escondido
County of San Diego
Encina Wastewater Authority
Fallbrook Public Utilities Department
Leucadia Wastewater District
Metropolitan Water District of Southern California
Olivenhain Municipal Water District
Rainbow Municipal Water District
Rincon del Diablo Municipal Water District
San Diego Association of Governments
San Diego County Water Authority
San Elijo Joint Powers Authority
Santa Fe Irrigation District
Vallecitos Water District
Valley Center Municipal Water District
Vista Irrigation District

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Kimberly Thorner
Olivenhain Municipal Water District
1966 Olivenhain Road
Encinitas, CA 92024

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Ms. Thorner,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Clint Baze
Rincon del Diablo Municipal Water District
1920 North Iris Lane
Escondido, CA 92028

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Baze,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Mike Thornton
San Elijo Joint Powers Authority
2695 Manchester Avenue
Cardiff-by-the-Sea, CA 92007

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Thornton,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Tim Bombardier
San Diego County Water Authority
4677 Overland Avenue
San Diego, CA 92123

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Bombardier,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City’s plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City’s UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City’s website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City’s 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Coleen Clementson
San Diego Association of Governments
401 B Street
Suite 800
San Diego, CA 92101-4231

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Ms. Clementson,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Mark Wardlaw
County of San Diego
5510 Overland Avenue
Suite 310
San Diego, CA 92123

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Wardlaw,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Vicki Quiram
City of Carlsbad/Carlsbad Municipal Water District
5950 El Camino Real
Carlsbad, CA 92008

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Ms. Quiram,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Glenn Pruim
Vallecitos Water District
201 Vallecitos De Oro
San Marcos, CA 92069

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Pruim,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Christopher W. McKinney
City of Escondido
201 North Broadway
City Hall, Second Floor
Escondido, CA 92025

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. McKinney,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Paul J. Bushee
Leucadia Wastewater District
1960 La Costa Avenue
Carlsbad, CA 92009

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Bushee,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Jeffrey Kightlinger
Metropolitan Water District of Southern California
P.O. Box 54153
Los Angeles, CA 90054-0153

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Kightlinger,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

300 NORTH COAST HIGHWAY•OCEANSIDE, CA 92054•TELEPHONE 760-435-5800•FAX 760-435-5821

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Al Lau
Santa Fe Irrigation District
P.O. Box 409
Rancho Santa Fe, CA 92067

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Lau,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Tom Kennedy
Rainbow Municipal Water District
3707 Old Highway 395
Fallbrook, CA 92028

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Kennedy,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Brett Hodgkiss
Vista Irrigation District
1391 Engineer Street
Vista, CA 92081

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Hodgkiss,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Gary T. Arant
Valley Center Muncipal Water District
29300 Valley Center Rd
Valley Center, CA 92082

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Arant,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Larry Rannals
Camp Pendleton
Community Plans & Liaison Office, Commanding General, Attn:CPLO
Marine Corps Base, Box 555010
Camp Pendleton, CA 92055-5010

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Rannals,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Jack Bebee
Fallbrook Public Utilities Department
990 E. Mission Rd.
Fallbrook, CA 92028

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Bebee,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

CITY OF OCEANSIDE
WATER UTILITIES DEPARTMENT

March 4, 2021

Michael Steinlicht
Encina Wastewater Authority
6200 Avenida Encinas
Carlsbad, CA 92011

RE: 60-DAY PUBLIC HEARING NOTICE – 2020 URBAN WATER MANAGEMENT PLAN

Dear Mr. Steinlicht,

This letter is to inform you that City of Oceanside (City) is updating its Urban Water Management Plan (UWMP), in compliance with the Urban Water Management Planning Act and the Water Conservation Act of 2009, commonly referred to as SBX7-7. California state law requires each urban water supplier to prepare and adopt an UWMP every five years. The City is currently preparing an update to its 2015 UWMP and Water Shortage Contingency Plan. The 2020 UWMP documents the City's plans to ensure adequate water supplies to meet existing and future demands for water under a range of water supply conditions, including water shortages.

In conformance with the California Water Code Division 6, Part 2.6, §10621, which requires an urban water supplier updated its UWMP to notify cities and counties within its service area of the update at least sixty (60) days prior to holding a public hearing on the UWMP update. This letter serves as the notification to all city and county agencies that the City's UWMP is being reviewed and updated, to be adopted and submitted to the California Department of Water Resources by July 1, 2021. The City is also considering an Addendum to the 2015 UWMP to incorporate an Appendix to demonstrate consistency with Delta Plan Policy to Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (California Code Reg., tit. 23, § 5003). A copy of the draft 2020 UWMP and 2015 UWMP Addendum will be available for public review on the City's website in spring 2021, and the City will subsequently hold a noticed public hearing to discuss:

- 2020 UWMP
- Water Shortage Contingency Plan (included in 2020 UWMP)
- 2015 UWMP Addendum

The City invites you to submit comments and consult with the City regarding its 2020 update. A follow up notice will be released establishing when the draft 2020 UWMP will be available for public review and the date for the public hearing. Please contact Mr. Kirill Dolinskiy at 760-435-5828 or KDolinskiy@oceansideca.org if you have any questions, comments, or input regarding the City's 2020 UWMP.

Sincerely,

Cari Dale
Water Utilities Director

Order ID: 7779507

* Agency Commission not included

GROSS PRICE * : **$1,384.50**

PACKAGE NAME: Legal-North General Notices

Product(s): San Diego Union Tribune, CApublicnotice.com, mobile.sduniontribune.com

AdSize(s): 3 Column, 1 x 1

Run Date(s): Sunday, May 9, 2021, Sunday, May 16, 2021

Color Spec. B/W

Preview

CITY OF OCEANSIDE
CITY COUNCIL
NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the **City Council** of the City of Oceanside will conduct a **PUBLIC HEARING** on **WEDNESDAY, JUNE 16, 2021 at 6:00 PM**, or soon thereafter as possible, in the Council Chambers of the Civic Center, 300 North Coast Highway, Oceanside, California, to consider the following:

REVIEW OF DRAFT 2020 URBAN WATER MANAGEMENT PLAN FOR COMPLIANCE WITH THE CALIFORNIA URBAN WATER MANAGEMENT PLANNING ACT (CALIFORNIA WATER CODE DIVISION 6, PART 2.6), DRAFT WATER SHORTAGE CONTINGENCY PLAN, DRAFT 2020 WATER CONSERVATION MASTER PLAN, AND SUPPLEMENT TO THE 2015 URBAN WATER MANAGEMENT PLAN FOR COMPLIANCE WITH THE DELTA PLAN (CALIFORNIA CODE REGULATIONS, TITLE. 23, § 5003).

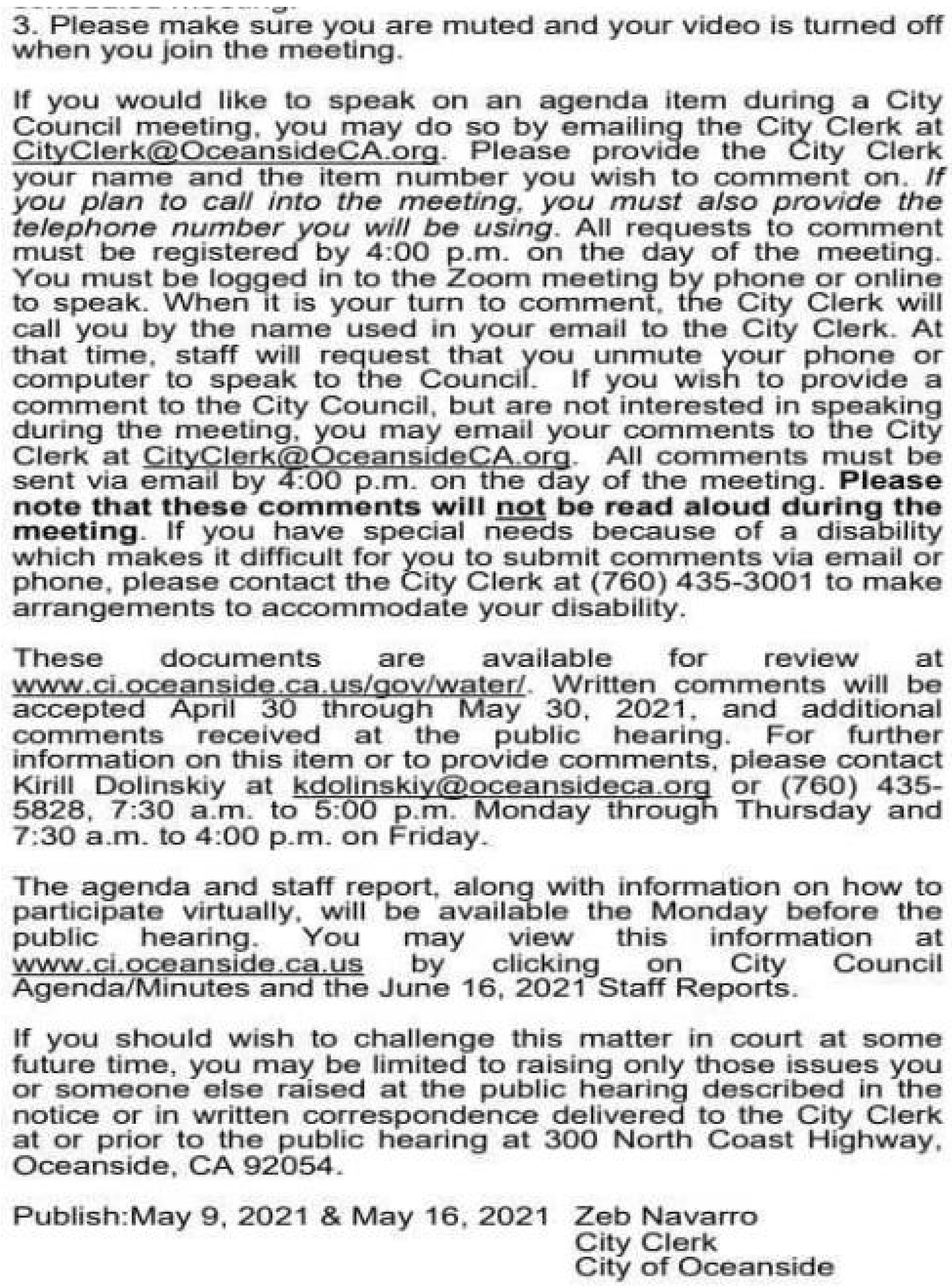
Due to applicable Public Health and capacity restrictions**, the City Council chambers are open to the public with a limited capacity** and City Council members have the option of participating by Zoom. You are encouraged to listen/watch the meeting via Zoom from any phone, or join by computer or Zoom app. The meeting will also be available on KOCT Cox Channel 19, AT&T Channel 99, or live stream on KOCT's webpage: https://www.koct.org/channel-19.

To participate via Zoom from any phone:
1. You can use a mobile phone or a landline to dial into a Zoom meeting.
2. Dial **(669) 900-6833**. When prompted, enter the Meeting ID. The Meeting ID will always be on the first page of the published meeting agenda. Meeting agendas are available to view and download on our website 72 hours before the scheduled meeting. The (669) 900-6833 phone number is the same for all City of Oceanside Zoom meetings.
3. Please make sure your phone is on mute when you join the meeting.

To participate via Zoom from your computer:
1. Go to Zoom.us and click "Join a Meeting" at the top of the webpage.
2. Enter the Meeting ID. The Meeting ID will always be on the first page of the published meeting agenda. Meeting agendas are available to view and download 72 hours before the scheduled meeting.

GROSS PRICE * : **$1,384.50**

PACKAGE NAME: Legal-North General Notices



3. Please make sure you are muted and your video is turned off when you join the meeting.

If you would like to speak on an agenda item during a City Council meeting, you may do so by emailing the City Clerk at CityClerk@OceansideCA.org. Please provide the City Clerk your name and the item number you wish to comment on. *If you plan to call into the meeting, you must also provide the telephone number you will be using*. All requests to comment must be registered by 4:00 p.m. on the day of the meeting. You must be logged in to the Zoom meeting by phone or online to speak. When it is your turn to comment, the City Clerk will call you by the name used in your email to the City Clerk. At that time, staff will request that you unmute your phone or computer to speak to the Council. If you wish to provide a comment to the City Council, but are not interested in speaking during the meeting, you may email your comments to the City Clerk at CityClerk@OceansideCA.org. All comments must be sent via email by 4:00 p.m. on the day of the meeting. **Please note that these comments will not be read aloud during the meeting**. If you have special needs because of a disability which makes it difficult for you to submit comments via email or phone, please contact the City Clerk at (760) 435-3001 to make arrangements to accommodate your disability.

These documents are available for review at www.ci.oceanside.ca.us/gov/water/. Written comments will be accepted April 30 through May 30, 2021, and additional comments received at the public hearing. For further information on this item or to provide comments, please contact Kirill Dolinskiy at kdolinskiy@oceansideca.org or (760) 435-5828, 7:30 a.m. to 5:00 p.m. Monday through Thursday and 7:30 a.m. to 4:00 p.m. on Friday.

The agenda and staff report, along with information on how to participate virtually, will be available the Monday before the public hearing. You may view this information at www.ci.oceanside.ca.us by clicking on City Council Agenda/Minutes and the June 16, 2021 Staff Reports.

If you should wish to challenge this matter in court at some future time, you may be limited to raising only those issues you or someone else raised at the public hearing described in the notice or in written correspondence delivered to the City Clerk at or prior to the public hearing at 300 North Coast Highway, Oceanside, CA 92054.

Publish:May 9, 2021 & May 16, 2021

Zeb Navarro
City Clerk
City of Oceanside

Page intentionally left blank.

Appendix *J -* Adoption Resolution

Page intentionally left blank.

RESOLUTION NO. 21-R0469-1

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF OCEANSIDE ADOPTING THE 2020 URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan (Plan), the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the City of Oceanside is an urban supplier of water providing water to a population over 178,021;

WHEREAS, the Urban Water Management Plan shall be periodically reviewed at least once every five years and the City shall make any amendments or changes to its plans which are indicated by the review;

WHEREAS, the proper and cost effective conservation of our water resources is essential to insuring adequate water supplies now and in the future;

WHEREAS, water conservation is recognized as an integral part of all water programs;

WHEREAS, the City of Oceanside has completed a 2020 Urban Water Management Plan pursuant to the requirements of California Water Code Section 10620;

WHEREAS, the Plan is the formal document to discuss past, current, and projected water demands; current and alternate water conservation measures; water supply deficiencies; and future water management practices;

WHEREAS, the Plan must be adopted after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption;

WHEREAS, the City has prepared and circulated for public review a draft 2020 Urban Water Management Plan (2020 Plan) and a properly noticed public hearing regarding the 2020 Plan was held by the City; and

WHEREAS, the City did prepare and shall file said 2020 Plan with the California Department of Water Resources.

NOW, THEREFORE, the City Council of the City of Oceanside DOES RESOLVE as follows:

SECTION 1. The 2020 Urban Water Management Plan for the City of Oceanside, a copy of which is available in the City Clerk's office, is hereby adopted and approved.

SECTION 2. The Water Utilities Director of the City of Oceanside is hereby authorized and directed to implement the water conservation measures included in the local and regional water conservation effort made part of the Plan.

PASSED AND ADOPTED by the City Council of the City of Oceanside, California, this 16th day of June, 2021, by the following vote 5-0

AYES: SANCHEZ, KEIM, JENSEN, RODRIGUEZ, WEISS
NAYES: NONE
ABSENT: NONE
ABSTAIN: NONE

MAYOR, CITY OF OCEANSIDE

ATTEST:

CITY CLERK

APPROVED AS TO FORM:

CITY ATTORNEY

G:\Administration\Council - Commission\Staff Reports\Staff Reports - 2021\Pending Council Action\06-16-2021 UWMP, WCMP and Ordinance Update\Attachment A UWMP Resolution.doc

Appendix K - Delta Reliance

Page intentionally left blank.

Appendix K – Reporting on Reduced Delta Reliance

Regulatory Background

Urban water suppliers that anticipate participating in or receiving water from a proposed project, such as a multiyear water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Sacramento-San Joaquin Delta (Delta) are required to demonstrate reduced reliance on the Delta in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the certification of consistency process to demonstrate consistency with Delta Plan Policy WR P1, *Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance* (California Code Regulations, Title 23, §5003).[1] The Delta Plan Policy WR P1 identifies UWMP as the tool to demonstrate consistency with the state policy that suppliers that carry out or take part in covered actions must reduce their reliance on the Delta.[2]

The City's information on its reduced reliance on the Delta is documented below and can be used in future certifications of consistency with WR P1 for potential future water supply covered actions in the Delta.

City of Oceanside (City) Reliance on Delta Watershed

The City currently has two direct sources of potable water: purchased raw and treated water from the San Diego County Water Authority (Water Authority), and local groundwater. In 2020, approximately 89% of the City's water supplies were purchased from the Water Authority. The Water Authority's imported water supplies are primarily sourced from the State Water Project (SWP) and Colorado River Project (CVP) via Metropolitan Water District of Southern California (MWD), and from the CVP via transfers from Imperial Irrigation District (IID).

The City's only imported water supplies that originate in the Delta watershed are imported water supplies delivered by the Water Authority via MWD. Recognizing that the Delta supplies are threatened by uncertain long-term reliability issues associated with drought shortages, climate change, seismic events, environmental impacts, and flow restrictions, and that imported water purchases are becoming increasingly expensive, the City is actively working toward reducing demand for imported water from the Water Authority as supplied by MWD. The City plans to use more water from local sources and is implementing Pure Water Oceanside to produce local potable reuse supplies, as well as expand its non-potable recycled water system to offset potable demands, thereby lessening the need for imported water in the future.

Quantification of Water Supplies that Contribute to Local Self-Reliance

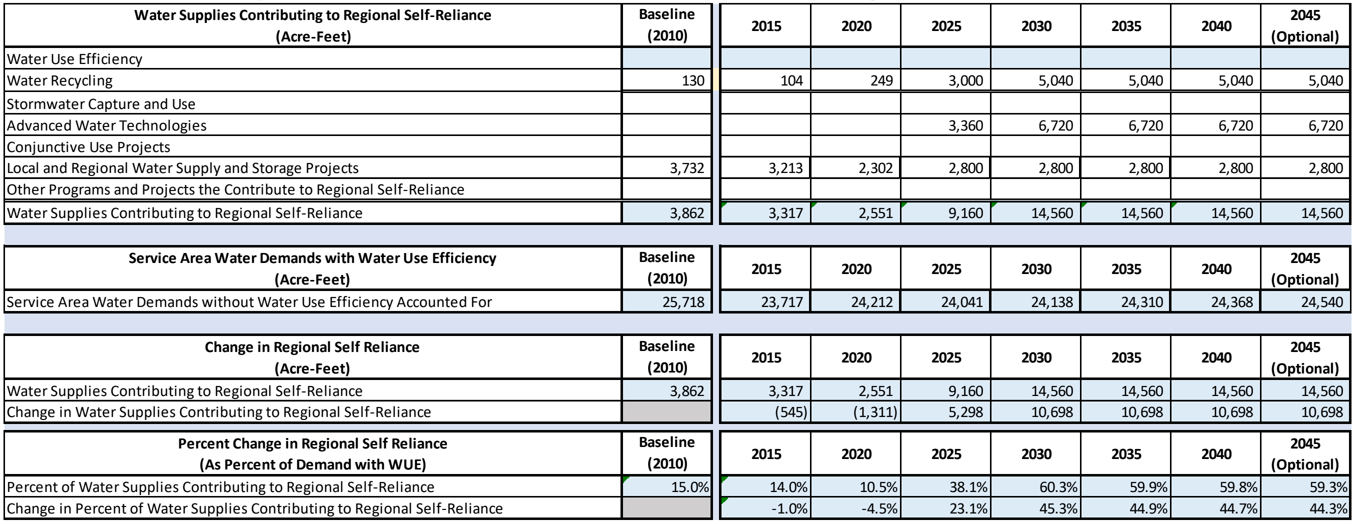
Table 1 shows the City's local supply projections, demands with water use efficiency, and changes to the City's reliance for purchased water from the Water Authority (shown in **Table 1** as Regional Self-Reliance).

---

[1] *Draft Urban Water Management Plan Guidebook 2020*, California Department of Water Resources, August 2020, p. C-1.

[2] *Ibid.*, p. C-2.

Table 1 – City of Oceanside's Local Contribution to Reducing Reliance on the Delta*



Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Use Efficiency								
Water Recycling	130	104	249	3,000	5,040	5,040	5,040	5,040
Stormwater Capture and Use								
Advanced Water Technologies				3,360	6,720	6,720	6,720	6,720
Conjunctive Use Projects								
Local and Regional Water Supply and Storage Projects	3,732	3,213	2,302	2,800	2,800	2,800	2,800	2,800
Other Programs and Projects the Contribute to Regional Self-Reliance								
Water Supplies Contributing to Regional Self-Reliance	3,862	3,317	2,551	9,160	14,560	14,560	14,560	14,560

Service Area Water Demands with Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands without Water Use Efficiency Accounted For	25,718	23,717	24,212	24,041	24,138	24,310	24,368	24,540

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies Contributing to Regional Self-Reliance	3,862	3,317	2,551	9,160	14,560	14,560	14,560	14,560
Change in Water Supplies Contributing to Regional Self-Reliance		(545)	(1,311)	5,298	10,698	10,698	10,698	10,698

Percent Change in Regional Self Reliance (As Percent of Demand with WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies Contributing to Regional Self-Reliance	15.0%	14.0%	10.5%	38.1%	60.3%	59.9%	59.8%	59.3%
Change in Percent of Water Supplies Contributing to Regional Self-Reliance		-1.0%	-4.5%	23.1%	45.3%	44.9%	44.7%	44.3%

*Accounts for Water Use Efficiency

Water Authority Reduced Reliance on Delta Watershed

As part of its *Draft 2020 UWMP*, the Water Authority completed a Delta Reliance analysis to evaluate reduced Delta reliance consistent with Appendix C in the California Department of Water Resources' (DWR) *Draft UWMP Guidebook 2020* (DWR Guidebook). Given that the City's only potential source of water from the Delta watershed is water purchased from the Water Authority, the City further relies on the Water Authority's Delta reliance analysis to also demonstrate reduced regional reliance on the Delta.

The Water Authority's *Draft 2020 UWMP* documents consistency with WR P1 by quantifying the water supplies that contribute to regional self-reliance and demonstrating reduced reliance on the Delta watershed, as summarized below.

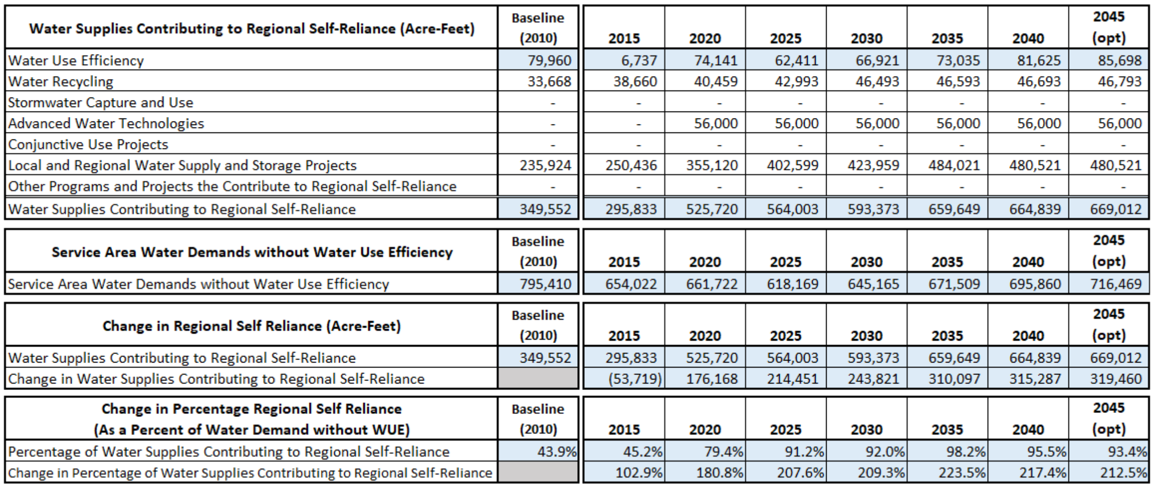
Quantification of Water Supplies that Contribute to Regional Self-Reliance

Water suppliers must report the expected outcome for measurable improvement in regional self-reliance as a reduction in water used from the Delta watershed. **Table 2** lists the sources of water supplies and volumes that contribute to regional self-reliance.[3] As shown in the table, the Water Authority's reliance on the Delta watershed, and consequently the City's reliance on the Delta watershed, decreases over time as the percent of water supplies that contribute to regional self-reliance increase over time.

---

[3] *Draft 2020 UWMP*, San Diego County Water Authority, March 2021, Appendix J, Table 2.

Table 2 – Calculation of Supplies Contributing to Regional Self-Reliance



Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Water Use Efficiency	79,960	6,737	74,141	62,411	66,921	73,035	81,625	85,698
Water Recycling	33,668	38,660	40,459	42,993	46,493	46,593	46,693	46,793
Stormwater Capture and Use	-	-	-	-	-	-	-	-
Advanced Water Technologies	-	-	56,000	56,000	56,000	56,000	56,000	56,000
Conjunctive Use Projects	-	-	-	-	-	-	-	-
Local and Regional Water Supply and Storage Projects	235,924	250,436	355,120	402,599	423,959	484,021	480,521	480,521
Other Programs and Projects the Contribute to Regional Self-Reliance	-	-	-	-	-	-	-	-
Water Supplies Contributing to Regional Self-Reliance	349,552	295,833	525,720	564,003	593,373	659,649	664,839	669,012

Service Area Water Demands without Water Use Efficiency	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Service Area Water Demands without Water Use Efficiency	795,410	654,022	661,722	618,169	645,165	671,509	695,860	716,469

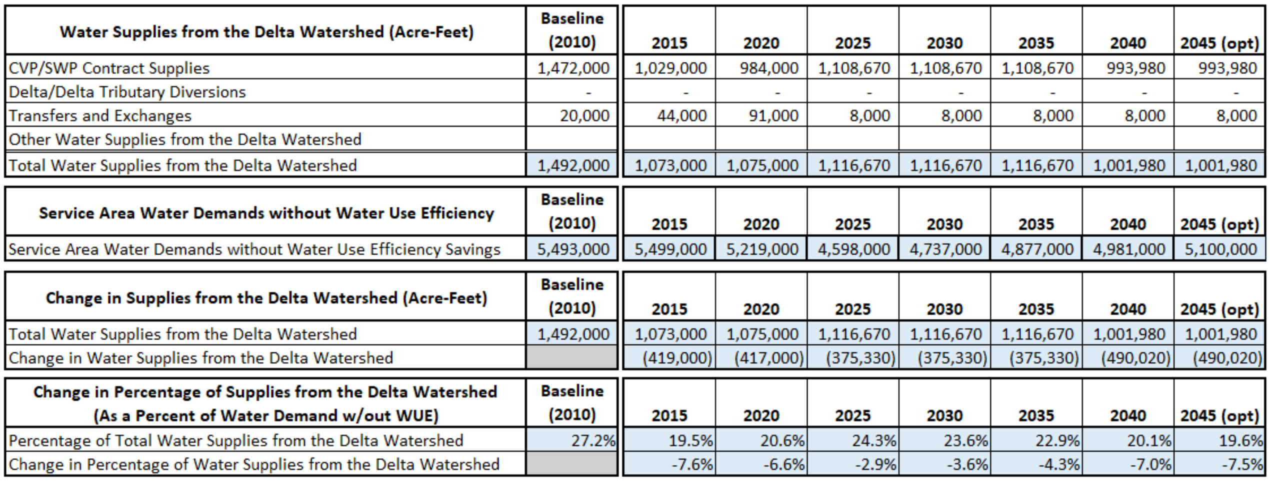
Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Water Supplies Contributing to Regional Self-Reliance	349,552	295,833	525,720	564,003	593,373	659,649	664,839	669,012
Change in Water Supplies Contributing to Regional Self-Reliance		(53,719)	176,168	214,451	243,821	310,097	315,287	319,460

Change in Percentage Regional Self Reliance (As a Percent of Water Demand without WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Percentage of Water Supplies Contributing to Regional Self-Reliance	43.9%	45.2%	79.4%	91.2%	92.0%	98.2%	95.5%	93.4%
Change in Percentage of Water Supplies Contributing to Regional Self-Reliance		102.9%	180.8%	207.6%	209.3%	223.5%	217.4%	212.5%

Demonstration of Reduced Reliance on Water Supplies from the Delta Watershed

Water suppliers are required to report on the expected outcomes for measurable reductions in water supplies from the Delta watershed. For the City, the only potential source of water from the Delta watershed is water purchased from the Water Authority via MWD. Because water provided by MWD to the Water Authority can include supplies that comingle Delta watershed and CVP supplies, the Water Authority (and therefore the City) must wholesale incorporate the MWD's forecast as a reasonable methodology to forecast the percent of MWD water supply from the Delta watershed and the CVP, at least until MWD provides the methodology approved by the DSC as anticipated. To serve as placeholder for this requirement, **Table 3** calculates the reduced reliance on the Delta watershed within the entirety of the MWD service area.[4]

Table 3 – Calculation of Reliance on Water Supplies from Delta Watershed [5]



Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
CVP/SWP Contract Supplies	1,472,000	1,029,000	984,000	1,108,670	1,108,670	1,108,670	993,980	993,980
Delta/Delta Tributary Diversions	-	-	-	-	-	-	-	-
Transfers and Exchanges	20,000	44,000	91,000	8,000	8,000	8,000	8,000	8,000
Other Water Supplies from the Delta Watershed								
Total Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,116,670	1,116,670	1,116,670	1,001,980	1,001,980

Service Area Water Demands without Water Use Efficiency	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Service Area Water Demands without Water Use Efficiency Savings	5,493,000	5,499,000	5,219,000	4,598,000	4,737,000	4,877,000	4,981,000	5,100,000

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Total Water Supplies from the Delta Watershed	1,492,000	1,073,000	1,075,000	1,116,670	1,116,670	1,116,670	1,001,980	1,001,980
Change in Water Supplies from the Delta Watershed		(419,000)	(417,000)	(375,330)	(375,330)	(375,330)	(490,020)	(490,020)

Change in Percentage of Supplies from the Delta Watershed (As a Percent of Water Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (opt)
Percentage of Total Water Supplies from the Delta Watershed	27.2%	19.5%	20.6%	24.3%	23.6%	22.9%	20.1%	19.6%
Change in Percentage of Water Supplies from the Delta Watershed		-7.6%	-6.6%	-2.9%	-3.6%	-4.3%	-7.0%	-7.5%

---

[4] *Draft 2020 UWMP*, Metropolitan Water District of Southern California, February 2021, Appendix 11, Table A.11-3.

[5] Metropolitan Water District of Southern California, *Draft 2020 UWMP*, February 2021, Appendix 11, Table A.11-3.

The CVP/SWP contract supplies in **Table 3** include MWD's SWP Table A and Article 21 supplies. [6] The values in **Table 3** do not include supplies from San Luis Carryover storage or Central Valley storage programs. The transfers and exchanges of supplies from the Delta watershed shown in **Table 3** include supplies from the San Bernardino Valley MWD Program, Yuba River Accord Purchase Program, the San Gabriel Valley MWD Program, and other generic SWP and Central Valley transfers and exchanges. Additional information can be found in Section 3.2 and Appendix 3 of MWD's *Draft 2020 UWMP*.[7]

---

[6] *Ibid.*, p. A.11-7.

[7] *Ibid.*, pgs. A.11-7 – 11-8.

Appendix L - 2020 Water Conservation Master Plan

Page intentionally left blank.

WATER CONSERVATION MASTER PLAN UPDATE

2020

Final

Prepared by:

WOODARD
&CURRAN

City of Oceanside

June 2021

Page intentionally left blank.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

AB	Assembly Bill
ACS	American Community Survey
AF	acre-foot/acre-feet
AFY	acre-foot/acre-feet per year
ag	agricultural
AMI	Advanced Metering Infrastructure
AWE	Alliance for Water Efficiency
AWWA	American Water Works Association
AWWARF	American Water Works Association Research Foundation
BMP	Best Management Practice
CII	Commercial, Industrial, and Institutional
City	City of Oceanside
CPI	Consumer Price Index
CUWCC	California Urban Water Conservation Council
DMM	Demand Management Measure
DOF	Department of Finance
DWR	Department of Water Resources
EPA	Environmental Protection Agency
ETo	evapotranspiration
FY	Fiscal Year
GPCD	gallons per capita per day
gpd	gallons per day
gpf	gallons per flush
gpm	gallons per minute
hcf	hundred cubic feet
HE	High Efficiency
HEU	High Efficiency Urinal
HOA	Homeowners association
HP	horsepower
IE	irrigation efficiency
ILI	Infrastructure Leakage Index
IRR	Irrigation
MAWA	Maximum Applied Water Allowance
MF	Multi-Family
MG	million gallons
MOU	Memorandum of Understanding
MRCD	Mission Resource Conservation District
MWD	Metropolitan Water District of Southern California
MWELO	Model Water Efficient Landscape Ordinance
NRW	Non-revenue water
PV	Present value
PWSS	Public Water System Statistics
SANDAG	San Diego Association of Governments
SB	Senate Bill
SB X7-7	2009 Water Conservation Act
SDCWA	San Diego County Water Authority
SF	Single Family
SLA	special landscape areas
SLRWRF	San Luis Rey Wastewater Treatment Water Reclamation Facility
SWRCB	State Water Resource Control Board
UHET	Ultra-High Efficiency Toilet
ULF	Ultra-Low Flow
ULFT	Ultra-Low Flow Toilet
UWMP	Urban Water Management Plan
WCMP	Water Conservation Master Plan
WF	Water factor

EXECUTIVE SUMMARY

ES.1 Introduction

The purpose of the Executive Summary is to provide an overview of the City of Oceanside's (City) Water Conservation Master Plan Update (2020 WCMP). The evaluation process and assumptions used to develop this Master Plan Update and recommendations for future implementation are included in the full report and appendices.

The City manages a robust water conservation program. Expanding existing efforts in a cost-effective way will help meet future water use objectives and support continued compliance with State-mandated per capita reduction targets according to the 2009 Water Conservation Act (SB X7-7).

The 2020 WCMP analyzes existing and potential conservation measures and programs using the Alliance for Water Efficiency Conservation Tracking Tool (AWE Tool). The evaluation included conservation measures implemented by existing customers, as well as measures to promote water efficiency for new residential and business customers. Three conservation programs, each comprising multiple conservation measures, were developed to evaluate the net effect of running multiple measures together over time. From this analysis, a Recommended Plan was selected in concert with the City's 2020 Urban Water Management Plan (UWMP). The City selected a plan that incorporates aggressive water conservation, advanced metering infrastructure (AMI), and further implementation of recycled water conversions.

The benefits of implementing the elements of the Master Plan Update are:

- Expands existing conservation efforts, along with the use of recycled water, to help meet future water use objectives per Senate Bill (SB) 606 and Assembly Bill (AB) 1668;
- Is cost-effective and less expensive than continuing to purchase additional imported water from San Diego County Water Authority (SDCWA);
- Helps the City become more self-sufficient with its water supply; and
- Is environmentally beneficial and promotes sustainable water resource management.

ES.2 Long-Term Demand and Conservation Program Analysis Results

The City's baseline water demands (i.e., average year demand before additional active conservation savings are incorporated) were forecasted from 2025 through 2045 using regional forecasts of population, housing, and employment. Separate indoor and outdoor unit demand factors were developed using customer billing data by sector, as well as historical demographic and housing information.

The baseline demand forecast incorporated estimated conservation resulting from changes in state and federal water efficiency requirements in the plumbing code, sometimes referred to as "passive conservation." These standards have resulted in a significant reduction in indoor water use over time. Going forward, recent codes and standards on fixtures and appliances will continue to reduce indoor water demands through the replacement of existing fixtures, and as more efficient technologies are used in new development in the City. Active conservation savings (i.e., those savings achieved through actions taken by property owners) are realized through implementation of different conservation measures, which have been organized into three conservation program scenarios the City may implement. The three conservation program scenarios are:

- **Program A**: "Current Regulation" option includes measures designed to meet existing regulations based around SB X7-7. Program A also continues to take advantage of conservation programs administered by Metropolitan Water District of Southern California (MWD) and SDCWA with minimal cost and effort to the City.
- **Program B**: "Anticipated Regulations" option includes individual measures that were selected by the City. The primary goal of Program B is to meet the new regulatory requirements under AB 1668 and SB 606. At the time

this 2020 WCMP was written, the final targets were still unknown so Program B can be adjusted when the final requirements are available.

- **Program C**: "Enhanced Conservation" presents a scenario where all 18 individual conservation measures are implemented. Program C represents a toolbox of options that are available to implement during a drought or to meet more stringent regulatory requirements, though the City may choose to implement only some of these options at any given time.

Table ES-1 presents all 18 conservation measures modeled in this analysis. The measures have been organized into four categories: 1) utility, 2) commercial, industrial and institutional (CII), 3) landscape, and 4) residential categories, which have been sorted into each Program.

Table ES-1. Conservation Measure Program Scenarios

Measure Name		Program A	Program B	Program C
Utility Measures				
1	Advanced Metering Infrastructure (AMI)	✓	✓	✓
2	System Water Loss	✓	✓	✓
3	Public Information	✓	✓	✓
4	Public and School Education	✓	✓	✓
CII Measures				
5	CII Rebate Programs	✓	✓	✓
6	CII Water Surveys		✓	✓
7	CII Self Surveys			✓
8	CII Enhanced Outreach			✓
Landscape Measures				
9	Landscape Rebate Programs	✓	✓	✓
10	Large Landscape Outdoor Water Audits	✓	✓	✓
11	Large Landscape Water Budgeting/Monitoring			✓
12	Landscape Workshops and Trainings	✓	✓	✓
13	Agricultural Program	✓	✓	✓
14	Recycled Water Retrofits	✓	✓	✓
Residential Measures				
15	Residential Rebate Programs	✓	✓	✓
16	Residential Water Surveys	✓	✓	✓
17	Residential Enhanced Outreach			✓
18	Residential Device Giveaways			✓

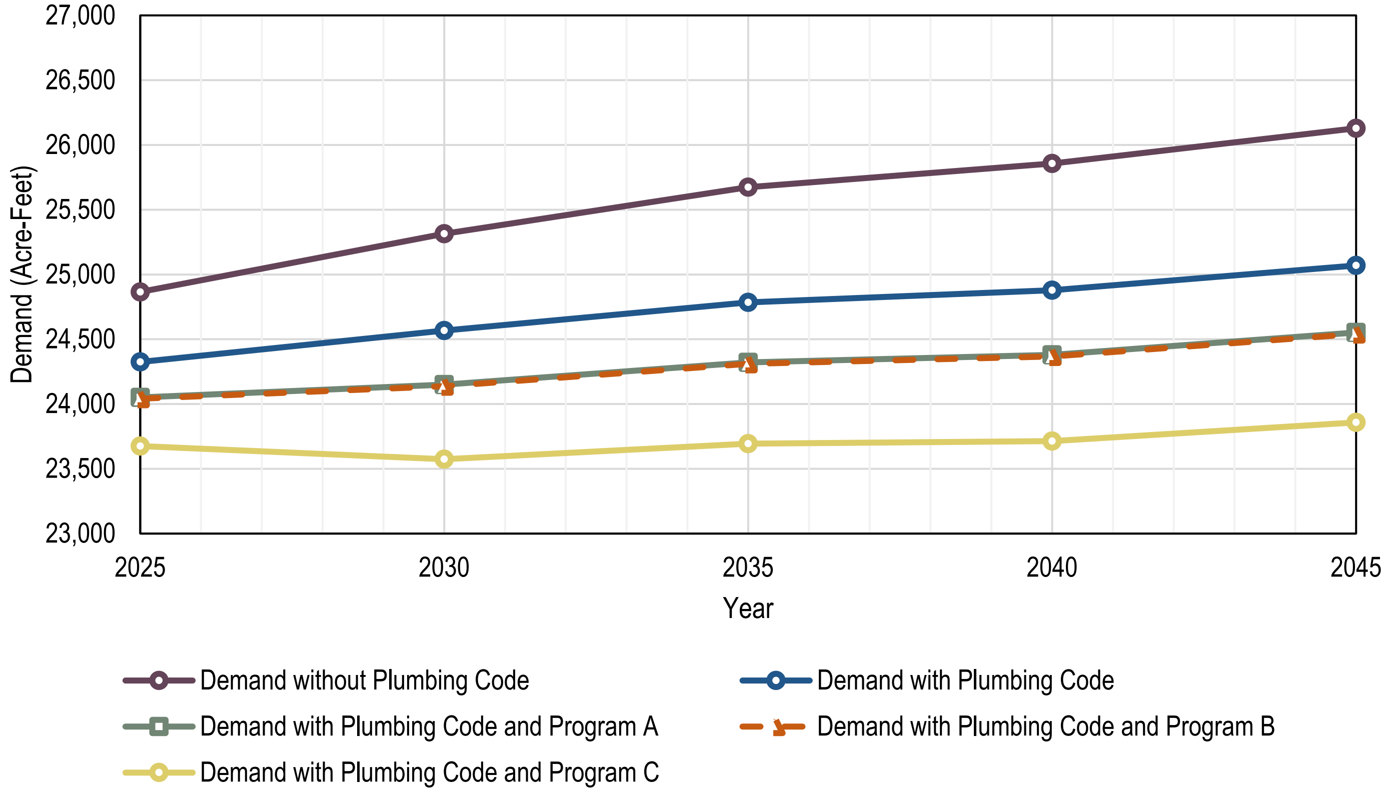
Table ES-2 presents the City's potable water use projections without plumbing code savings, with only plumbing code savings and no active conservation activity, and with plumbing code savings and Program A, Program B, and Program C active conservation program implementation savings. Figure ES-1 exhibits the same information as Table ES-2 in graphic form.

Table ES-1. Water Use Projections (Acre-Feet/Year)

	2025	2030	2035	2040	2045
Demand without Plumbing Code	24,865	25,315	25,673	25,857	26,129
Demand with Plumbing Code	24,325	24,567	24,785	24,878	25,070
Demand with Plumbing Code and Program A	24,051	24,150	24,322	24,380	24,552
Demand with Plumbing Code and Program B	24,041	24,138	24,310	24,368	24,540
Demand with Plumbing Code and Program C	23,676	23,574	23,695	23,713	23,858

Note: Total water use includes agricultural, recycled water use, and water loss.

Figure ES-1. Long Term Demands with Conservation Programs



Notes:

1. Program A and Program B scenarios are close in value and therefore Program B is shown as a dashed line.
2. Total water use includes agricultural, recycled water use, and water loss.

Table ES-3 shows the annual water savings for plumbing code savings only (passive conservation), plumbing code savings with Program A, Program B, and Program C implementation (passive plus active conservation) in five-year increments, as well as the City's direct costs in dollars per acre-foot to implement each program. The benefit to cost ratio for each conservation program from the perspective of the water utility (the City, MWD, and SDCWA) and the combined perspective of the utility plus the customers (community) is also presented.

Table ES-2. Water Demand Program Savings Projections

Conservation Program Water Savings (AFY)	2020	2025	2030	2035	2040	City-Only Unit Cost of Water Savings ($/AF)	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio
Plumbing Code	541	748	889	979	1,059	N/A	N/A	N/A
Program A with Plumbing Code	814	1,165	1,351	1,477	1,576	$1,244	0.83	1.13
Program B with Plumbing Code	824	1,177	1,363	1,489	1,588	$1,216	0.84	1.15
Program C with Plumbing Code	1,190	1,741	1,979	2,143	2,271	$573	1.33	1.49

Program B is the selected program for this 2020 WCMP, which has an estimated budget and associated water savings resulting in a benefit-cost ratio of 0.84 to the utility (combined cost for the City, MWD, and SDCWA). The City's cost to implement Program B is $1,216 per AF of water saved. While the City does not directly pay for regional conservation program costs, such as MWD's SoCal WaterSmart rebate programs, it supports regional programs indirectly as part of the cost of imported water supplies. The City's customers pay for these programs regardless of participation in regional conservation measures. As such, it is reasonable to compare program costs at both the utility level and at the City level. Program B is intended to be flexible and structured as "menu/toolbox," which enables the City to select or change measures for implementation as needed to reach its conservation goals, including to help meet future anticipated water use objectives.

1. INTRODUCTION

This section provides an overview of the issues facing the City of Oceanside (City) water system, describes the purpose and scope of the 2020 Water Conservation Master Plan (2020 WCMP), and provides a project history of the steps used to complete the Plan.

In this report, "demand management" and "water conservation" are used interchangeably. The evaluation includes measures directed at existing accounts, as well as new development measures that mandate that new residential and business customers use water efficiently. Three program scenarios were provided to help evaluate the net effect of running multiple measures together over time. Assumptions and results for the individual measures and three programs are described in detail in this report.

1.1 Overview of Oceanside Water System

The City Water Utilities Department operates and maintains the City's water treatment, distribution, and metering systems. Approximately 89% of the City's water was purchased from the San Diego County Water Authority (SDCWA) in calendar year 2020. SDCWA supplies are a combination of imported water from the State Water Project and Colorado River Aqueduct as well as desalinated seawater from the Claude "Bud" Lewis Carlsbad Desalination Plant, and are available as either untreated (raw) water or treated (potable) water. The City purchases both treated and raw water through five aqueduct connections. Raw water is treated at the Robert A. Weese Filtration Plant prior to delivery into the City's distribution system. Approximately 10% of the City's water comes from the Mission Basin, a groundwater sub-basin that stores water classified as subsurface flows from the San Luis Rey River. Brackish groundwater is extracted and treated through a desalting process at the Mission Basin Groundwater Purification Facility to serve as potable supply. The City also reclaims wastewater at the San Luis Rey Water Reclamation Facility (SLRWRF), which is delivered to four non-potable recycled water customers for irrigation uses. Additional recycled water produced at SLRWRF is delivered to Lake Whelan to support wildlife and habitat. This non-potable recycled water comprises approximately 1% of total water use, excluding deliveries to Lake Whelan, which are unmetered. The City's Water Utilities Department operates and maintains almost 600 miles of pipelines that distribute water throughout the City and 12 reservoirs with a combined capacity of 50.5 million gallons.

As a result of the decreasing reliability and increasing cost of imported supplies, the City and other water suppliers in the region are exploring or pursuing development of alternative supplies, such as increased desalination and recycled water, and potable reuse.

On the demand side, the City has completed a demand assessment for the 2020 Urban Water Management Plan (UWMP) and 2020 WCMP. This assessment will be instrumental in meeting existing and future urban water use objectives as defined by the California Department of Water Resources (DWR). As part of the 2020 UWMP, the City will use a combination of recycled water and water conservation to achieve its potable demand reduction targets while maintaining a high-quality, reliable, and cost-effective supply for its customers. This 2020 WCMP can also be used by the City to help plan for responses to drought, which may increase in frequency or intensity as a result of climate change.

1.2 Purpose and Scope of Plan

The 2020 WCMP builds on the previous 2015 WCMP update. The purpose of the WCMP is to evaluate water conservation demand management alternatives, general and sector-specific (residential, landscape, commercial, etc.) conservation programs, and other water efficiency measures the City is implementing or may choose to implement. These were evaluated in terms of their water savings, costs, and cost effectiveness from various perspectives, their acceptability, and their ability to be implemented. Preferred measures have been incorporated into the 2020 UWMP for the period of 2020 to 2045.

1.2.1 Objective of Plan

The 2020 WCMP's objective is to outline opportunities to attain the water efficiency goals in a cost-effective manner that is feasible to implement by City staff. Key components of the plan include:

- Updating and further examining the current water use by the City to identify the best method of achieving additional savings and the timing of achieving those savings; and
- A flexible approach to complying with forthcoming urban water use objectives.

1.2.2 Conservation Savings Goals

The City is committed to implementing a water demand reduction through conservation savings and water recycling. Program A is designed to address current water conservation and use goals (e.g., SB X7-7 requirements). The City has elected complete its water planning with the goal to implement Program B, which is designed to help the City meet anticipated future water use objectives, once those objectives have been established by the State.

1.2.3 Structure and Basis of Existing Oceanside Conservation Program

The City was a member of the California Urban Water Conservation Council (CUWCC) starting in 1997 until it was recently dissolved. Currently, the City partners with SDCWA and Metropolitan Water District of Southern California (MWD) for most of its current offering of programs, such as landscape site surveys. Over 25 separate rebate programs have been historically offered to the City's customers through MWD and SDCWA. These programs range from toilet and washing machine rebates for residential and business customers to "smart" irrigation controller rebates. The City is fortunate that its water wholesalers offer aggressive rebate and conservation programs. However, accessibility of these programs, without additional outreach, does not necessarily equate to large water savings. The actual participation in these programs by City customers determines how much water is being saved. Successful conservation using these programs will require that the City be proactive in marketing and educating customers about the benefits of installing water efficient devices and changing water use habits. It is anticipated that in the future many of these programs will no longer be sponsored or run by the water wholesalers and that the City will need to consider directly administering and funding these programs.

1.3 Content of Report

The following information is included in this report and is discussed in individual sections below:

- Section 2 – Analysis of Historical Water Demand
- Section 3 – Demand Projections
- Section 4 – Current Water Conservation Program
- Section 5 – Comparison of Individual Conservation Measures
- Section 6 – Results of Conservation Program Evaluation
- Section 7 – Conclusions
- Appendix A – Assumptions for the Passive Savings Model
- Appendix B – Water Use Graphs for Production and Customer Categories
- Appendix C – Assumptions for Water Conservation Measures Evaluated in the AWE Tool
- Appendix D – List of Contacts
- Appendix E – References

2. ANALYSIS OF HISTORICAL WATER DEMAND

The City's water use patterns, including unaccounted for water, were analyzed based on water production and consumption data. Historical monthly water use data was analyzed, with data from the most recent five years (2016 to 2020) used to derive typical average water use. Data from each customer category was analyzed separately. Baseline water use data was segregated into indoor and outdoor water use by customer type using a comparison of seasonal water use in dedicated landscape meters.

2.1 Unaccounted for Water

Unaccounted for water is water produced that is not used by the City's customers (metered and unmetered), and includes apparent losses (metering accuracy) and real losses. Since passage of Senate Bill (SB) 555 in 2015, California urban water suppliers have been required to submit an annual water loss audit to DWR. SB 555 also directed the State Water Resources Control Board (SWRCB) to develop performance standards for volumetric water loss by July 2020. The current proposed standard is to quantify water loss in units of real losses and apparent losses per service connection per day (gallons per connection per day). Although final performance standards have not been released at the time of writing, the draft standards, released in December 2020, have a real water loss standard of 15.8 gallons per connection per day for the City as of 2028.

Unaccounted for water in the demand forecast is calculated using three years of available validated Water Loss Audit reports, which can be found on DWR's WUEdata Portal[1]. The Water Loss Reports calculate losses on a per connection basis. The "number of Service Connections" includes both active and inactive service lines that are connected to mains, as well as fire hydrant laterals. The real losses, apparent losses, and service connections from the most recent water loss audits and are shown in Table 2-1. The City's real water losses over this period are less than 3% of total water demands. Based on the State's draft performance standards, the City is within its long-term targets.

Table 2-1. Audited Water Loss Reporting

	2016	2017	2018	3-Year Average
Real Losses (acre-ft/yr)	479	744	1,140	585
Apparent Losses (acre-ft/yr)	800	591	532	844
Service Connections (Active and Inactive)	44,227	44,450	44,598	44,425
Real Losses (gallons/connection/day)	9.7	14.9	22.8	15.8
Apparent Losses (gallons/connection/day)	16.2	11.9	10.7	12.9
Total Losses (gallons/connection/day)	25.8	26.8	33.5	28.7

2.2 Consumption by User Category

The City has several different types of water users. The current and projected user categories in the City may be generally classified as *single family residential*, *multi-family residential*, *irrigation, commercial, industrial, agricultural,* and *recycled water*. A previous *governmental* customer category was phased out in 2015. The City is predominantly a residential community, with some agriculture, light commercial and industry. Appendix B presents historical customer category water use, showing the monthly average for the seven customer categories including recycled water.

The methodology used to create the water demand forecast relies on a baseline water use measured using a five-year average of monthly water use by sector from 2016 to 2020, as shown in Figure 2-1. The most recent five-year average

---

[1] Site: https://wuedata.water.ca.gov/

was selected in order to account for annual variations in water use from weather, as well as other irregularities that can occur over shorter periods. This baseline period includes the California Drought State of Emergency, which extended from January 2014 to April 2017, and mandated water use reductions. To account for depressed demands during this period, the pre-drought year of 2013 was included in the baseline water use as a drought adjustment. Through 2020 there has not been indication of a rebound in post-drought water use. Given climate change, drought periods, and new conservation legislation that will be implemented during the planning horizon, there is expected to be further downward pressure on water demands. For these reasons the selected baseline period is lower than the pre-drought water use. Figure 2-2 provides a breakdown of baseline water use by customer category.

Figure 2-1 Monthly Baseline Water Use

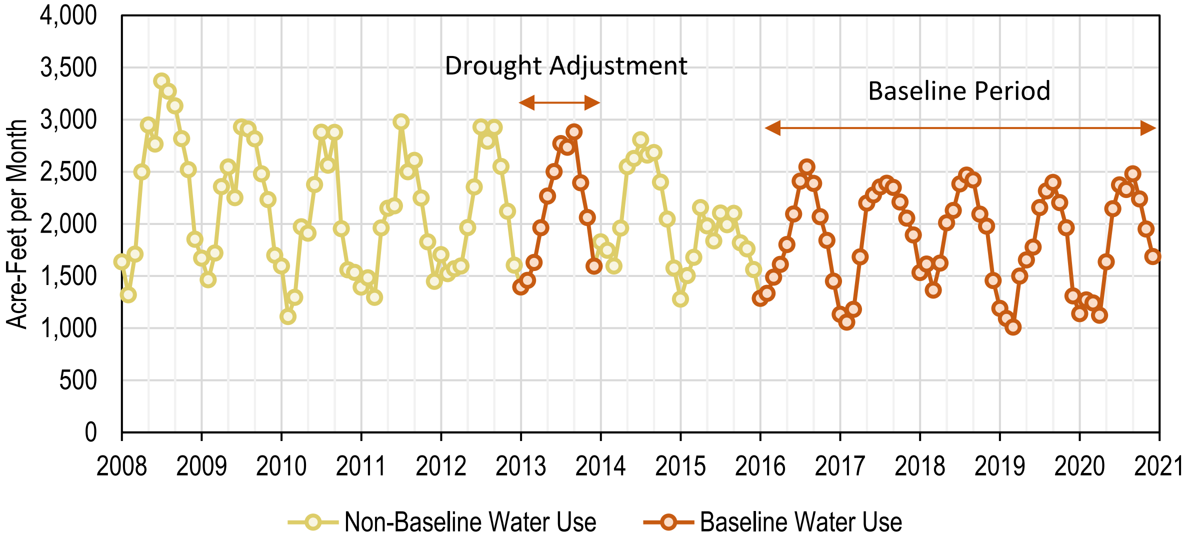
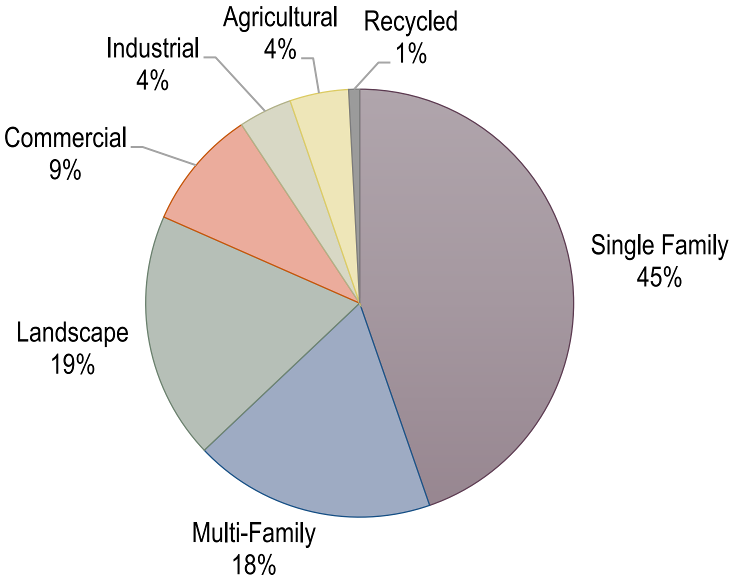


Figure 2-2. Annual Consumption by User Category in Baseline



2.2.1 Indoor and Outdoor Water Use

Outdoor water use is estimated for customer categories with mixed meters. An industry standard approach to measuring outdoor use, referred to as the "minimum month" method, assumes that all winter use is categorized as indoor consumption. However, this method tends to underestimate outdoor use. The water demand forecast in this

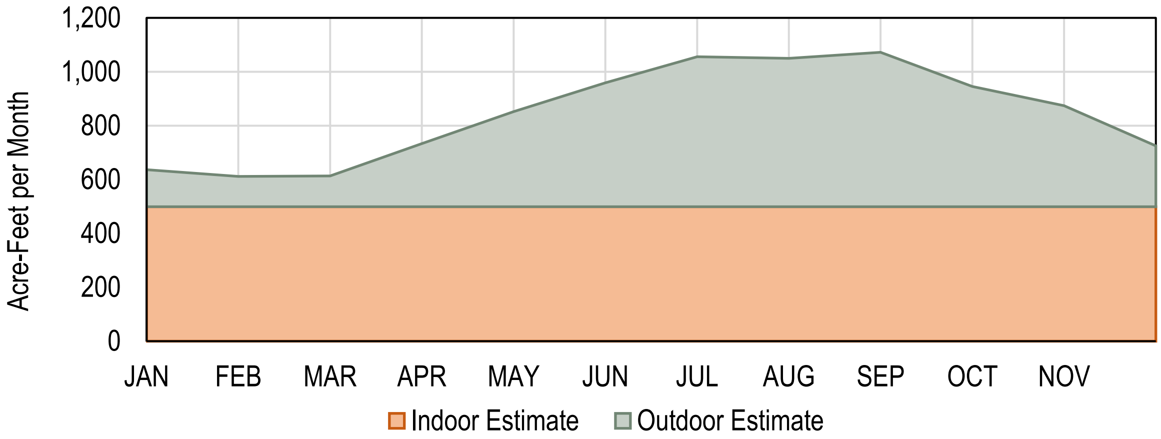
2020 WCMP instead uses the pattern of seasonal variation from dedicated irrigation meters and applies it to other sectors with mixed meters. This analysis was completed for the Single Family, Multi-Family, Commercial, and Industrial customer categories (see Appendix A). All categories exhibit a strong seasonal pattern where water use is higher in the summer. The Landscape, Agricultural, and Recycled Water customer categories are assumed to be all outdoor water use. The outdoor and indoor water use percentages are provided in Table 2-2.

Table 2-2. Outdoor Water Use by Customer Sector

Sector	Indoor Percentage	Outdoor Percentage
Single Family	62%	38%
Multi-Family	80%	20%
Landscape	0%	100%
Commercial	72%	28%
Industrial	90%	10%
Agricultural	0%	100%
Recycled Water	0%	100%

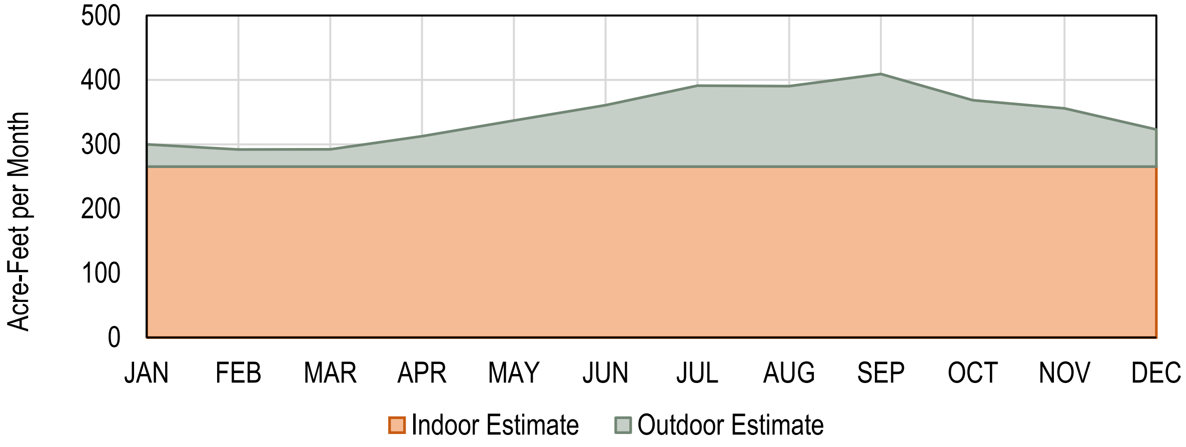
Residential use is approximately 62% of total demands, typical for a city without significant commercial industrial uses. Figure 2-3 shows the breakdown of single family residential use by month for the baseline period. Figure 2-4 shows the breakdown of multi-family residential use by month for the baseline period. In both cases there is a small amount of winter irrigation assumed.

Figure 2-1. Single Family Residential Water Use: Indoor vs. Outdoor



* Average 2016-2020 monthly Single Family indoor and outdoor water use.

Figure 2-4. Multi-Family Residential Water Use: Indoor vs. Outdoor



* Average 2016-2020 monthly Multi-Family indoor and outdoor water use.

2.3 Historical Growth Patterns

The historical population and housing units counts shown in Table 2-3 are from the California Department of Finance (DOF), which provides annual estimates from 1990 to 2020. These estimates are used to develop baseline estimates of population and housing, and to determine the types of plumbing fixtures that were installed when the buildings were constructed. As shown in Table 2-3, the majority of City homes are older, with about 75% of single-family homes built before 1990 and 82% of multi-family homes built before 1990. Typically, older homes have older fixtures and more leaks, leading to higher indoor water use than new homes. There was limited information on the ages of commercial and institutional buildings, so it is assumed that these are of a similar age to residential developments. As shown in the table, residential growth has slowed significantly since 2005, due to both the 2008 economic recession and the City's decreasing capacity for additional housing. In recent years, there has been a shift from single-family housing development towards multi-family housing units, which use less water when compared to single-family housing.

Annual DOF estimates are benchmarked to the Decennial Census. The 2010 Census is currently 10 years out of date, and 2020 Census data is not expected to be released until mid-2021. Once the 2020 Census is released, the City will be able to confirm the accuracy of recent DOF estimates.

Table 2-3. City of Oceanside Historical Housing and Population

Year	Total Population	Increase	Single Family	Increase	Multi Family	Increase
1990	128,090	35,290*--	31,555	—N/A**	19,469	—N/A**
1995	146,069	17,979	35,121	3,566	20,871	1,402
2000	161,624	15,555	38,342	3,221	21,104	233
2005	166,958	5,334	41,057	2,715	22,059	955
2010	167,086	128	41,543	486	22,839	780
2015	175,068	7,982	41,977	434	23,045	206
2020	177,335	2,267	42,243	266	23,835	790

Source: State of California, DOF, Tables E-4 & E-5.
*Population increase in 1990 shows increase compared to 1985 estimates not shown in this table
**Housing estimates prior to 1990 are not available from DOF Table E-5

3. DEMAND PROJECTIONS

The purpose of Section 3 is to document the demand projections developed for the 2020 WCMP This section presents:

- Demand methodology overview;
- Future population, housing and employment projections;
- Unit demand factors;
- Plumbing code savings;
- Water use targets; and
- Water demand projections with and without the plumbing code savings

3.1 Demand Forecast Overview

The City's baseline water demands (i.e., average year demand before additional active conservation savings are incorporated) were forecasted from 2025 through 2045 using regional forecasts of population, housing, and employment. Separate indoor and outdoor unit demand factors were developed based on the historical billing data by sector as well as historical demographic and housing information.

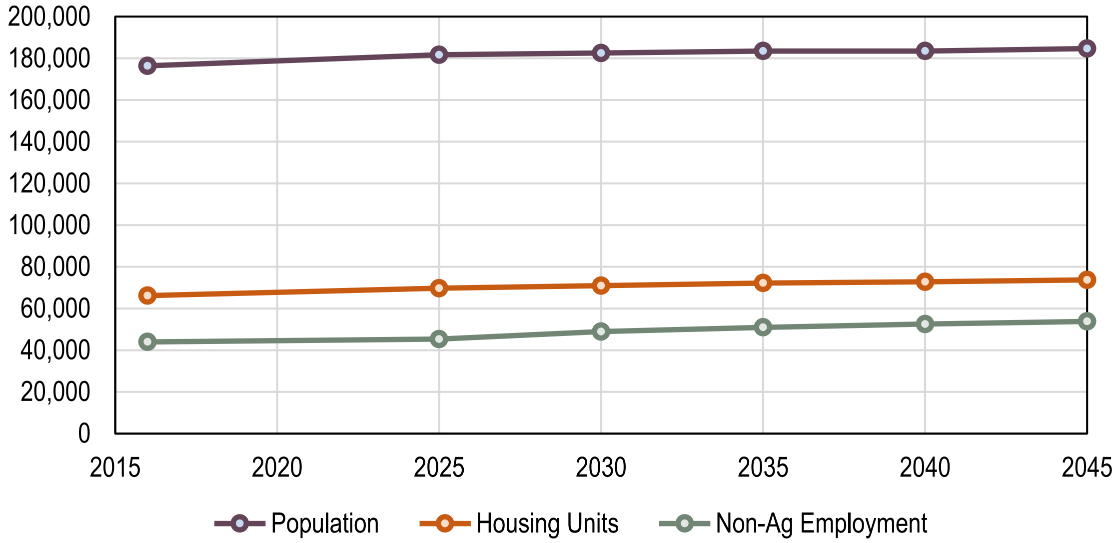
The baseline demand forecast estimates conservation that occurs as a result of changes in state and federal water efficiency requirements for plumbing fixtures, sometimes referred to as "passive conservation." These standards have resulted in a significant reduction in indoor water use over time. Going forward, recent codes and standards related to fixtures and appliances will continue to reduce indoor water demands through the replacement of existing fixtures, as will the more efficient technologies used in new developments.

3.2 Future Population, Housing, and Employment Projections

Socioeconomic projections of population, housing units, and employment are provided by the San Diego Association of Governments (SANDAG). These are based on the Series 14 Regional Growth Forecast, Version 17 (Interim Series 14) prepared for San Diego Forward: The 2019 Federal Regional Transportation Plan (2019 Federal RTP). The SANDAG regional growth forecast is currently the most recent and most detailed data available for the City of Oceanside. The forecast distributes regional growth based on a variety of factors, including available capacity for housing and accessibility to jobs and transportation. It does not allocate growth beyond what is allowed for by any jurisdiction's general plan.

The Interim Series 14 forecast uses a base year of 2016. From 2016 to 2045, the City is projected to increase its population by 8,270 (5%). Housing units are projected to increase by 7,535 (11%). Among those, single family units are projected to increase by 2,323 (5%) and multi-family units are projected to increase by 5,212 (22%). Non-agricultural employment is projected to grow by 9,824 (22%). The larger growth rate in housing units compared to population indicates a decline in the number of persons per household, which is projected to decrease from 2.9 in 2016 to 2.73 in 2045. Included in the following Table 3-1 and Figure 3-1 are the population, housing, and employment projections for the City. SANDAG estimates for 2020 have been omitted as they are part of the baseline period and have been replaced by actual growth and water use data for 2020. An additional adjustment was made to SANDAG's assumptions for persons per household in 2025 and 2030 in order to smooth out population growth between 2016 and 2035. This avoided a temporary flattening of population growth that resulted from SANDAG's model, and was determined to be unrealistic for the City.

Figure 3-1. Socioeconomic Growth Forecast for Planning Area



Note: Population per household assumptions were adjusted to smooth out population growth from 2016-2035.

Table 3-1. Historical and Projected Population, Housing, and Employment

Year	Population	Single Family Housing Units	Multi-Family Housing Units	Mobile Home Housing Units	Non-Ag Employment
2016	176,387	42,703	19,983	3,497	43,965
2025	181,659	43,471	22,740	3,497	45,336
2030	182,527	43,913	23,518	3,497	48,919
2035	183,483	44,396	24,334	3,497	50,960
2040	183,482	44,690	24,601	3,497	52,532
2045	184,657	45,026	25,195	3,497	53,789

Additional data on occupancy rates are used to split the population between single-family, multi-family, and mobile homes. This information is derived from the American Community Survey (ACS), conducted by the U.S. Census Bureau. Unlike the decennial census, the ACS is based on a sample and has a margin of error, so multi-year estimates are provided to increase the statistical reliability of the data. The most current ACS estimates are the five-year estimates from 2014 to -2018. The ACS identifies a single-family occupancy rate of 3.1 persons per household for single-family homes, 2.99 for multi-family homes, and 2.15 for mobile homes. The baseline and projected population by housing type is provided in Table 3-2.

Table 3-2. Historical and Projected Population by Housing Type

Year	Single Family Population	Multi-Family Population	Mobile Homes Population
2016	118,636	51,129	6,623
2025	119,397	55,680	6,582
2030	119,011	57,005	6,511
2035	118,655	58,388	6,440
2040	118,306	58,787	6,389
2045	118,505	59,801	6,351

3.3 Unit Demand Factors

Future projections of water use are based on unit factors developed for each customer category from the historical billing data. These unit factors are developed by dividing each sector's five-year average of baseline water demands by the baseline values of population, housing units, and employment from annual DOF estimates. Note that SANDAG's count of housing units varies from DOF estimates, because SANDAG relies on its own methodology which it considers to more accurately reflect local conditions. These differences have been accounted for when developing the unit factors. The baseline unit factors are calculated as follows:

- **Single-Family** – Future indoor water uses are based the single-family population and future outdoor water uses are based on single-family housing units as provided by SANDAG.
- **Multi-Family** – Indoor water use is based the single-family population and outdoor water use is based on single-family housing units as provided by SANDAG. Total population estimates from SANDAG were split into single-family and multi-family estimates based on Census values of persons per household. Mobile homes were included in the multi-family category.
- **Landscape** – Future water demand is based on total housing units, under the assumption that future landscape uses, such as common areas and parks, are driven generally by future residential developments.
- **Commercial and Industrial** – Future water demand is based on the total number employees, under the assumption that most of these uses occur indoors.
- **Recycled Water** – Recycled water projections are calculated separately based on planned uses. Increases in recycled water are assumed to occur from conversions of existing dedicated landscape meters.

The baseline unit factors calculations by sector are provided in Table 3-3 for indoor uses, and Table 3-4 for outdoor uses. These unit factors are applied to the future population, housing, and employment projections to develop a baseline municipal demand projection before conservation, recycled water, or unaccounted for water.

Table 3-3. Baseline Units Factor for Indoor Uses

Sector	Unit Factor Description	Unit Factor
Single-family	Gallons per Person Per Day (Single-Family)	45
Multi-family	Gallons per Persons Per Day (Multi-Family)	49
Landscape	Gallons per Housing Unit Per Day (Total)	0
Commercial	Gallons per Employee Per Day	30
Industrial	Gallons per Employee Per Day	17

Table 3-4. Baseline Unit Factor for Outdoor Uses

Sector	Unit Factor Description	Unit Factor
Single-family	Gallons per Housing Unit Per Day (Single-Family)	86
Multi-family	Gallons per Housing Unit Per Day (Multi-Family)	36
Landscape	Gallons per Housing Unit Per Day (Total)	57
Commercial	Gallons per Employee Per Day	11
Industrial	Gallons per Employee Per Day	2

3.4 Passive Water Conservation Savings

The passive conservation savings are based on a demographically-driven growth and replacement model that accounts for fixtures from new construction and natural replacement using the same demographic data as the regional growth forecast. Savings estimates are provided for the single-family residential, multi-family residential, and non-residential sectors. The passive conservation model estimates water savings for toilets, clothes washers, dishwashers, and urinals. Even though showers and faucets are significant residential indoor uses, studies have shown that efficiency standards have had minimal impact on per capita usage rates. The model estimates the inventory of different types of water fixtures annually from 1990 to 2045.

The historical and current water efficiency standards used to estimate indoor passive conservation savings are shown in Appendix A. Water fixtures installed due to new construction are assumed to be in compliance with the plumbing codes in effect when the new construction occurs. Natural replacement rates vary by device and are linked to the expected life of the device. When devices are replaced due to failure, remodeling, or other reasons, the new devices are assumed to be compliant with the plumbing codes in effect when the replacement occurs.

The natural replacement rate for indoor plumbing fixtures is provided in Table 3-5. The useful life and associated annual replacement rates for each device are based on standard industry estimates, estimates from plumbing fixture saturation studies, and Best Management Practices reports from California Water Efficiency Partnership.

Table 3-5. Parameters Used in Indoor Water Savings Fixtures

Sector	Fixture	Useful Life (Years)	Replacement Rate (% per Year)
Residential	Toilets	25	4%
Residential	Clothes Washers	14	8.3%
Residential	Dishwashers	13	8%
Non-Residential	Toilets	40	2.5%
Non-Residential	Urinals	40	2.5%

The frequency of water use events is provided in Table 3-6. These were obtained from focused end-use studies. Residential fixtures are based on *2016 Residential End Uses of Water, Version 2* published by the Water Research Foundation (DeOreo et al. 2016). Non-residential fixtures are based on *Commercial and Institutional End Uses of Water* study published by the American Water Works Association Research Foundation (Dziegielewski et al. 2000). Both of these studies are the current industry benchmarks for residential and non-residential water uses. These factors are applied on a per person basis as described below.

Table 3-6. Parameters Used in Indoor Water Savings Fixtures

Sector	Fixture	Frequency of Use
Residential	Toilets	4.9 flushes per person per day
Residential	Clothes Washers	3.5 cubic feet per load 0.3 cycles per person per day
Residential	Dishwashers	0.3 cycles per person per day
Non-Residential	Toilets	2.6 flushes per employee per day
Non-Residential	Urinals	1.25 flushes per employee per day

3.5 Water Demand Projections with and without Plumbing Code Savings

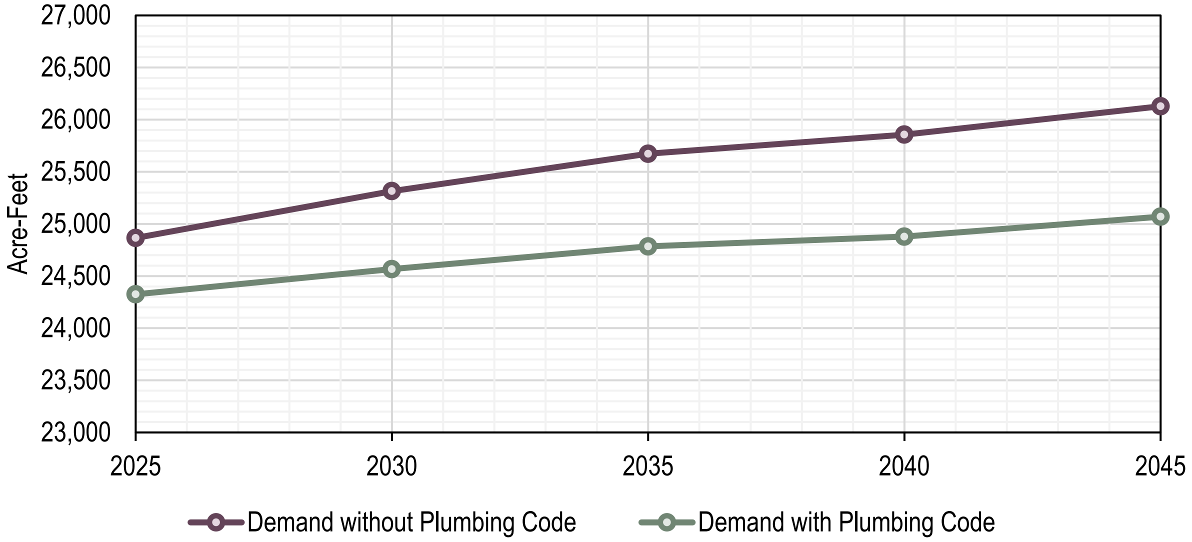
Water demand projections were developed from 2015 to 2045. Table 3-7 and Figure 3-2 show projected demands in five-year increments through 2045, with and without plumbing codes and appliance standards. Information and assumptions about plumbing code and appliance standards can be found in Appendix A. The demand projections reflect average water use assuming average weather conditions, and do not reflect drier and hotter drought conditions. Likewise, climate change (which might alter weather patterns), increased or decreased rainfall, and possibly increased irrigation demand in the spring and fall due to a warmer climate have not been addressed in this analysis.

Table 3-7. Water Use Projections (Acre-Feet/Year)

	2025	2030	2035	2040	2045
Demand without Plumbing Code (AFY)	24,865	25,315	25,673	25,857	26,129
Demand with Plumbing Code (AFY)	24,325	24,567	24,785	24,878	25,070
Plumbing Code Savings (AFY)	541	748	889	979	1,059

* Total water use includes agricultural, recycled water use, and unaccounted for water.

Figure 3-2. Water Use Projections for City of Oceanside (AFY)



* Total water use includes agricultural and recycled water use, and unaccounted for water.

The City's current and projected demands for each customer category, after plumbing code savings, are identified in Table 3-8. Total deliveries include agricultural water and recycled water use as well as unaccounted for water. It is anticipated that future recycled water demands will primarily offset current potable water uses for landscape irrigation and agriculture. Targeted customers for recycled water conversions include parks, golf courses, homeowner association (HOA) landscapes, medians, and agricultural operations.

Table 3-8. Demands and Accounts by Customer Category*

	2025	2030	2035	2040	2045
Single-family	9,977	9,900	9,859	9,824	9,831
Multi-family	4,305	4,327	4,388	4,391	4,443
Landscape	2,184	674	744	775	825
Commercial	1,913	1,930	2,013	2,076	2,126
Industrial	942	1,017	1,059	1,092	1,118
Agricultural	558	232	233	233	233
Existing Recycled Water	3,000	5,040	5,040	5,040	5,040
Unaccounted for Water	1,444	1,447	1,448	1,447	1,453
Total Deliveries	**24,325**	**24,567**	**24,785**	**24,878**	**25,070**

*Demands include plumbing code savings, but not additional conservation measures.

3.6 Water Conservation and Use Targets

SB X7-7, or “The Water Conservation Act of 2009,” was enacted to ensure California continues to have reliable water supplies, requiring urban water agencies to collectively reduce statewide per capita water use by 20% by December 31, 2020. The law establishes that the base daily per capita use be based on total gross water use divided by the service area population.

In tracking per capita water use, which is measured in gallons per capita per day (GPCD), the primary project driver is the SB X7-7 compliance requirements that require tracking of baseline GPCD, a 2015 target, and a 2020 target. The 2020 GPCD target for the City was calculated using DWR’s Method 1, which is 80% of the urban retail water supplier’s baseline per capita daily water use. The City’s SB X7-7 baseline is 171 GPCD. The resulting per capita demand target for 2020 is 137 GPCD, with an interim 2015 target of 154 GPCD, which the City achieved in 2015. Based on 2020 gross water use and estimated population, the City of Oceanside’s 2020 actual water use is 116 GPCD. The City has met its 2020 water use reduction target under SB X7-7. Additional background information about the calculation of the water use targets can be found in the 2020 UWMP.

In 2018, California Senate Bill SB 606 and Assembly Bill (AB) 1668 was enacted and lays out a new long-term conservation framework for California. This new legislation requires DWR to develop and establish water use efficiency standards for 1) indoor residential, 2) outdoor residential, 3) commercial, industrial, and institutional (CII) water use for irrigation, and 4) water loss. These water use objectives will not be in place until 2023, and the first report will require information on what water conservation measures suppliers will implement to meet their stated objectives. Urban water suppliers will be required to stay within annual water budgets, based on these standards, for their service areas. It is important to build in flexibility within this WCMP as these specific objectives are still unknown. Urban water suppliers are encouraged to consider aligning conservation management actions and the changing urban use patterns in order to consider these future obligations. With the completion of SB X7-7 requirements in 2020, the water use objectives will serve as the statewide water use targets for the City moving forward.

4. CURRENT WATER CONSERVATION PROGRAM

The purpose of this section is to present the City's existing water conservation program. As a member of the California Urban Water Conservation Council (CUWCC) starting in 1997, the City has become a leader in water conservation management. While the CUWCC no longer exists, the City's alignment with CUWCC helped it to establish a comprehensive water conservation program that is now the foundation of its current conservation efforts. The City's water conservation program is a combination of the City's commitment to carrying out the CUWCC Best Management Practices (BMPs) and the City's desire to be water-efficient. Since July 2008, the City has been participating in three regional programs that focus on offering services and hardware that satisfied many of the CUWCC BMPs created in 1997. The 14 BMPs from the CUWCC were required of the CUWCC signatories until the end of 2008. In addition, former CUWCC members were expected to comply with the new and revised CUWCC BMPs which went into effect with the last Memorandum of Understanding (MOU) revision on January 4, 2016. The City's conservation program is generally organized around the Demand Management Measures (DMMs) outlined in the City's 2020 UWMP, which also correlate to the five BMPs established in the 2016 MOU:

- BMP 1.1: Utility Operations Programs
- BMP 1.2: Water Loss Control
- BMP 1.3: Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections
- BMP 1.4: Retail Conservation Pricing
- BMP 2.1: Public Information Programs
- BMP 2.2: School Education Programs
- BMP 3: Residential Programs
- BMP 4: CII Programs
- BMP 5: Landscape Programs

SB 606 and AB 1668 lay out a new long-term water conservation framework for California. This new framework is far-reaching for both the urban and agricultural sectors of California and represents a major shift in focus. The legislation expands authority to implement a water budget-based approach to conservation and water use efficiency. New urban water use efficiency standards are anticipated to be adopted by the SWRCB, in coordination with DWR, in 2023. The City continues to implement numerous public outreach and education programs, and support rebate programs to manage demand. This 2020 WCMP identifies activities in the City's "toolbox" of conservation programs to be implemented to help achieve future water use objectives. The following sections describe the various components of City's current conservation program that are on-going or have been implemented over the past five years.

4.1 Water Waste Prevention Ordinances

The City has three ordinances in place to give the City the authority to prohibit water waste and encourage water use efficiency within the service area. Each ordinance is updated as needed to stay current with State regulations. The three ordinances are listed and described in further detail below.

- Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)
- Water Efficient Landscaping (Ordinance No. 10-OR0412-1)
- Recycled Water (Ordinance No. 14-OR0565-1)

The City will maintain and expand its water waste prevention ordinances as needed to meet demand management goals established in this 2020 WCMP.

4.1.1 Updates to Water Conservation Program and Drought Response Conservation Measures (Ordinance No. 15-OR0276-1)

The most recent amendments to the City's "Drought Ordinance" occurred in 2015 to incorporate Governor Brown's 2014 state of emergency proclamation for drought and the 2015 Executive Order for a 25% reduction of water use statewide. This ordinance clarifies four drought response levels and describes the water use restrictions and required reductions for each stage. A copy of the ordinance is included in Appendix E of the City's 2020 UWMP. The City is currently updating its drought ordinance to maintain consistency with SDCWA's 2021 Model Drought Ordinance, which was revised in 2021 to include the six state-mandated water shortage levels. The updated drought ordinance is expected to be adopted in conjunction with this WCMP and the City's 2020 UWMP in June 2021.

4.1.2 Water Efficient Landscaping (Ordinance No. 10-OR0412-1)

To ensure compliance with the State's Water Conservation in Landscaping Act, this ordinance was implemented to include 2006 development landscape design requirements and is written to be as effective as the State's Model Water Efficient Landscape Ordinance (MWELO). This ordinance was updated July 15, 2015 and a copy is included in Appendix F of the 2015 and 2020 UWMPs.

In California, about half of all urban water usage is for landscape irrigation. Substantial water savings can be achieved by proper landscape design, installation, and maintenance. To improve water savings in this sector, DWR updated the MWELO in 2015. MWELO promotes efficient landscapes in new developments and retrofitted landscapes while increasing water efficiency standards for new and retrofitted landscapes through more efficient irrigation systems, greywater usage, onsite storm water capture, and by limiting the portion of landscapes that can be covered in turf. The MWELO also requires reporting on the implementation and enforcement of local ordinances. To reduce the complexity and costs for the smaller landscapes now subject to ordinance, the 2015-revised MWELO has a prescriptive compliance approach for landscapes between 500 and 2,500 square feet. Landscapes within this size range can comply either through meeting the traditional MWELO approach or through the prescriptive approach. The size threshold for existing landscapes that are being rehabilitated has not changed, remaining at 2,500 square feet. Only rehabilitated landscapes that are associated with a building or landscape permit, plan check, or design review are subject to the Ordinance.

In typical non-residential landscapes, the reduction in Maximum Applied Water Allowance (MAWA) limits the planting of high water use plants to special landscape areas. The revised MWELO still uses a water budget approach and larger areas of high water use plants can be installed if the water use is reduced in the other areas, provided the overall landscape stays within the budget. The use of special landscape areas (SLA) was not changed in the revised MWELO. The SLA provides for an extra water allowance in non-residential areas for specific functional landscapes, such as recreation, areas for public assembly, and edible gardens or for areas irrigated with recycled water. The revised MWELO allows the irrigation efficiency to be entered for each area of the landscape.

4.1.3 Recycled Water (Ordinance No. 14-OR0565-1)

The Recycled Water Ordinance establishes the authority for the City to enforce connection to and use of recycled water where applicable and available. This ordinance supports the City's ongoing efforts to increase non-potable recycled water use in its service area. A copy of the ordinance is included in Appendix G of the 2020 UWMP.

4.2 Metering

Per California Water Code §527, the City is required to install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025. All water service connections are metered and billed according to water consumed. The City has an active water meter replacement program in place to continually change out older meters. In addition, to comply with future water use objectives, the City will need to ensure that all meters are accurately classified.

With City Council approval in August 2020, the City is preparing to implement a service area-wide advanced metering infrastructure (AMI) program. AMI, in concert with a web-based interface software (WaterSmart), will provide real-time consumption data to facilitate early identification of water loss, allow customers to track daily water use, and provide a mechanism for ongoing outreach and communication between the City and its customers. It will also allow the City to notify customers of overwatering or leaks in real time the month rather than after the once a month read is taken. This program is anticipated to be fully implemented for customers citywide by March 2024.

4.3 Conservation Pricing

The City has and will continue to utilize a combination of uniform and increasing block or tiered conservation rate structures. Residential customers, composed of single-family, master-metered residential, and multi- family customer classes, are billed in increasing block structures in which the water rates increase with additional water units consumed. Table 4-1 shows the proposed residential customer billing rates for 2021. Commercial, agricultural, and irrigation customer classes have uniform rate structures in which a flat rate is billed for every unit consumed. Table 4-2 shows the proposed billing rates for commercial customers. The City chose not to include conservation pricing when developing program options. However, the City will maintain and expand its conservation pricing as needed to meet demand management goals established in this 2020 WCMP.

Table 4-1. Residential Customer Billing Rates

Tier	Block Structure	Cost per Unit
Single Family and Master – Metered (per dwelling unit)		
Tier 1	0 – 13 units	$2.65/unit
Tier 2	14 units and above	$3.56/unit
Multi-Family (per dwelling unit)		
Tier 1	0 – 7 units	$2.69/unit
Tier 2	8 units and above	$3.17 /unit

Table 4-2. Commercial Customer Billing Rates

Tier	Cost per Unit
Commercial Agriculture Rate	$2.87/unit
Special Agricultural Rate	$1.85/unit
Irrigation Rate	$2.90/unit
Commercial Rate	$2.77/unit

4.4 Public Education and Outreach

The City engages in a variety of public education and outreach efforts to improve water use management, education, and efficiency. These programs are described herein.

4.4.1 Outreach Activities

The City provides water conservation messaging to customers through their dedicated water conservation website www.SaveWaterOceanside.com which contains water conservation tips, rebate program information, water saving videos, and important links to other water conservation websites and regional partners. Water conservation messaging is also distributed via public events and social media.

The City staffs a “Green Oceanside” booth dedicated to promoting water conservation at several events throughout the year. Displayed are brochure handouts containing indoor and outdoor water saving information and conservation tools as free giveaways. Giveaway items include California-friendly landscaping guides, pressure gauges, home water audit kits, reusable water bottles and student workbooks..

In order to reach a wide range of audiences, the City has brochures and handouts available at various community centers and City offices. Bill inserts are included with utility bills to announce available programs and important water conservation reminders. The City has consistently reached out to customers using various methods, including through its WaterSmart customer portal, every quarter within the last five years. In coordination with SDCWA, the City promotes opportunities for residents to participate in regional programs such as Green Oceanside Business Network certification, California-Friendly landscape contest, Speaker Bureaus, and Citizens Water Academy.

The City and other agencies in the region host the WaterSmart Landscape Contest, an annual contest for residents in San Diego County. The contest recognizes residents who have swapped their grass for drought-tolerant landscaping and brings awareness to the benefits of sustainable landscaping.

Residential outreach includes, but is not limited to, leak identification services, possible rebates, year-round outreach and education, and highlighting efforts during the Mayor’s Challenge for Water Conservation. Additional outreach focuses on top CII water customers from each category, such as hotels, restaurants, stores, and schools.

4.4.2 Landscape Workshops

The City, often in coordination with SDCWA, provides landscape workshops and classes for residential customers and professional contractors. Workshop topics provided in the past include California Friendly Landscape Training and Fix-a-Leak. Workshops are offered for free and held at different locations through the City, with at least two workshops held in a City of Oceanside facility. Virtual Water Wise Landscape Workshops were hosted online from June through August 2020. Workshop topics included landscape installation and maintenance, irrigation, landscape design, and plant selection. Recordings and workshop materials are made available on the City’s conservation website.

Workshop marketing includes strategically placed poster notices at various public locations such as libraries, community centers, and garden centers, and through email blasts and monthly bill inserts. The City also conducts outreach and workshop marketing on social media, through presentations at HOA groups, and in coordination with local stakeholders and stakeholder groups (e.g., MainStreet Oceanside, Chamber of Commerce).

4.4.3 School Education

The City offers two school education programs for local schools as well as education materials to teachers upon request through SDCWA. The Splash Lab offers assembly presentations available to grades K-6 to educate students on water science. For Grades 4-6, students can participate in a mobile water lab for a hands-on experience learning water-related topics. The City also provides virtual school assemblies, educational video series, Green Oceanside Presentations, and the Water Use Lesson Plan.

In conjunction with other agencies in northern San Diego County, the City holds a poster contest for 4th graders to compete for inclusion in an annual water conservation calendar. The top posters are incorporated into the calendar that includes conservation tips and reminders. The poster is provided as a giveaway item to customers.

City staff plan to expand school outreach in FY 2022 with the development of several new programs. The City will increase outreach to the youth sector and is building partnerships with the YMCA, Boys and Girls Club, Boy Scouts, and Girl Scouts to support this effort. Water refill stations have been installed at all public high schools and middle schools, and the City is working to build awareness around tap water quality. The City is also developing lessons plans on water use, activities that can be used in the classroom in connection with the Mayor's Challenge for Water Conservation, and educational videos.

4.4.4 Giveaways

At past community events and City-led workshops, the City had provided giveaways for high-efficiency faucet aerators, showerheads, soil moisture sensors, irrigation equipment, and spray to drip kits.

4.5 Water Surveys and Audits

The City offers free water surveys and audits designed to improve water use management and promote water saving solutions. These programs are described below.

4.5.1 Water Smart Checkup Program

The City, in coordination with SDCWA, continues to offer the WaterSmart Checkup program to residential and CII customers. The program coordinates a property visit with a WaterSmart representative to provide water-saving recommendations and perform a water audit. The water audit includes an inventory of indoor and outdoor water fixtures, an evaluation of water use inefficiencies, and an adjustment of irrigation schedules where appropriate. A summary report with additional conservation advertising is left with the customer at the end of the appointment.

4.5.2 Large Landscape Water Budgeting/Monitoring

The WaterSmart online customer portal provides feedback to customers with large landscapes on water use and strategies for monitoring use-efficiency. This information can be used by customers to identify opportunities to use water more efficiently and implement changes to irrigation equipment or practices that can result in water and cost savings.

4.5.3 Agricultural Water Audit Program

The City actively promotes and provides agricultural water audits performed by the Mission Resource Conservation District (MRCD). Those customers with high water use are targeted, offered a survey, and provided a customized report on how to save water. Surveys are currently provided upon request.

4.6 Customer Rebate Programs

The City participates in a variety of regional rebate programs to improve water use management and increase water use efficiency. These programs are described herein.

4.6.1 Residential Customer Rebates

Multiple residential rebate programs are available through MWD's SoCal WaterSmart program. The program provides rebates to replace indoor and outdoor water fixtures with water-efficient devices. Table 4-3 provides a list of all rebates available and associated rebate amounts for residential customers. Rebates for clothes washers and premium high efficiency (HE) toilets continue to be popular programs gathering participation of 182 fixtures replaced in FY 2020. In addition, in FY 2020 the program provided rebates for a total of 379 outdoor water fixtures such as rain barrels, rotating sprinkler nozzles, and weather-based irrigation controllers, and removed approximately 73,500 square feet (sq. ft.) of turf.

Table 4-3. Residential Water Conservation Rebate

Rebate Program Name	Rebate Amount
Indoor Fixtures	
Clothes washer rebate	$85
Premium HE toilets	$40
Outdoor Fixtures	
Irrigation controllers	$35
Irrigation nozzles	$2/nozzle (minimum of 30)
Rain barrels	$35
Cisterns (50-199 gallons)	$35
Cisterns (200-500 gallons)	$250
Cisterns (501-999 gallons)	$300
Cisterns (1000+ gallons)	$350
Soil moisture sensors	$35/controller station
Turf removal rebate	$2/sq. ft. up to $5,000

Source: MWD, SoCal Water$mart Website: www.socalwatersmart.com

4.6.2 Commercial Customer Rebates

The City, in combination with MWD’s SoCal WaterSmart Program, provides rebates geared towards commercial customers to promote water efficiency. Table 4-4 displays the rebates available grouped into market sectors with associated amounts available per rebate for commercial customers. The rebates most applied for by commercial customers in the last five years include premium HE toilets (209 in FY 2020) and weather-based irrigation controllers (22 in FY 2020)

Table 4-4. Commercial Water Conservation Rebates

Rebate Name	Rebate Amount
Indoor Fixtures	
Premium HE toilet	$40
ULF Urinal	$200
Zero Water urinal	$200
Flow valve restrictions	$5/valve (minimum of 10)
Outdoor Fixtures	
Turf removal	$2/sq. ft. up to $5,000
Irrigation controllers	$35/controller station
Irrigation nozzles	$2/nozzle (minimum of 30)
Large rotary nozzles	$13/set (minimum of 8)
Flow regulators	$1/regulator (minimum of 25)
Soil moisture sensors	$35/station
Restaurant Fixtures	
Connectionless food steamers	$485
Air-cooled ice machines	$1,000
Commercial Industrial	
Cooling tower conductivity controllers	$625
Cooling tower pH controllers	$1,750
Dry vacuum pump	$125/0.5 HP
Laminar flow restrictors	$10/restrictor (minimum of 10)

Source: MWD, SoCal Water$mart Website: www.socalwatersmart.com

4.6.3 Incentive for Recycled Water Conversions

The City has priced recycled water at rates that incentivize customers to convert approved uses from potable water to recycled water. The City is expanding its current recycled water system in phases, while at the same time implementing the new Pure Water Oceanside Program. Pure Water will serve to augment the Mission Basin groundwater supply with fully advanced treated (FAT) water to replenish local source water for the City's potable water system. In addition, it will be blended with non-potable recycled water to provide high-quality recycled water to meet the irrigation needs of agricultural and other customers in the City's Upper Conveyance System. This high-quality non-potable recycled was will also be provided at rates the incentivize customer use of this supply over potable water, saving customers money. The City's Lower Conveyance System, fed primarily by non-potable recycled water, is priced to provide customers even greater savings over potable water.

4.6.4 Require Plan Review for New CII

The City's Building Department reviews all plans per Green Building Code Requirements. As part of the recycled water system expansion described above, the City has hired a consultant tasked with facilitating the recycled water conversions for the large-use customers targeted in the expansion of the system. This consultant is providing site evaluations and planning reports to these customers, which will outline the process for the private conversion, estimated costs, and support through the process.

4.7 Programs to Assess and Manage Distribution System Real Loss

Real water losses are physical water losses from the pressurized distribution system and a utility's storage tanks up to the point of customer consumption (e.g., the water meter). After Senate Bill (SB) 555 was passed in 2015, urban water suppliers have been required to submit an annual water loss audit to DWR. This audit attempts to quantify all inputs and outputs of a supplier's potable distribution system along with many other factors related to quantifying water losses. SB 555 also directed the SWRCB to develop performance standards for volumetric water loss by July 2020. As of November 2020, the SWRCB has not completed final rulemaking for performance standards but has proposed to use an MS Excel-based economic model to calculate a unique volumetric standard for each water supplier. The standard is proposed to be quantified in units of real losses per service connection per day (gallons per connection per day).

The City has completed three years of validated Water Loss Audit reports and has determined that water losses are within the acceptable industry standard range. The City is proactive in reducing unaccounted-for water by ensuring water meters are regularly maintained, evaluated for functionality, and replaced at industry standards. Reported leaks are investigated and recorded in a tracking database that collects the time of report, leak location, and type of leaking pipe or fitting. Leaks are repaired to the extent that is cost-effective and prioritized based on potential water loss. The City will continue to survey and correct its own infrastructure system and processes to reduce system real loss.

The City maintains an excel spreadsheet to track water production and sales. WaterSmart leak alerts provide notification of leaks to help reduce losses. As stated in Section 4.2 Metering (above) the City also maintain as schedule for meter replacement to ensure more accurate meter reads. In addition, an AMI program is being implemented to help facilitate early identification of water loss.

4.8 Water Conservation Program Coordination and Staffing Support

Water conservation staffing is performed by a full-time Environmental Specialist and supervised by the Senior Management Analyst appointed as the Water Conservation Coordinator. The City's current conservation coordinator is Ms. Sarah Davis, (760) 435-5830, SDavis@oceansideca.org. The City will maintain its Water Conservation Coordinator to serve as a program manager and point of contact for demand management activities.

5. COMPARISON OF INDIVIDUAL CONSERVATION MEASURES

This section presents the conservation measure screening process, a description of the measures selected to be analyzed in the AWE Tool, measure design assumptions, and a comparison of the individual conservation measure costs and savings.

5.1 Selecting Conservation Measures to be Evaluated (Conservation Measure Screening)

An important step in updating the water conservation program is the review and screening of existing, recently implemented, and new water conservation measures. The first step in the conservation analysis was to review historical water conservation activity and savings. The purpose of this review was to look at historically successful programs, past penetration rates (activity levels) for individual measures, which customers – single-family, multi-family, commercial, etc.- engaged with the programs, and the types of programs that were implemented and by the City since the 2015 UWMP and 2015 WCMP.

A list of potential measures was developed based on the City's general experience and review of what other water agencies with conservation programs are currently implementing. Following a workshop with the City to review the preliminary conservation program list, the potential conservation measures were provided to the City to be considered for further evaluation in the AWE Tool. A second workshop was held with the City to determine a final list of conservation measures to be analyzed. These measures were screened by City staff to identify which had the highest level of interest and potential for implementation within its service area. The result of this process was a short list of 18 measures that were selected for further water savings and benefit-cost analysis using the AWE Tool. This evaluation was specific to the water use characteristics, economies of scale, demographics, and other factors that are unique to the region and the City.

The general discussion screening criteria included:

- Measure Cost Effectiveness
- Applicability to Service Area
- Amount of Water Savings Generated
- Cost to the City
- Ease of Implementation and Staffing Required
- Whether the Measure was Being Run by MWD or SDCWA
- Local Preferences
- Fulfill Regulatory Requirements

Based on the previously listed criteria, City staff determined whether a measure was eliminated from further conservation (given a "No") or passed into the next evaluation phase (given a "Yes"). The next evaluation phase was a cost-effectiveness analysis using the AWE Tool. Once finalized, the selected measures were inserted into the AWE Tool, along with the City's conservation program budget, in order to have a complete accounting for the benefits and costs of the measures.

5.2 Conservation Measures Evaluated

Table 5-1 includes the 18 water use efficiency measures that were analyzed using the AWE Tool. The table includes measures, devices, and programs that can be used to achieve water use efficiency; methods through which the device or program will be implemented; and what distribution method or mechanism can be used to activate the device or program.

Table 5-1. Conservation Measure Descriptions

No.	Measure Name	Measure Description
		Utility Measures
1	Water Loss	Maintain a thorough annual accounting of water production, sales by customer class, and quantity of water produced but not sold. For real water loss reductions, measures include efforts to find and repair leaks in the distribution system. Leak repairs would be handled by existing crews at no extra cost. For distribution system pressure regulation, activities could include installing additional pressure regulators to maintain water pressure within recommended limits. This measure is based on SB 555 requirements for water loss auditing and efforts to reduce system water losses.
2	Advanced Metering Infrastructure (AMI)	Install more than 44,000 smart meters and purchase WaterSmart software. The AMI program was approved in August 2020, with citywide implementation of smart meters scheduled for completion by 2023. The AMI program will provide remote updates on an hourly basis, and customers will have access to near real-time use data through the WaterSmart customer portal, allowing them to view their current and past water usage to more quickly identify the possibility of leaks and opportunities to reduce water usage. Additionally, the AMI program will notify customers via text or email if a potential leak is detected, allowing for proactive management of leaks by customers.
3	Public Information	Engage in a variety of public information efforts to improve water use management, knowledge, and efficiency. Public information includes conservation messaging with water savings tips and rebate program information through bill inserts, a dedicated water conservation website, social media, brochures and handouts, and public events.
4	Public and School Education	Work with local school districts to develop classroom programs to promote water use efficiency education, such as poster contests and the Splash Lab. Some programs would require dedicated Utility staff to assist and present.
		CII Measures
5	CII Rebate Programs	Provide rebates for commercial indoor water using appliances. Program is currently part of the SoCal WaterSmart program administered MWD.
6	CII Water Surveys	Provide professional water surveys to large accounts such as hotels, restaurants, stores, and schools to evaluate ways for the business to save water and money. There is opportunity for this measure to be part of regional partnership.
7	CII Self Surveys	Provide self-auditing software and materials for smaller CII customers to evaluate ways to save water and money. The software would be promoted as part of a smaller user program. There is opportunity for this measure to be part of regional partnership.
8	CII Enhanced Outreach	Conduct additional targeted outreach to top water customers from each category, such as hotels, restaurants, stores, and schools.
		Landscape
9	Landscape Rebate Programs	Provide rebates for residential and commercial landscape products. Program is currently part of the SoCal WaterSmart program administered MWD.
10	Large Landscape Outdoor Water Audit	Offer outdoor water audits for existing large landscape customers. Those with high water use are targeted and provided a customized report on how to save water. All large multifamily residential, CII, and public irrigators of large landscapes would be eligible for free landscape water audits upon request. Program is currently part of

No.	Measure Name	Measure Description
		the WaterSmart Checkup. There is opportunity for additional outreach to CII customers.
11	Large Landscape Water Budgeting/Monitoring	Purchase software to compare water use to a budget benchmark based on site-specific characteristics and real-time weather. Combined with landscape survey. Program is not currently offered but is something the City may consider moving forward with, if needed to meet future water conservation targets.
12	Landscape Workshops and Trainings	Provide landscape workshops and classes, demonstration gardens, and trainings. Program is currently offered in coordination with SDCWA.
13	Agricultural Water Audit Program	Offer water audits for existing agricultural customers. Those with high water use are targeted, offered a survey, and provided a customized report on how to save water. Audits are currently performed by Mission Resource Conservation District.
14	Recycled Water Retrofit	Provide outreach and incentives for recycled water conversion. Program includes the SoCal WaterSmart On-site Retrofit Program, which provides financial incentives to commercial, industrial and institutional property owners, including Homeowner Associations, who convert potable water irrigation or industrial water systems to recycled water use.
Residential Measures		
15	Residential Rebate Programs	Provide rebates for residential indoor water using appliances. Program is currently part of the SoCal WaterSmart program, administered MWD.
16	Residential Water Surveys	Offer outdoor and indoor water surveys for existing residential customers. Targets customers with high water use and provides a customized report to owner. Program is currently part of the WaterSmart Checkup, which provides surveys for indoor and outdoor water savings.
17	Residential Enhanced Outreach	Conduct marketing campaign to raise awareness of conservation measures available to customers, including incentive programs offered.
18	Residential Device Giveaways	Purchase high-efficiency devices such as efficient showerheads and faucets in bulk and give them away at the Utility office or community events.

5.3 Targeted Participation in Conservation Measures

Customer participation assumptions varied for each individual measure. For rebate and survey programs, customer engagement was based on recent activity provided by the City. Assumptions for implementation of AMI with the WaterSmart software was based on a 2018 East Bay Municipal Utility District study of its WaterSmart pilot project (EBMUD, 2018). Based on this study, implementation of the WaterSmart software was assumed to contribute to an 85% increase in residential rebate program participation and a 115% increase in residential survey program participation. This WCMP assumes 50% of the City's customers will engage with the WaterSmart software. New program participation rates were based on comparable rates in existing programs as well as a review of participation targets and assumptions used in the 2015 WCMP. The enhanced outreach measures assume that engagement is doubled for the associated residential and CII measures. This is generally less than what was experienced during the 2014-2017 drought emergency and is considered realistic based on market saturation and recent program activity. See Appendix C for recent participation in current conservation programs.

5.4 Alliance for Water Efficiency Water Conservation Tracking Tool

The Alliance for Water Efficiency Water Conservation Tracking Tool version 3.0 (AWE Tool) was used to evaluate the benefit and costs for utilities in implementing water conservation activities. The AWE Tool has a library of 30 water conservation activities with predefined parameters. The tool was supplemented with City-specific information such as current rebate amounts for each device. To align with the list of measures included in the 2020 WCMP, four new activities were added to the AWE Tool: Agricultural Program and Recycled Water Retrofits, CII Water Surveys, and CII Self Surveys. Appendix C contains detailed descriptions of the assumptions used for each of the activities.

Many of the activities from the AWE Tool are packaged into a single conservation measure. For example, residential rebate programs currently include clothes washers and premium high efficiency toilets. The list of measures does not include references to specific rebate programs because these change over time with updates to the plumbing code, as technologies improve, and as program saturation occurs. Table 5-2 presents the AWE tracking tool activities included in this analysis.

Savings and cost categories from the AWE Tool are defined below:

- **Unit** – used to measure the water savings and costs on a per device, per activity, or per customer basis.
- **Savings Per Unit** – the initial (first year) unit water savings of the activity in gallons per year (gpy).
- **Useful Life** – the useful life of savings from the activity. After the end of the useful life, the activity is assumed to be replaced with a less efficient activity.
- **Utility Cost** – the variable cost per unit for a utility (City of Oceanside or program partners, such as SDCWA or MWD) to implement the activity.
- **Participant Cost** – the out-of-pocket cost for the participant (customer) in 2020 dollars. For example, in a clothes washer rebate program the participant may pay for a portion of the new clothes washer as well as the cost of installation.

Table 5-2. Activities from AWE Conservation Tracking Tool

Activity	Unit	Savings Per Unit (gpy)	Useful Life (Years)	Utility Cost ($)	Participant Cost ($)
CII Measures					
CII Valve-Type HE Toilet	Device	15,000	25	$40	$139
CII 1/2 Gallon Urinal	Device	6,206	25	$200	$0.00
CII Food Steamer	Device	81,500	10	$485	$710
CII Cooling Tower	Device	209,880	5	$625	$2,470
CII Water Surveys	Device	173,960	10	$1,000	$500
CII Self Surveys	Survey	43,490	10	$0	$125
Landscape Measures					
Large Landscape Irrigation Controller	Device	7,600	10	$35	$1,665
Residential Rain Barrels	Device	1,300	5	$35	$100
Residential Cisterns	Device	1,300	5	$300	$1,000
Residential Efficient Irrigation Nozzles	Application	39,000	5	$60	$0.00
Residential Soil Moisture Sensor System	Device	1,500	10	$57	$165
Residential Irrigation Controller, SF	Device	7,600	10	$35	$278
Large Landscape Turf Replacement	Application	175,273	10	$30,000	$60,000
Residential Turf Replacement	Application	69,179	10	$1,125	$2,250
Large Landscape Surveys	Survey	9,660	5	$1,500	$1,000
Large Landscape Water Budgets	Survey	262,910	10	$3,277	$3,330
Agricultural Conservation	Device	32,585	5	$1,000	$7,500
Recycled Water Connection	Device	325,900	25	$11,700	$9,167
Residential Measures					
Residential Premium HE Toilets, SF	Device	15,000	25	$40	$320
Residential 4.0 WF Washer, SF	Device	5,000	15	$85	$166.50
Residential Surveys, SF	Device	12,373	5	$18.5	$50
Residential LF Showerhead, SF	Device	2,062	5	$6	$0.0
Residential LF Showerhead, MF	Device	1,898	5	$6	$0.0

5.5 Comparison of Individual Measures

Table 5-3 presents how much water the measures will save through 2045, how much the measures will cost to the utility and community, and what the benefit to the utility and community is. Overall, residential, CII, and landscape measures have the highest utility and community benefit cost ratios.

Cost categories are defined below:

- **Utility Costs** – to analyze each measure individually, utility costs are defined in this chapter as the total cost the City and regional agencies, SDCWA and MWD, will incur to implement the measure.
- **Utility Benefits** – the City’s avoided cost of purchasing imported water from SDCWA.
- **Customer Costs** – the costs City customers will incur to implement a measure and maintain its effectiveness over the life of the measure.
- **Customer Benefits** – the savings other than from reduced water/sewer utility bills from reduced use of water.
- **Community Costs and Benefits** – Community Costs include Utility Costs plus Customer Costs, while Community Benefits include Utility Benefits plus Customer Benefits.

The column headings in Table 5-3 are defined as follows:

- **Present Value (PV) of Utility and Community Costs and Benefits ($):** the present value of the 25-year time stream of annual costs or benefits, discounted to the base year 2020.
- **Utility Benefit-Cost Ratio**: PV of Utility Costs divided by PV of Utility Benefits over 25 years.
- **Community Benefit-Cost Ratio**: PV of Community Benefits divided by PV of Community Costs, over 25 years.
- **Cumulative Water Savings (AFY):** cumulative water savings over 25 years.
- **Utility Cost of Water Saved per Unit Volume ($/AF):** PV of Utility Costs over 25 years divided by the 25-Year Benefits. This value is compared to the utility’s avoided cost of water as one indicator of the cost effectiveness of conservation efforts.

Measures not associated with a specific device or activity (water loss, AMI, public information, public school education, and landscape workshops and trainings) provide ongoing conservation benefits but do not have quantified water savings in Table 5-3 to avoid double counting the water savings from other measures. City-specific costs are included in the City’s Conservation Program budget are generally considered overhead and not accounted for on a measure-by-measure basis. City specific costs are provided in *Section 6 Results of Conservation Program Evaluation.*

Table 5-3. Conservation Measure Cost and Savings

Measure	PV of Water Utility Benefits	PV of Community Benefits	PV of Water Utility Costs	PV of Community Costs	Water Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio	Cumulative Water Savings (AFY)	Utility Cost of Savings per Unit Volume ($/AF)
Water Loss	-	-	-	-	-	-	-	-
Advanced Metering Infrastructure (AMI)	-	-	-	-	-	-	-	-
Public Information	-	-	-	-	-	-	-	-
Public and School Education	-	-	-	-	-	-	-	-
CII Rebate Programs	$8,460,320	$22,668,565	$496,869	$1,912,350	17.0	11.9	5,400	$92
CII Water Surveys	$443,673	$781,553	$122,747	$184,120	3.6	4.2	281	$436
CII Self Surveys*	$221,836	$409,671	$20,000	$50,056	11.1	8.2	141	$142
CII Enhanced Outreach	$9,125,829	$23,859,789	$639,616	$2,146,526	14.3	11.1	5,400	$118
Landscape Rebate Programs	$5,540,957	$9,981,771	$5,523,786	$17,353,078	1.0	0.6	3,521	$1,569
Large Landscape Outdoor Water Audit	$88,829	$153,232	$589,291	$982,152	0.2	0.2	56	$10,464
Large Landscape Water Budgeting/Monitoring	$5,935,085	$10,238,123	$1,784,998	$3,599,021	3.3	2.8	3,771	$473
Landscape Workshops and Trainings	-	-	-	-	-	-	-	-
Ag Water Audit Program	$23,290	$37,946	$36,052	$306,444	0.6	0.1	15	$2,442
Recycled Water Retrofit	$2,488,306	$4,292,369	$796,852	$1,421,167	3.1	3.0	1,580	$504
Residential Rebate Programs	$1,328,651	$4,006,766	$334,061	$1,042,172	4.0	3.8	847	$394
Residential Water Surveys	$835,278	$2,050,202	$85,948	$318,241	9.7	6.4	529	$162
Residential Enhanced Outreach	$2,163,929	$6,056,968	$420,009	$3,241,223	5.2	1.9	1,155	$364
Residential Device Giveaways*	$1,822,118	$5,431,687	$163,425	$163,425	11.1	33.2	1,161	$141

* Utility costs associated with CII Self Surveys and Residential Device Giveaways are City-specific costs. These costs are included in the City's Conservation Program overhead when measures are totaled by Program option (see *Section 6 Results of Conservation Program Evaluation*).

6. RESULTS OF CONSERVATION PROGRAM EVALUATION

This section describes the process of selecting conservation measures for developing alternative conservation program scenarios and various cost, savings, and target results.

6.1 Selection of Measures for Programs

Eighteen conservation measures were incorporated into the City's AWE Conservation Tracking Tool for the water savings and benefit-cost analysis. Included in the AWE Conservation Tracking Tool was a list of measures in each of three alternative conservation programs (Programs A, B, and C), which were designed to illustrate a range of various measure combinations and resulting water savings. These programs are not intended to be rigid frameworks, but rather to demonstrate the range in savings that could be generated if selected measures were run together. The three program scenarios are organized as follows:

- **Program A**: "Current Regulation" scenario includes measures designed to meet existing conservation regulations based around SB X7-7. Program A also continues to take advantage of conservation programs administered by MWD and SDCWA with minimal cost and effort to the City.
- **Program B**: "Anticipated Regulations" scenario includes individual measures that were selected by the City. The primary goal of Program B will be to meet the new regulatory requirements under AB 1668 and SB 606. The final targets are still unknown so the measures in Program B can be adjusted when the final requirements are known.
- **Program C**: "Enhanced Conservation" scenario includes implementation of all 18 individual measures. The full complement of measures is intended to be a toolbox of options that could be implemented as needed during a drought or to meet more stringent regulatory requirements. The City may choose to implement one or more of these measures in the future as needed.

The AWE Conservation Tracking tool estimates the average annual savings for each of the alternative programs (Program A, B, and C). City staff reviewed the conservation program scenarios and tailored the programs to meet its needs. Table 6-1 presents the 18 measures by program.

Table 6-1. Conservation Measure Program Scenarios

	Measure Name	Program A	Program B	Program C
	Utility Measures			
1	Advanced Metering Infrastructure (AMI)	✓	✓	✓
2	System Water Loss	✓	✓	✓
3	Public Information	✓	✓	✓
4	Public and School Education	✓	✓	✓
	CII Measures			
5	CII Rebate Programs	✓	✓	✓
6	CII Water Surveys		✓	✓
7	CII Self Surveys			✓
8	CII Enhanced Outreach			✓
	CII Measures			
9	Landscape Rebate Programs	✓	✓	✓
10	Large Landscape Outdoor Water Audits	✓	✓	✓
11	Large Landscape Water Budgeting/Monitoring			✓
12	Landscape Workshops and Trainings	✓	✓	✓
13	Agricultural Program	✓	✓	✓
14	Recycled Water Retrofits	✓	✓	✓
	Residential Measures			
15	Residential Rebate Programs	✓	✓	✓
16	Residential Water Surveys	✓	✓	✓
17	Residential Enhanced Outreach			✓
18	Residential Device Giveaways			✓

6.2 Results of Program Evaluation

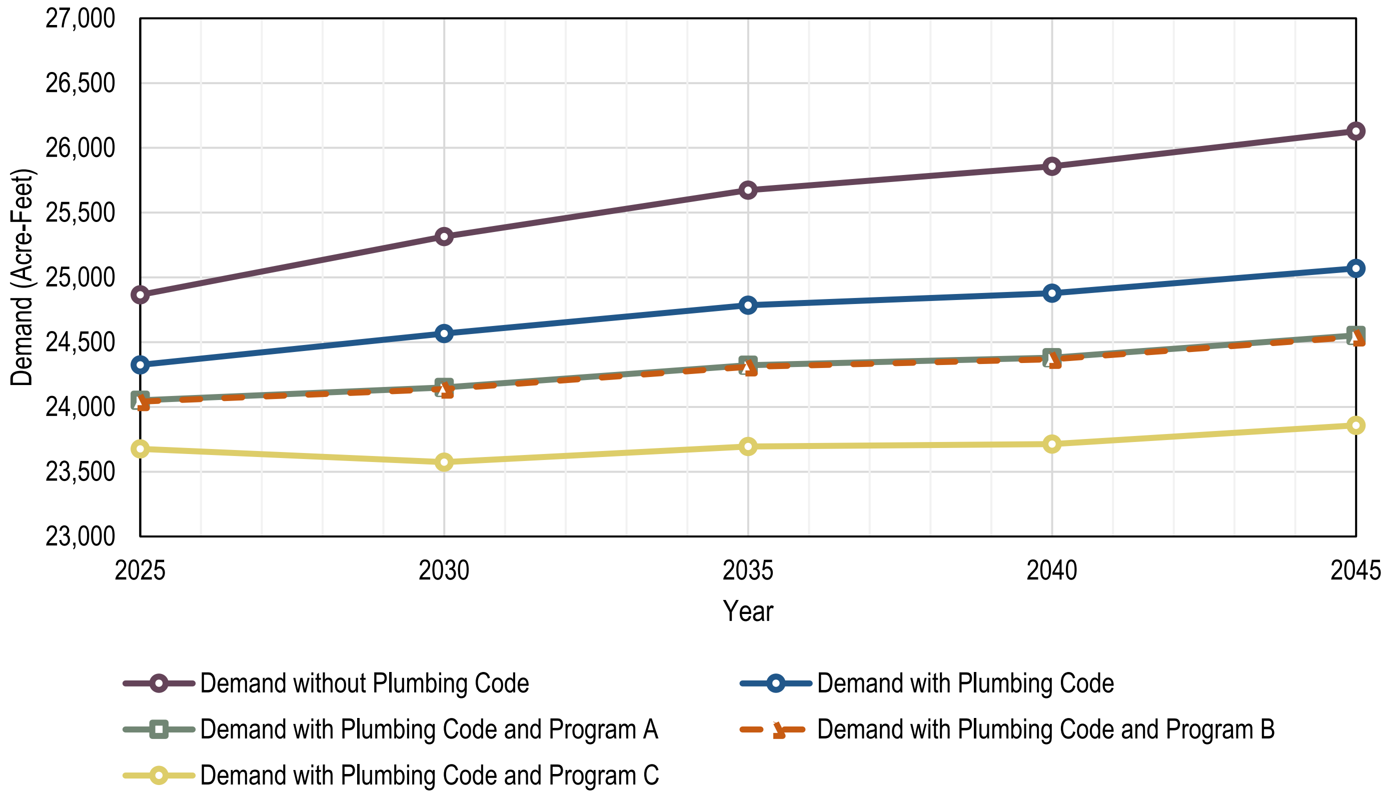
Table 6-2 and Figure 6-1 show annual baseline water demand with and without plumbing code-related conservation (but without other additional conservation), and the three conservation programs, all of which assume plumbing code savings. Program A and B result in similar projected water savings because the primary difference between these programs is the inclusion of CII water surveys in Program B. The plumbing code by itself achieves a 6.5% savings in the year 2045.

Table 6-2 Water Use Projections (Acre-Feet/Year)

	2025	2030	2035	2040	2045
Demand without Plumbing Code	24,865	25,315	25,673	25,857	26,129
Demand with Plumbing Code	24,325	24,567	24,785	24,878	25,070
Demand with Plumbing Code and Program A	24,051	24,150	24,322	24,380	24,552
Demand with Plumbing Code and Program B	24,041	24,138	24,310	24,368	24,540
Demand with Plumbing Code and Program C	23,676	23,574	23,695	23,713	23,858

Note: Total water use includes agricultural, recycled water use, and water loss.

Figure 6-1. Long Term Demands with Conservation Programs



Notes:

1. Program A and Program B scenarios are close in value and therefore Program B is shown as a dashed line. .
2. Total water use includes agricultural, recycled water use, and water loss.

Table 6-3 shows the water savings in five-year increments for all three conservation programs, including plumbing code savings. The difference in water savings is directly correlated to the variation in individual measures selected for each individual Program. Figure 6-2 shows how marginal returns change as more money is spent to achieve water savings. Program A and B are similar and thus produce similar water savings for similar costs.

Table 6-3. Water Demand Program Water Savings Projections (Acre-Feet/Year)

	2025	2030	2035	2040	2045
Program A with Plumbing Code	814	1,165	1,351	1,477	1,576
Program B with Plumbing Code	824	1,177	1,363	1,489	1,588
Program C with Plumbing Code	1,190	1,741	1,979	2,143	2,271

Figure 6-2. Present Value of Utility Costs vs. Cumulative Water Saved

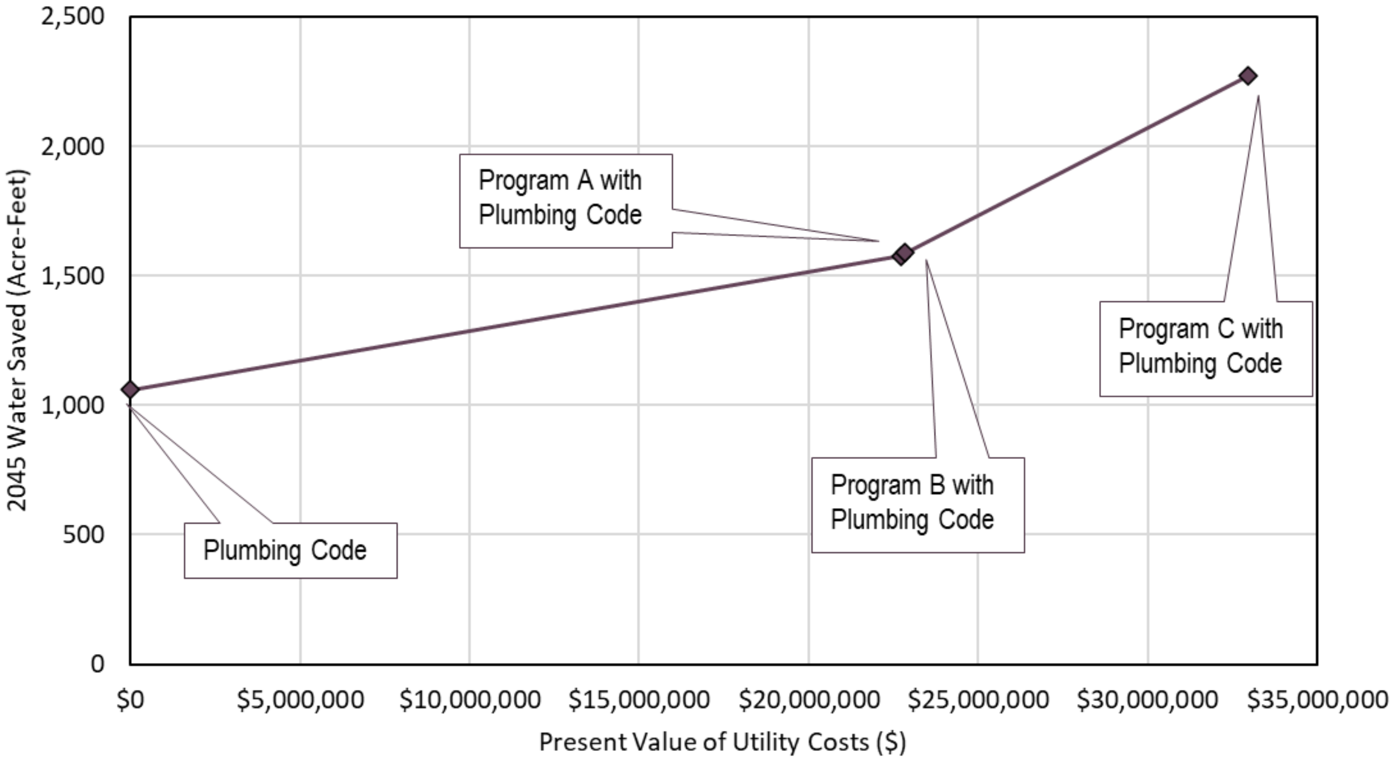


Table 6-4 presents key evaluation statistics compiled from the AWE Tool. Savings and costs in the following table are a result of each program's conservation measures and plumbing codes. Total present value costs and savings are estimated over the 25-year analysis period using an interest rate of 2.1%. The savings from water offsets due to conservation is presented for the utility, which includes the City, SDCWA, and MWD. In addition, City-only costs, which represent the City's Conservation Program budget, is presented. The City-only unit cost is significantly smaller for Program C, which includes enhanced outreach to increase participation in conservation measures, such as residential and CII rebate programs. However, because costs to administer the rebate programs are borne by regional partners, SDCWA and MWD, the City receives additional benefits without incurring costs associated with increase participation (e.g., rebates). While the City does not directly pay for regional conservation program costs, such as MWD's SoCal WaterSmart rebate programs, it supports regional utility programs indirectly through the purchase of imported water supplies, the purchase price of which helps fund the rebate programs. The City's customers pay for these programs regardless of participation in regional conservation measures. As such, it is reasonable to compare program costs at the utility level as well as at the City level.

Table 6-4. Comparison of Long-Term Conservation Programs – Utility Costs and Savings

	PV of Utility Water Savings ($)	PV of Utility Costs ($)	PV City-Only Costs ($)	PV of Community Costs ($)	Utility Unit Cost of Water Savings ($/AF)	City-Only Unit Cost of Water Savings ($/AF)	Utility Benefit to Cost Ratio	Community Benefit to Cost Ratio
Program A with Plumbing Code	$18,765,631	$22,726,926	$14,864,066	$38,199,671	$1,902	$1,244	0.83	1.13
Program B with Plumbing Code	$19,209,304	$22,849,672	$14,864,066	$38,383,791	$1,869	$1,216	0.84	1.15
Program C with Plumbing Code	$43,886,052	$32,936,989	$16,013,682	$66,835,407	$1,179	$573	1.33	1.49

Note: Utility Cost of Water Saved per Unit Volume ($/AF) = PV of Utility Costs over 25 years divided by the 25-Year Water Savings. This value is compared to the utility's avoided cost of water as one indicator of the cost effectiveness of conservation efforts.

7. CONCLUSIONS

This section presents a discussion of the relative savings and cost effectiveness of the City's alternative conservation programs.

The City's service area has a relatively high portion of residential water use including outdoor use, providing opportunities for meaningful conservation savings. In addition, the CII sector's historically low participation in the current conservation program means that large potential water savings can be achieved if resources are focused on these measures. Based on the assumed avoided cost of water offset by conservation, water conservation programs are cost-effective for both customers and the City. The change in water demands from years 2025 to 2045 are provided in Table 7-1.

Overall conclusions of this 2020 WCMP are as follows:

- The plumbing code by itself achieves an 6.5% savings (year 2045).
- Additional water savings from implementation of Conservation Program A, Program B, and Program C would reduce water needs in 2045 by approximately 5.55%, 5.60%, and 6.52%, respectively, when compared to 2045 water demands *with* plumbing code savings.
- In addition to plumbing code savings, water savings contributed by each program is as follows:
    - Program A savings alone are 2,156 acre-feet in 2045
    - Program B savings alone are 2,168 acre-feet in 2045, an additional 12 acre-feet in savings compared to Program A
    - Program C savings alone are 2,850 acre-feet in 2045, an additional 682 acre-feet in savings compared to Program A
- Water Utility Benefit-Cost Ratios of Program A, Program B, and Program C conservation alternatives are 0.83, 0.84 (a 0.01 increase in benefit-cost ratio), and 1.33 (a 0.49 increase in benefit-cost ratio), respectively. This ratio includes both city specific overhead costs as well as other funding from MWD and SDCWA. The inclusion of the City's projected overhead costs reduces the benefit to cost ratio. This can be improved with strong program participation, or if the City chooses to move a given measures from Program C to Program B.

Table 7-1. Water Use Projections (Acre-Feet/Year)

	2025	2030	2035	2040	2045
Demand without Plumbing Code	24,865	25,315	25,673	25,857	26,129
Demand with Plumbing Code	24,325	24,567	24,785	24,878	25,070
Demand with Plumbing Code and Program A	24,051	24,150	24,322	24,380	24,552
Demand with Plumbing Code and Program B	24,041	24,138	24,310	24,368	24,540
Demand with Plumbing Code and Program C	23,676	23,574	23,695	23,713	23,858

Note: Total water use includes agricultural, recycled water use, and unaccounted for water.

The City has already achieved (and exceeded) its current conservation goals as required by SB X7-7. However, the City anticipates more stringent water use requirements with the passing of the 2018 water conservation legislation SB 606 and AB 1668, thus Program A is not recommended moving forward. Based on the analyses conducted in this report, is it recommended that the City implement Program B for this 2020 WCMP. The program is intended to be flexible and structured as a "menu/toolbox" to allow individual measures to change as necessary. This flexible format will facilitate adaptation to new or best available technology and will enable the City to select or change measures for implementation as needed to reach its conservation goals. For example, the City may choose to move a measure from Program C to Program B if the current Program B measures are insufficient in meeting anticipated water use objectives. The City may also choose to focus efforts on increasing participation in current Program B measures in order to meet future water use objectives.

Page intentionally left blank.

APPENDIX A - ASSUMPTIONS FOR THE PASSIVE SAVINGS MODEL

The water demand forecast uses an inventory growth and replacement model with historical and projected housing units for Oceanside to estimate water savings rates for single family residential, multiple family residential, and non-residential plumbing fixtures and appliance inventories. The model is implemented in Excel with separate models for outdoor water use, toilets, clothes washers, and urinals.

A.1 Plumbing Codes and Legislation

The historical and current water efficiency standards used to estimate indoor passive conservation savings are shown in Table A-1. Water fixtures installed due to new construction are assumed to be in compliance with the plumbing codes in effect when the new construction occurs. Natural replacement rates vary by device and are linked to the expected life of the device. When devices are replaced due to failure, remodeling, or other reasons, the new devices are assumed to be in compliance with the plumbing codes in effect when the new replacement occurs. Clothes washers are also adjusted to reflect the market penetrations estimates from ENERGY STAR certified products[1].

Table A-1: State and Federal Plumbing Codes

Fixture/Appliance	Maximum Flow Rate[1]	Law/Regulation	Effective Year
Residential Toilets			
All Models	≤ 3.5 gpf	California Statute	1978
All Models	≤ 1.6 gpf	California Statue	1992
All Models	≤ 1.28 gpf	California (AB715) 2007	2014
Residential Clothes Washers			
Standard	≤ 9.5 IWF	Federal Energy Independence and Security Act of 2007	2011
Top Loading, Standard	≤ 8.4 IWF	Federal Standard (DOE) 2012	2015
Top Loading, Standard	≤ 6.5 IWF	Federal Standard (DOE) 2014	2018
Top Loading, Compact (less than 1.6 ft3 capacity)	≤ 14.4 IWF	Federal Standard (DOE) 2012	2015
Top Loading, Compact (less than 1.6 ft3 capacity)	≤ 12 IWF	Federal Standard (DOE) 2014	2018
Front Loading, Standard	≤ 4.7 IWF	Federal Standard (DOE) 2012	2015
Residential Dishwashers			
Regular	6.5 gal/cycle	Federal Energy Independence and Security Act of 2007	2010
Regular	5 gal/cycle	Federal Standard (DOE) 2012	2013
Compact	4.5 gal/cycle	Federal Energy Independence and Security Act of 2007	2010
Compact	3.4 gal/cycle	Federal Standard (DOE) 2012	2013

---

[1] Source: https://www.energystar.gov/partner_resources/products_partner_resources/brand_owner_resources/unit_shipment_data/archives

Fixture/Appliance	Maximum Flow Rate[1]	Law/Regulation	Effective Year
Non-Residential Toilets			
All Models	≤ 3.5 gpf	California Statute	1978
All Models	≤ 1.6 gpf	California Statue	1992
All Models	≤ 1.28 gpf	California (AB715) 2007	2014
Non-Residential Urinals			
Standard	1.0 gpf	Energy Policy Act of 1992	1994
Standard	0.5 gpf	California (AB 715) 2007	2014
Wall Mounted Urinals	0.125 gpf	California (CEC) 2015 Executive Order (EO B-29-15)	2018

gpf = gallons per flush (gpf)
gpm = gallons per minute (gpm) at a pressure of 80 psi.
IWF = Integrated Water Factor ("IWF") expressed in gallons per cycle per cubic foot

A.2 Age of Housing Stock

The age of the housing stock age has a significant effect on projected water savings for changes in plumbing codes and appliance standards. As shown in Figure A-1, the majority of the City's housing stock was constructed prior to 1990. Historical housing estimates for single family and multiple family residences come from the following sources:

- State of California, Department of Finance, E-4 E-8 Historical Population and Housing Estimates for Cities, Counties, and the State — 1990-2010. Sacramento, California, November 2012.
- State of California, Department of Finance, E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2011-2020. Sacramento, California, May 2020.

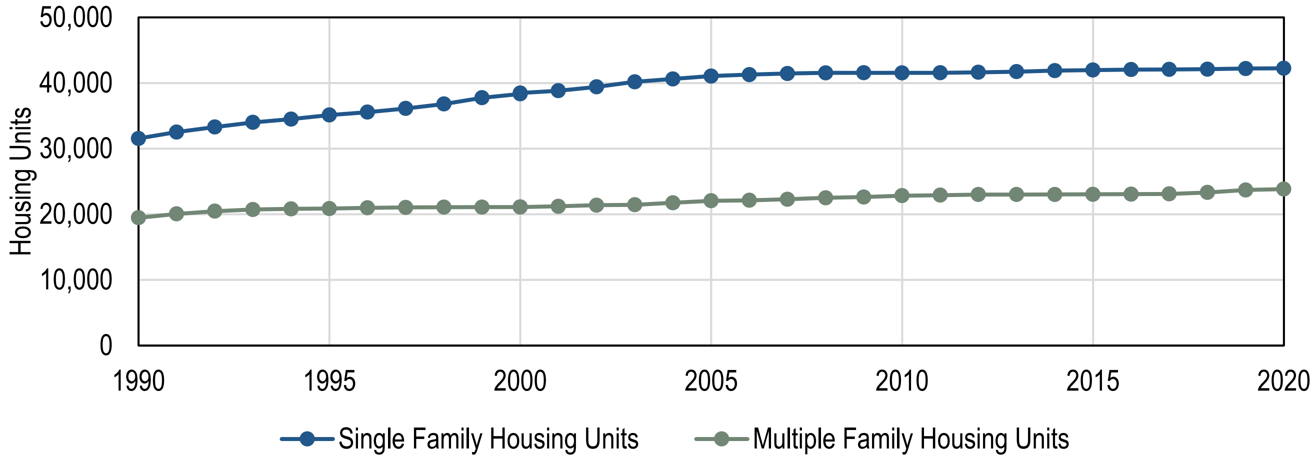


Figure A-1: Oceanside Housing Units by Type – Department of Finance

A.3 Inventory of Devices by Plumbing Code Standards

Projected rates of fixture saturation for toilets, clothes washers, dishwaters, and urinals are presented in the following figures. These reflect the estimated share of each device by year based on the date of the plumbing codes and appliance standards, the age of the housing stock, and the replacement rate of plumbing fixtures. Device inventories are separated into the single family, multiple family, and CII sectors.

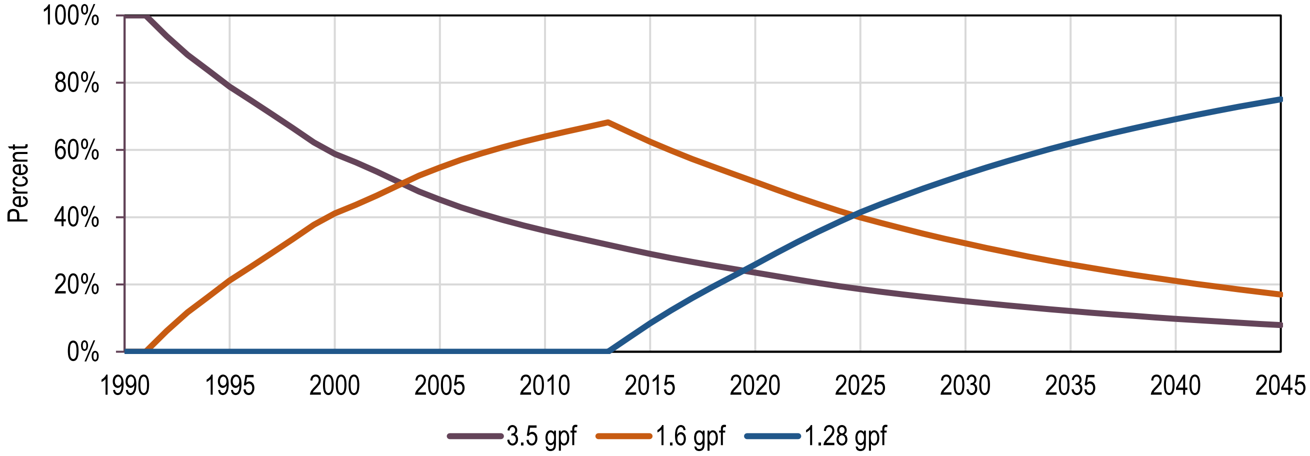


Figure A-2: Estimated Single Family Toilet Inventory

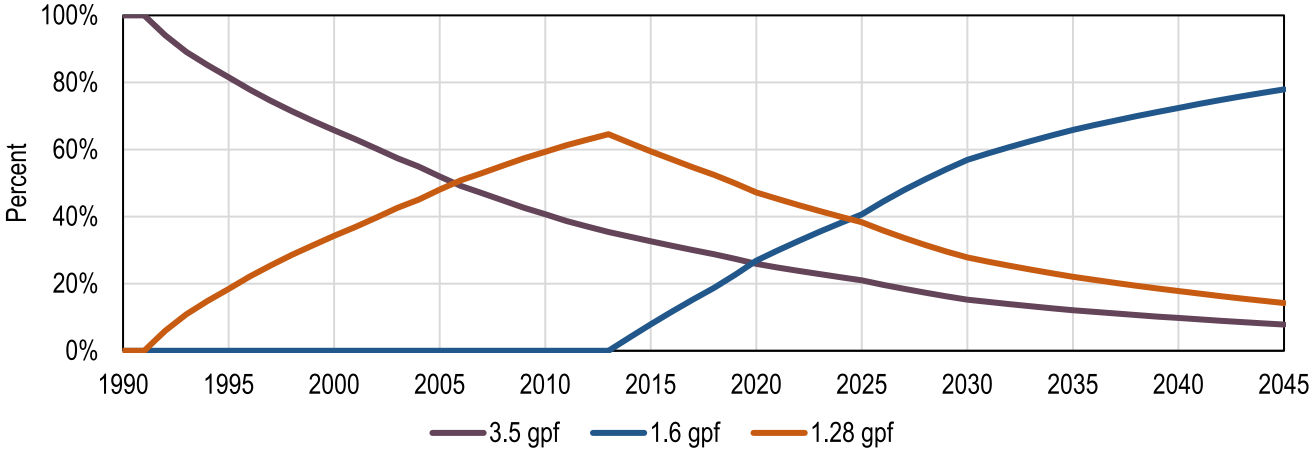


Figure A-3: Estimated Multiple Family Toilet Inventory

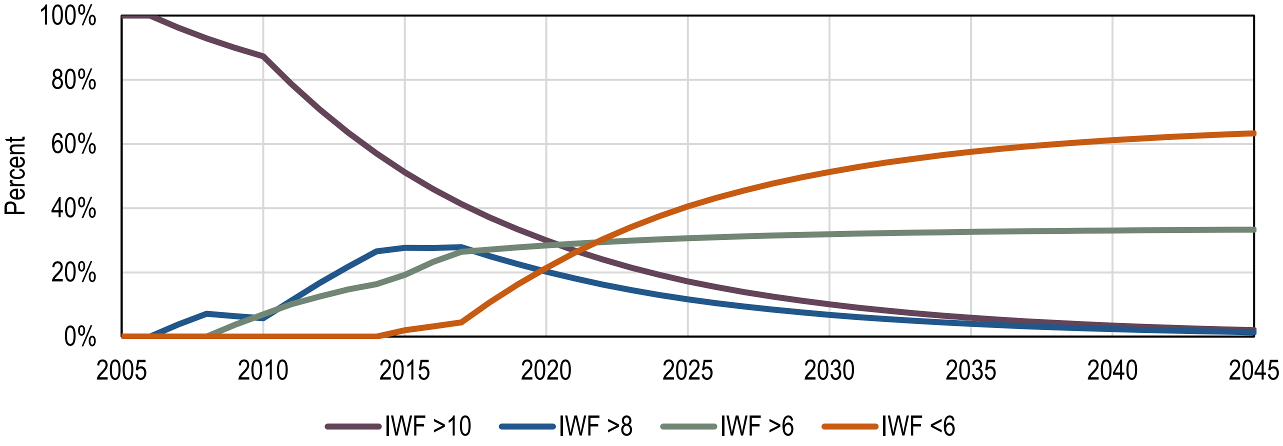


Figure A-4. Estimated Single Family Clothes Washer Inventory

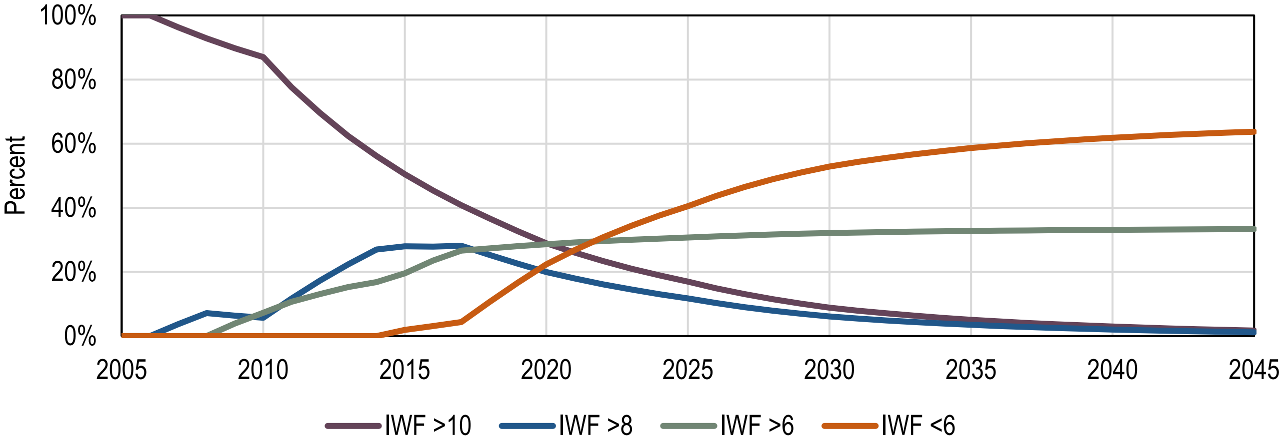


Figure A-5: Estimated Multiple Family Clothes Washer Inventory

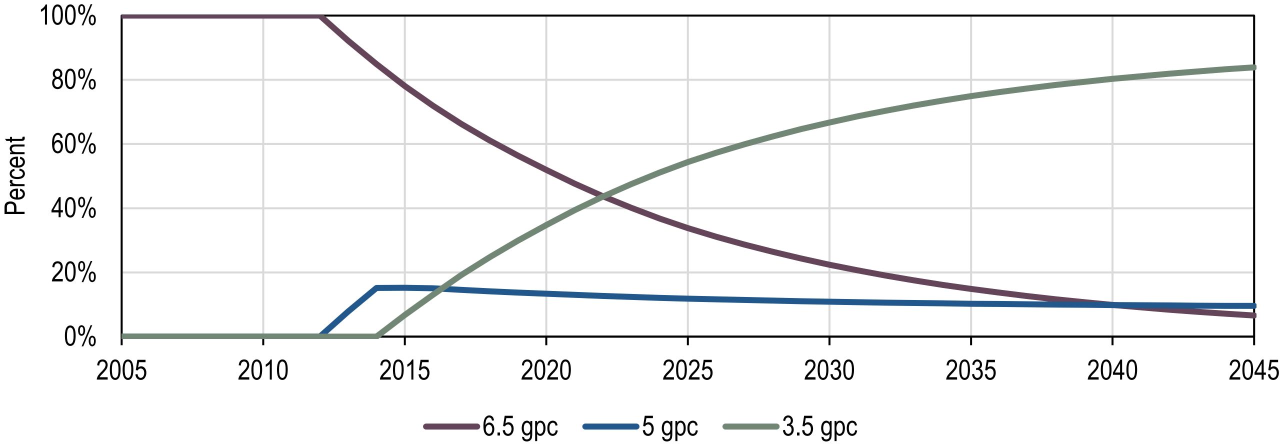


Figure A-6: Estimated Single Family Dishwasher Inventory

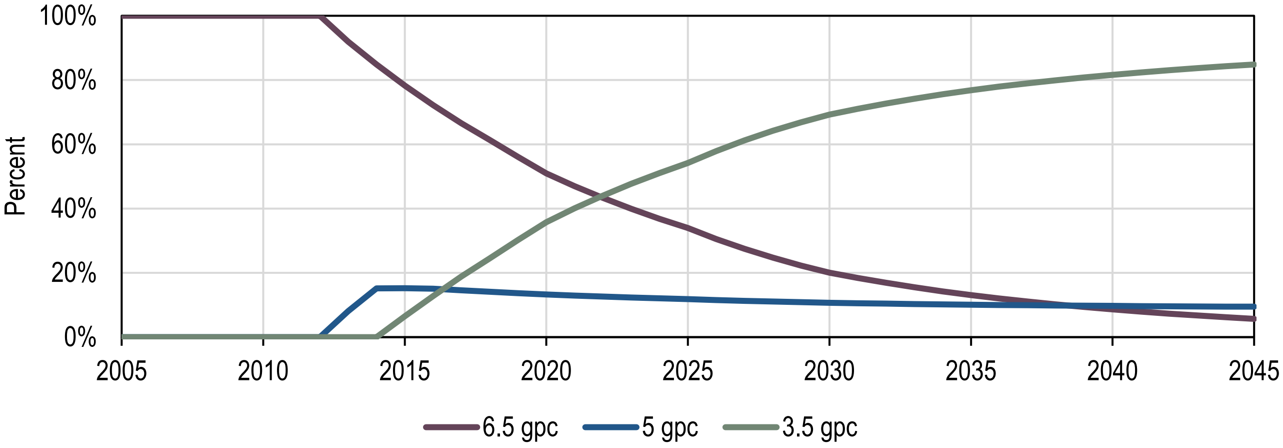


Figure A-7: Estimated Multiple Family Dishwasher Inventory

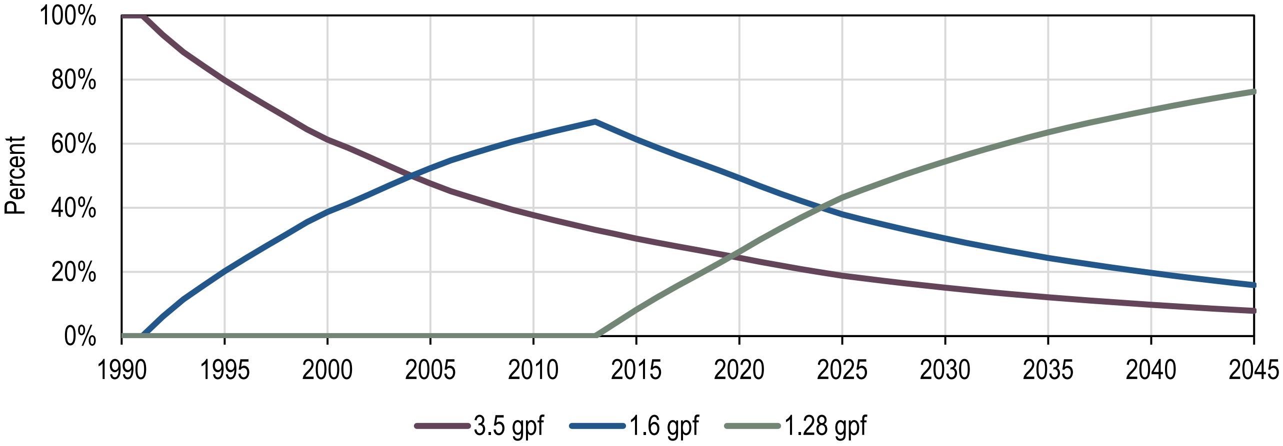


Figure A-8: Estimated CII Toilet Inventory

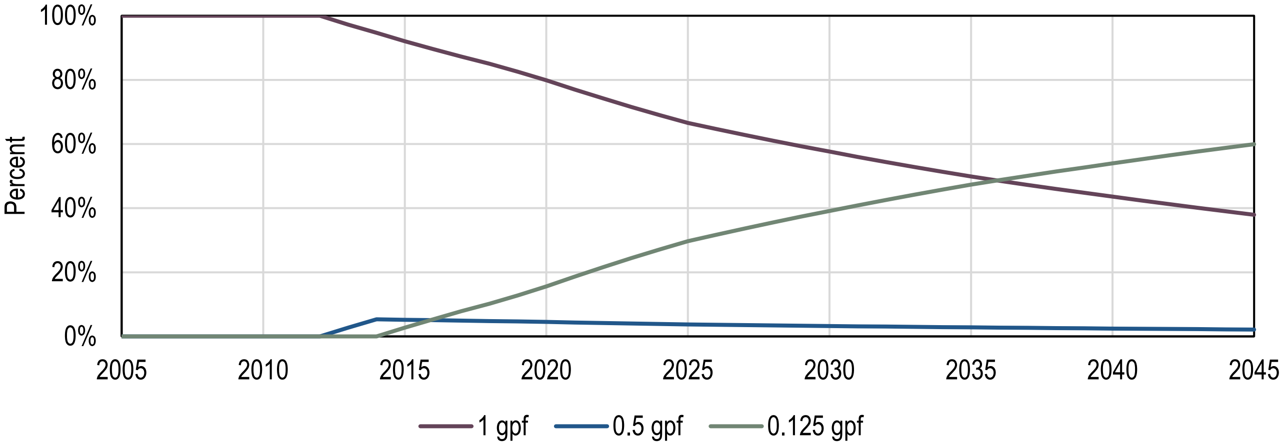


Figure A-9: Estimated CII Urinal Inventory

A.4 Analysis of Indoor and Outdoor Water Use

Outdoor water use is estimated for customer categories with mixed meters using a simple linear regression where the pattern of monthly seasonal variation is the dependent variable (y-axis), and the dedicated irrigation meters are used as the independent variable (x-axis). The resulting regression equation is used to estimate monthly outdoor water use in each category, including winter irrigation, based on water use in the dedicated landscape meters. The water use data used in this analysis are the monthly baseline water use. This analysis was completed for the Single Family, Multi-Family, Commercial, and Industrial customer categories. All categories exhibit a seasonal pattern where water use is higher in the summer. The Landscape, Agricultural, and Recycled Water customer categories are assumed to be all outdoor water use.

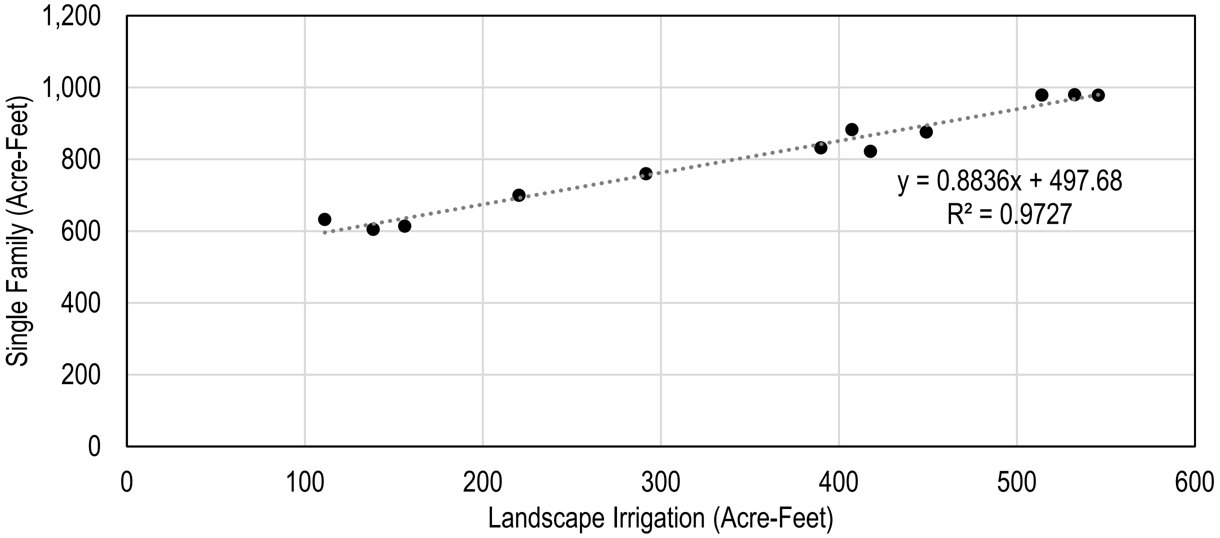


Figure A-10: Comparison of Seasonal Water Use for Landscape and Single Family Categories

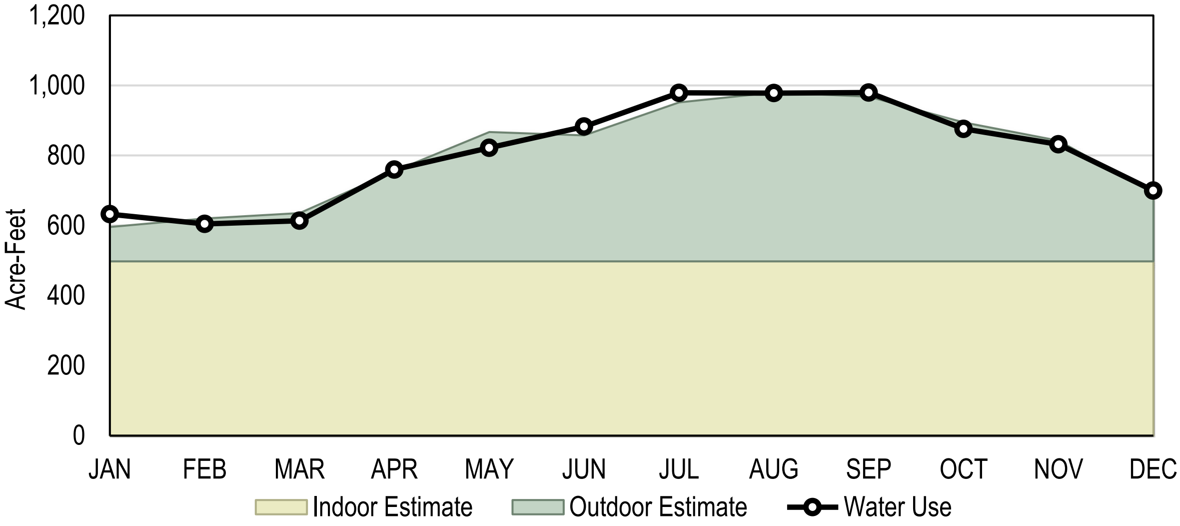


Figure A-11: Multiple Family Indoor and Outdoor Water Use Estimates

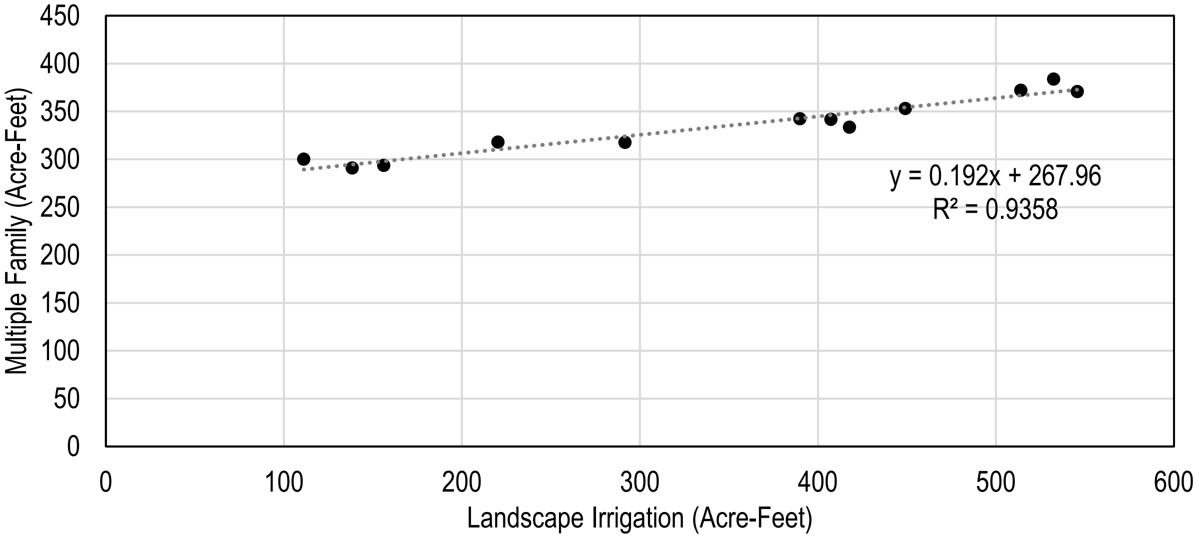


Figure A-12: Comparison of Seasonal Water Use for Landscape and Multiple Family Categories

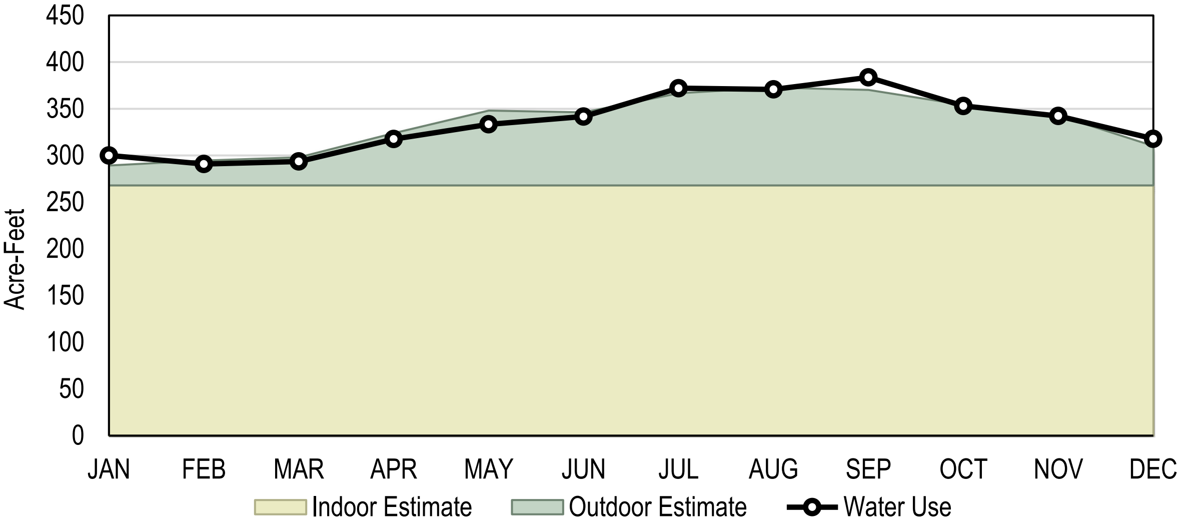


Figure A-13: Multiple Family Indoor and Outdoor Water Use Estimates

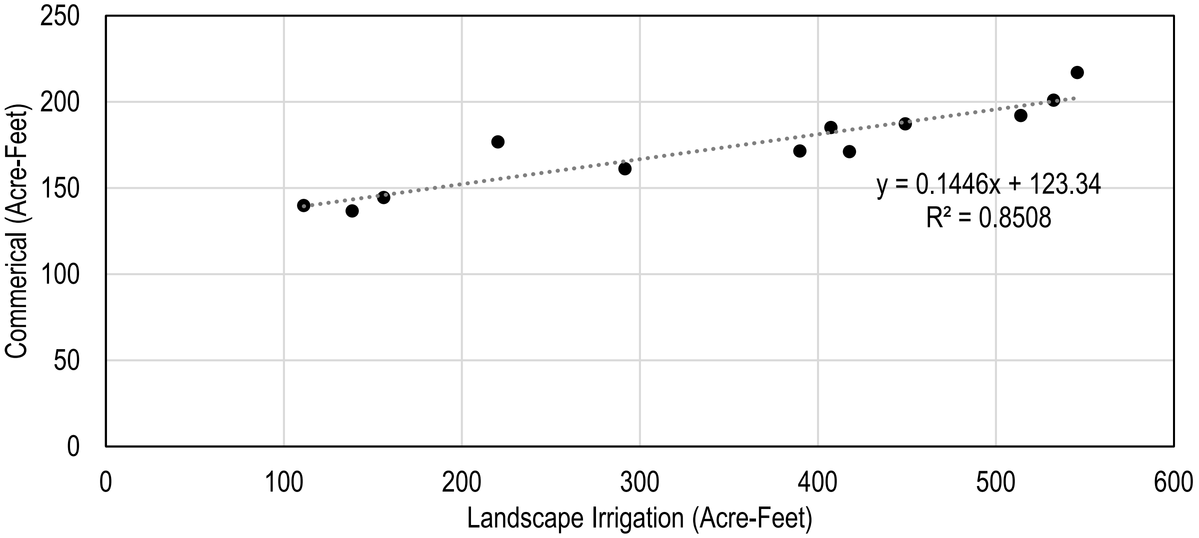


Figure A-14: Comparison of Seasonal Water Use for Landscape and Commercial Categories

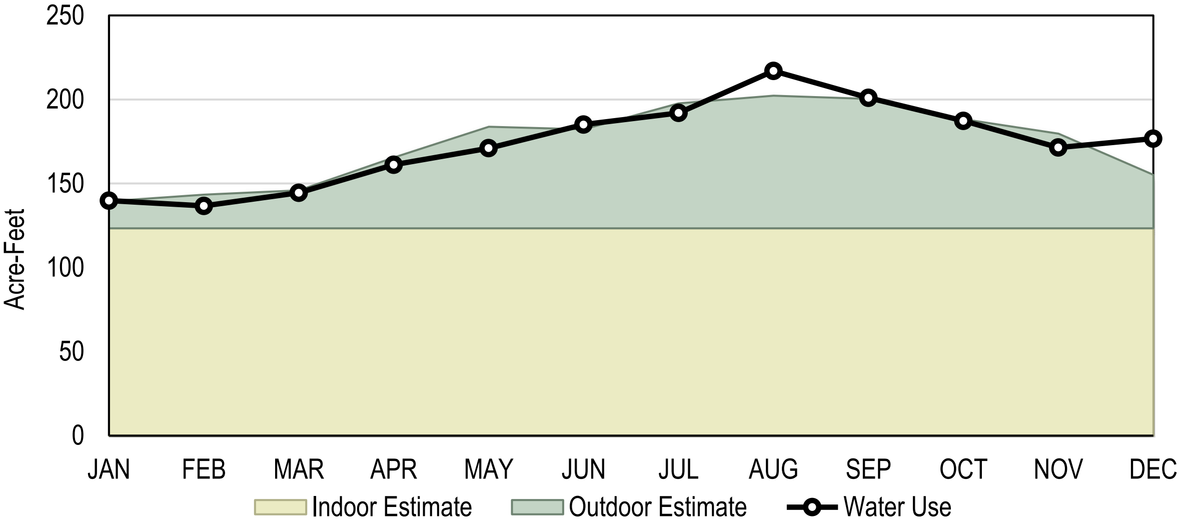


Figure A-15: Commercial Indoor and Outdoor Water Use Estimates

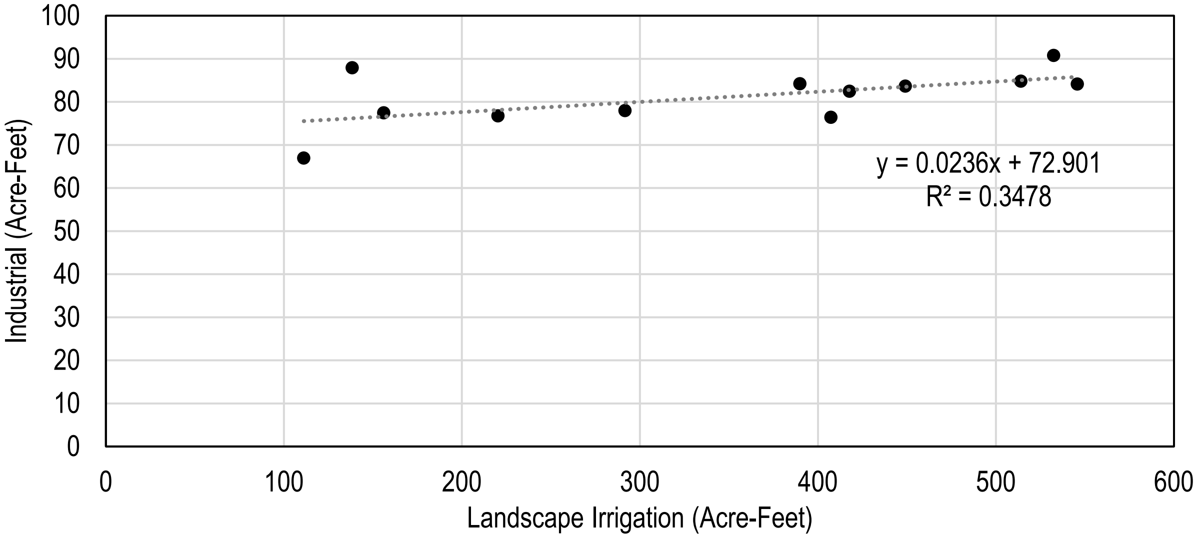


Figure A-16: Comparison of Seasonal Water Use for Landscape and Industrial Categories

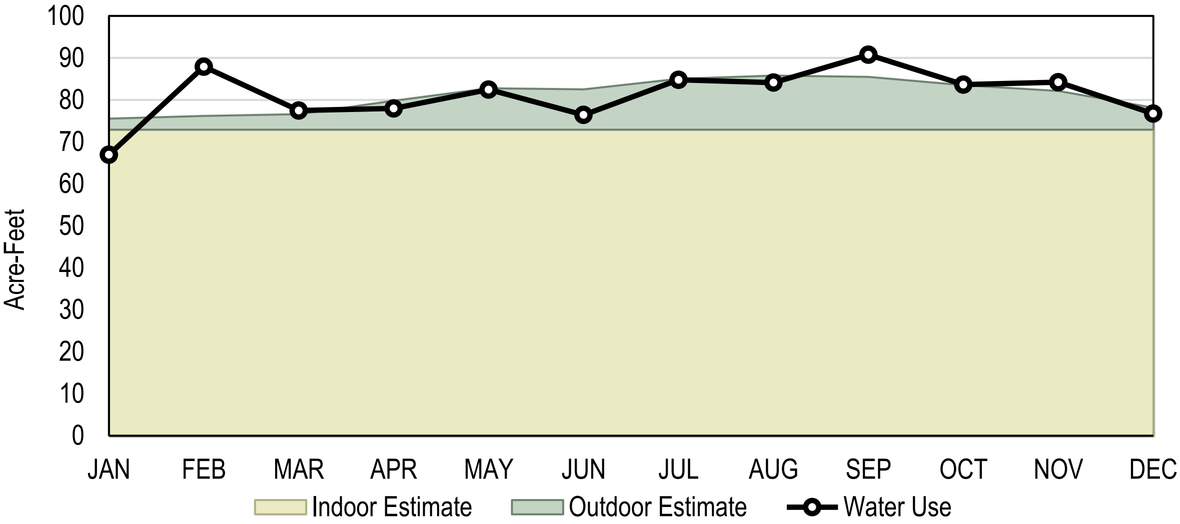


Figure A-17: Industrial Indoor and Outdoor Water Use Estimates

Projected Water Savings from Indoor Passive Conservation

In this section, projected effects of plumbing codes and appliance standards on water demand are presented. All savings effects are measured relative to a five-year baseline efficiency level (2016-2020). Savings are provided on a per unit basis (gallons per person or per employee per day) and in total acre feet.

Table A-2: Indoor Passive Savings by Sector (Gallons per Person Per Day)

Device	2025	2030	2035	2040	2045
Single Family					
Toilets	0.9	1.4	1.8	2.1	2.4
Clothes Washers	1.6	2.3	2.7	3.0	3.1
Single Family Dishwashers	0.2	0.3	0.3	0.4	0.4
Total Savings	2.7	4	4.8	5.5	5.9
Multiple Family					
Toilets	0.9	1.7	2.1	2.4	2.7
Clothes Washers	1.6	2.4	2.8	3.0	3.1
Single Family Dishwashers	0.2	0.3	0.3	0.4	0.4
Total Savings	2.7	4.4	5.2	5.8	6.2
Commercial, Industrial, Institutional					
Toilets	0.4	0.6	0.7	0.8	0.9
Urinals	0.3	0.5	0.6	0.8	0.9
Total Savings	0.7	1.0	1.4	1.6	1.8

Table A-3: Indoor Passive Savings by Sector (Acre-Feet)

Device	2025	2030	2035	2040	2045
Single Family					
Toilets	115	183	238	281	317
Clothes Washers	215	309	363	394	413
Single Family Dishwashers	18	27	33	37	40
Total Savings	348	519	634	712	770
Multiple Family					
Toilets	61	119	153	178	200
Clothes Washers	110	170	201	217	230
Single Family Dishwashers	7	11	13	15	16
Total Savings	178	300	367	410	446
Commercial, Industrial, Institutional					
Toilets	15	25	34	41	47
Urinals	13	22	30	37	43
Total Savings	28	47	64	78	90

A.5 Outdoor Passive Conservation Savings

Future water use is also adjusted to account for implementation of the California Model Water Efficiency Landscape Ordinance (MWELO) (DWR, updated July 15, 2015) as shown in Table A-3. The MWELO sets the minimum standard for outdoor water conservation in California. The updated MWELO applies to new construction projects with landscape areas between 500 and 2,500 square feet. The size threshold for existing landscapes that are being rehabilitated has not changed from the 2010 MWELO, remaining at 2,500 square feet. The MWELO also allows for special landscape areas (SLA) that allow for an extra water allowance in non-residential areas for specific landscape functions, such as recreation or for areas irrigated with recycled water.

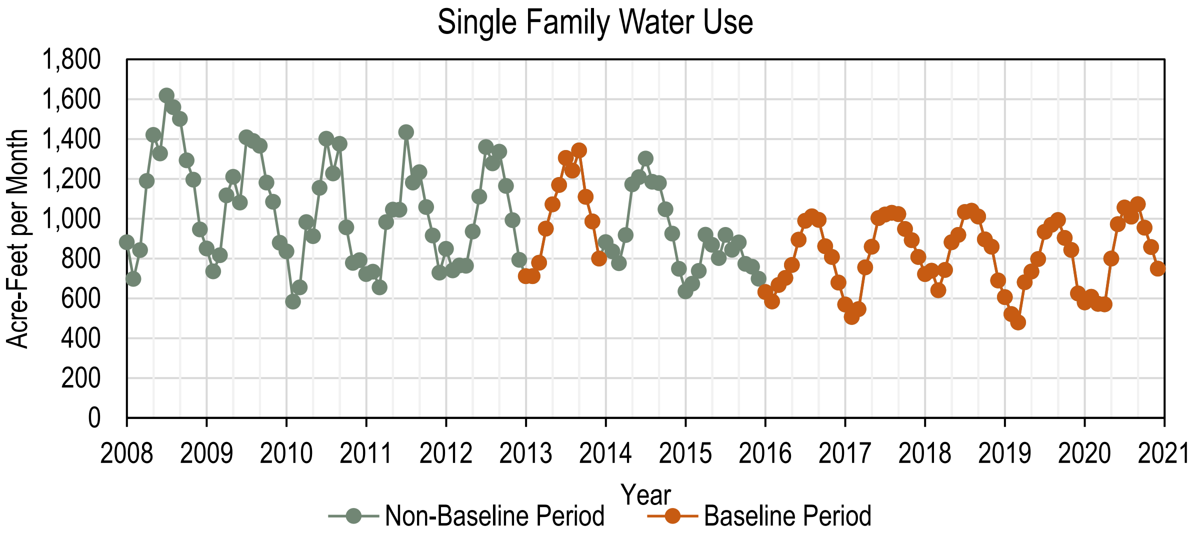
Table A-4: Total Outdoor Passive Conservation Savings (Acre-Feet)

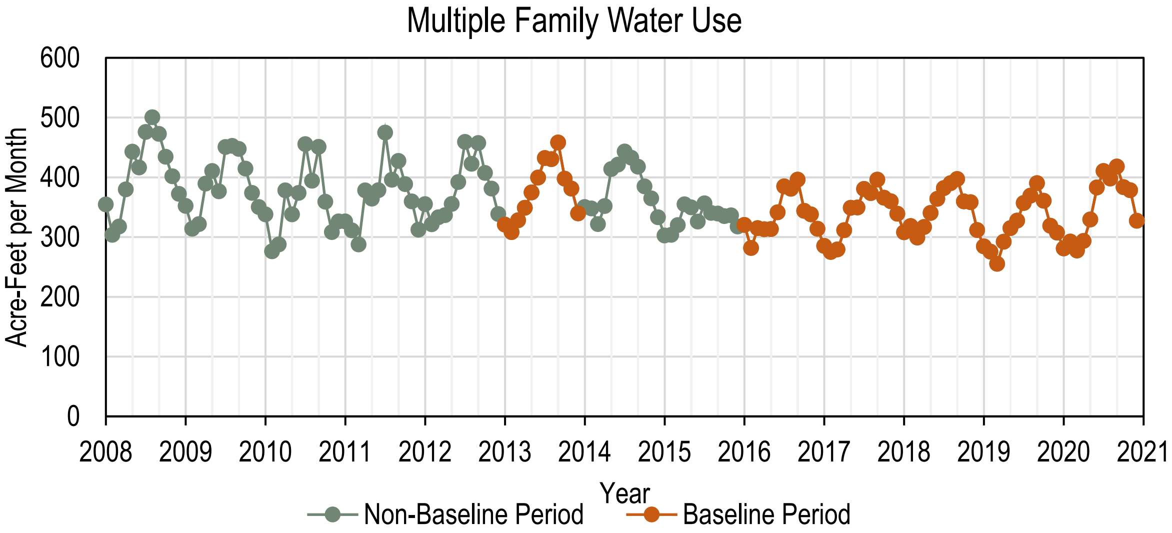
Device	2025	2030	2035	2040	2045
Single Family	26	34	42	47	53
Multiple Family	11	26	33	39	45
Landscape	128	154	180	191	210
CII	6	11	18	22	26
Total Savings	171	225	273	299	334

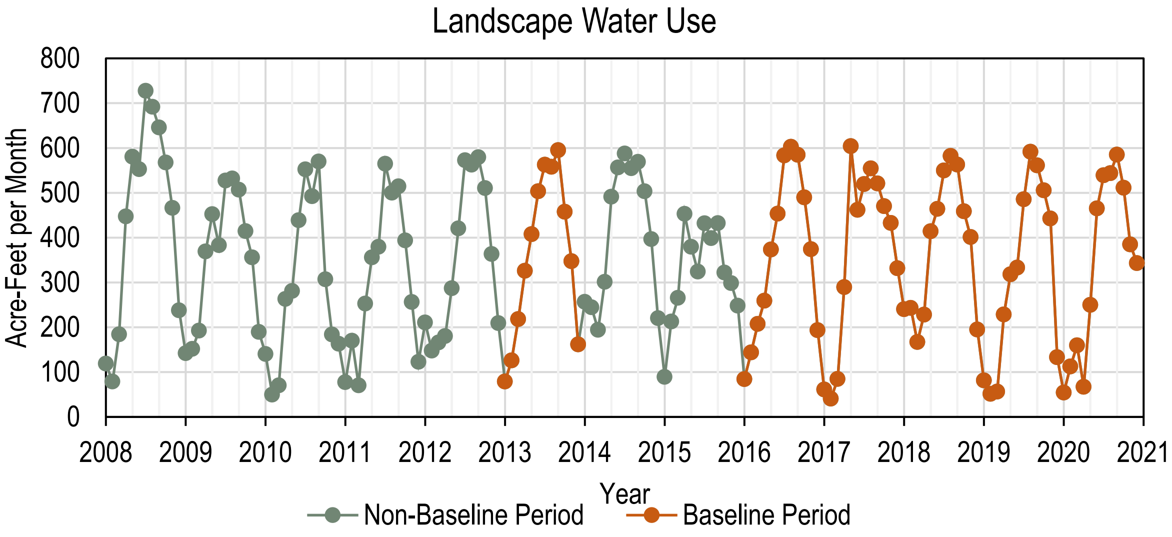
MWELO are based on an Evapotranspiration Adjustment Factor (ETAF), which when applied to reference evapotranspiration, adjusts for plant water requirements and irrigation efficiency. The current ETAF for new residential landscapes is 0.55 and the ETAF for non-residential landscapes is 0.45. Existing landscapes are assumed to have an ETAF of 0.7, meaning that new residential landscapes are assumed to use 21% less water than existing landscapes, and new non-residential landscapes are assumed to use 36% less water than existing landscapes. It is also assumed that 25% of dedicated landscape meters are categorized as SLA, such as sports fields, and therefore no savings are assumed from MWELO. No savings are assumed from existing landscapes, as these projections typically receive incentives under conservations programs, and are not considered a passive savings.

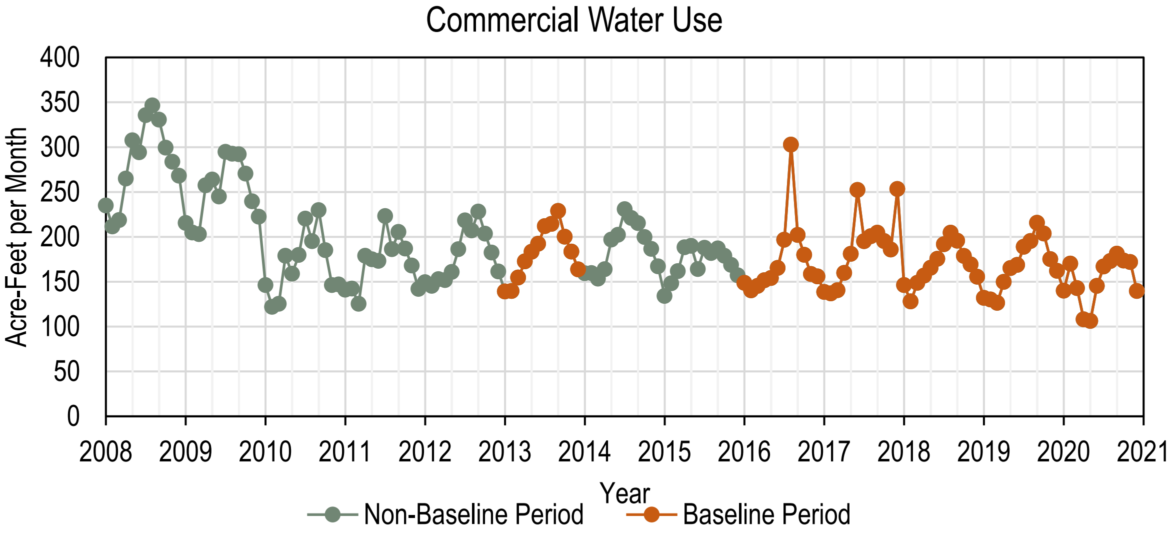
APPENDIX B - WATER USE GRAPHS

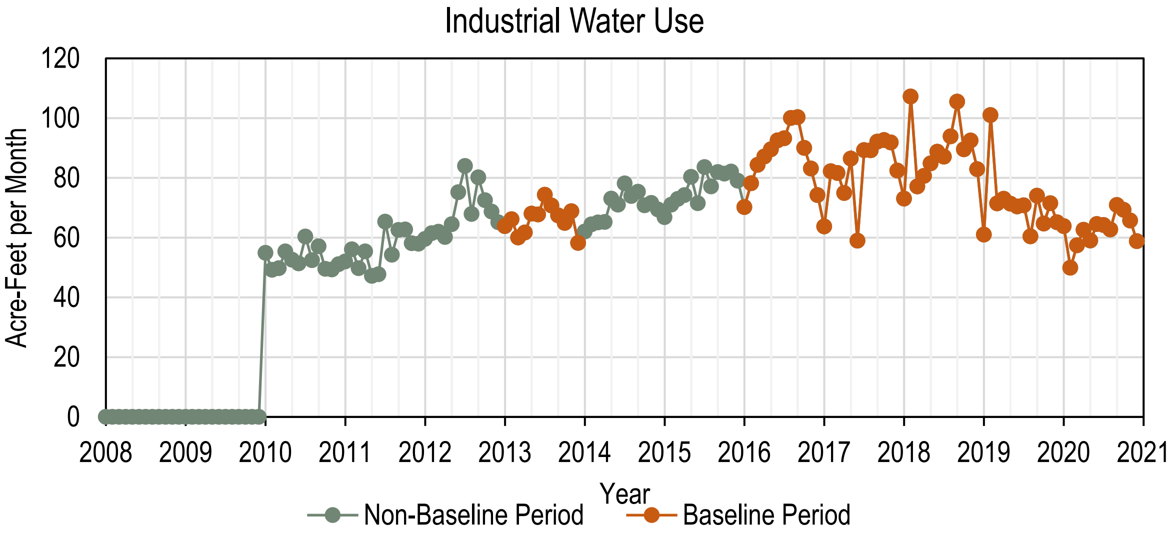
As presented in Section 2 of this report, this appendix presents historical customer category water use graphs from City of Oceanside billing data with baseline water use (2013 & 2016-2020). Units shown are monthly totals of water use in acre-feet per month.

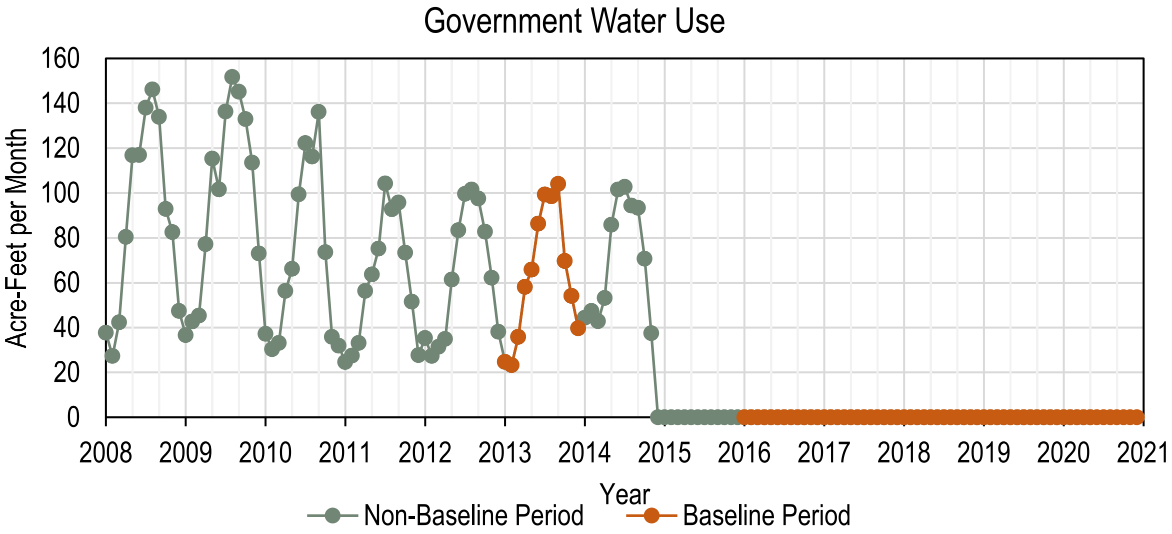




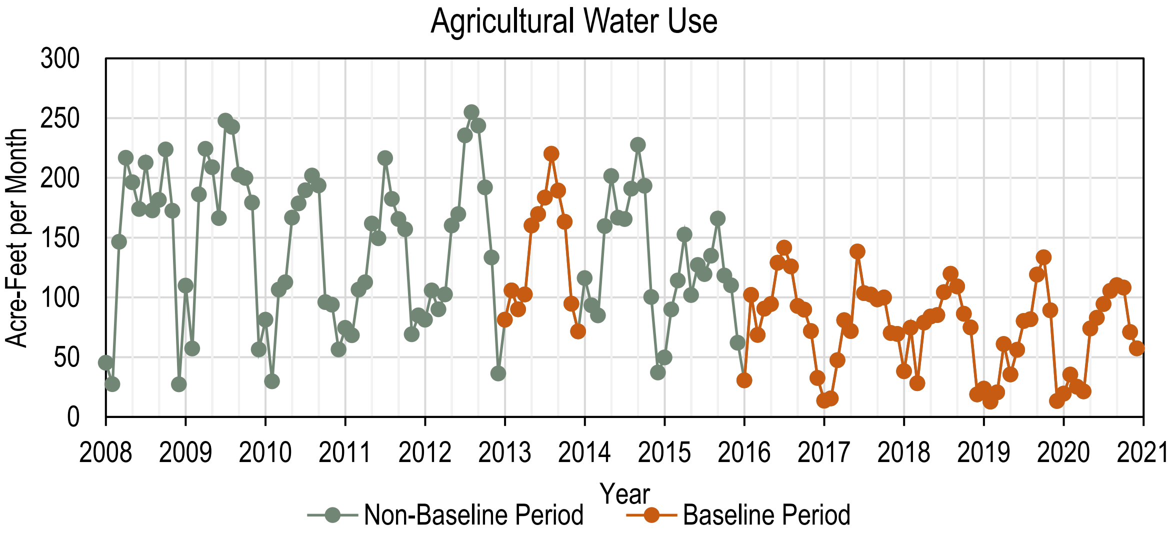

Landscape Water Use
Acre-Feet per Month
800
700
600
500
400
300
200
100
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year
Non-Baseline Period
Baseline Period

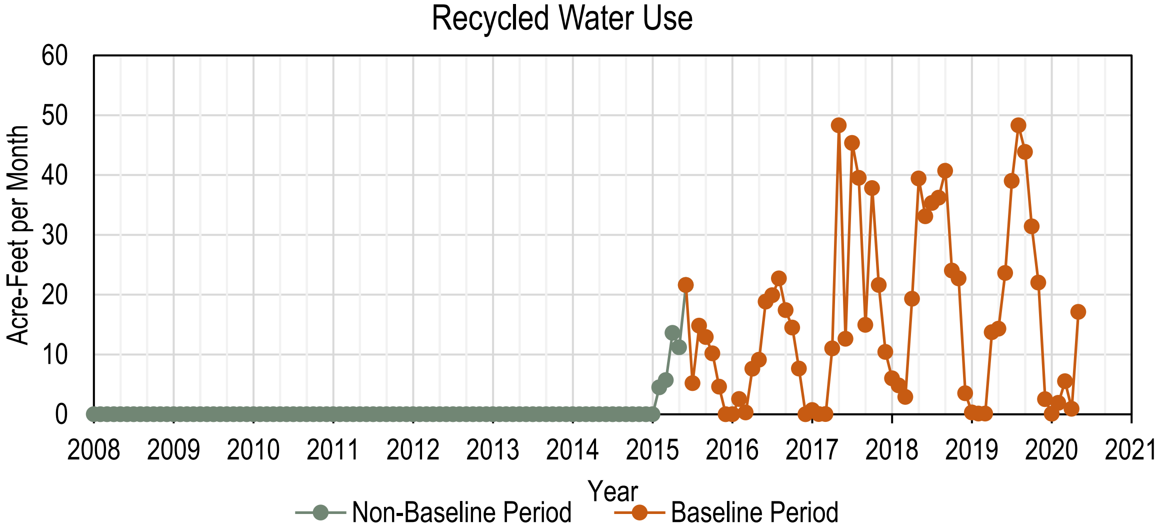

Commercial Water Use
Acre-Feet per Month
400
350
300
250
200
150
100
50
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year
Non-Baseline Period
Baseline Period





Note: The Governmental/Institutional category was discontinued as of January 1, 2015.


Agricultural Water Use
Acre-Feet per Month
300
250
200
150
100
50
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year
Non-Baseline Period
Baseline Period


Recycled Water Use
Acre-Feet per Month
60
50
40
30
20
10
0
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Year
Non-Baseline Period
Baseline Period

Page intentionally left blank.

APPENDIX C – AWE CONSERVATION TRACKING TOOL ACTIVITY ASSUMPTIONS

Appendix C outlines the specific assumptions used for each measure included in the AWE Conservation Tracking Tool. These assumptions were used to calculate water savings, present value costs, and present value benefits associated with each measure. Note that only device-based measures were inputted into the tool. Assumptions for non-device-based measures, such as outreach efforts are described in Section 5.

C.1 CII Rebate Program - Premium High-Efficiency Toilets

Description: SoCal WaterSmart provides incentives for Premium High Efficiency Toilets that use 1.1gpf or less. Rebates are offered at $40 per toilet. Eligible toilets must replace existing toilets using at least 1.6 gallons per flush. Savings and utility costs estimates are from Metropolitan Water District of Southern California (MWD). Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-1: CII Rebate Program - Premium High-Efficiency Toilets Assumptions

Activity Name	Description	Source
Measure	CII Rebate Program	-
Sector	CII	-
Unit	Per Toilet	-
Savings Per Unit (gpy)	15,000	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	25	AWE Conservation Tracking Tool (CII Valve-Type HET Rebate)
Natural Replacement Rate (%)	4%	AWE Conservation Tracking Tool (CII Valve-Type HET Rebate)
Utility Cost ($/Unit)	$40	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$138.75	AWE Conservation Tracking Tool (CII Valve-Type HET Rebate)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (CII Valve-Type HET Rebate)
Participation (FY 19-20)	1	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.2 CII Rebate Program - Ultra Low and Zero Water Urinals

Description: SoCal WaterSmart provides incentives for Ultra Low and Zero Water Urinals using only 1 pint (0.125 gallons) of water or less per flush. Rebates are offered at $120 per urinal. Savings and utility costs estimates are from SoCal WaterSmart. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-2: CII Rebate Program - Ultra Low and Zero Water Urinals Assumptions

Activity Name	Description	Source
Measure	CII Rebate Program	-
Sector	CII	-
Unit	Per Urinal	-
Savings Per Unit (gpy)	6,206	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	25	AWE Conservation Tracking Tool (CII 1/2 Gallon Urinal)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (CII 1/2 Gallon Urinal)
Utility Cost ($/Unit)	$200	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$138.75	AWE Conservation Tracking Tool (CII 1/2 Gallon Urinal)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (CII 1/2 Gallon Urinal)
Participation (FY 19-20)	0	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.3 CII Rebate Program - Food Steamers

Description: SoCal WaterSmart provides incentives for food steamers for restaurants to warm food. Rebates are available a $485 per steamer compartment. Savings and utility costs estimates are based on SoCal WaterSmart programs. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-3: CII Rebate Program - Food Steamers Assumptions

Activity Name	Description	Source
Measure	CII Rebate Program	-
Sector	CII	-
Unit	Per Toilet	-
Savings Per Unit (gpy)	81,500	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	10	AWE Conservation Tracking Tool (CII Food Steamer)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (CII Food Steamer)
Utility Cost ($/Unit)	$485	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$710	AWE Conservation Tracking Tool (CII Food Steamer)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (CII Food Steamer)
Participation (FY 19-20)	0	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.4 CII Rebate Program – Cooling Tower

Description: Cooling Tower Conductivity Controllers and pH Conductivity Controllers offered by SoCal WaterSmart. Rebates are available a $625 for Cooling Tower Conductivity Controllers and $1,750 pH Conductivity Controller. Savings and utility costs estimates are based on SoCal WaterSmart programs. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-4: CII Rebate Program – Cooling Tower Assumptions

Activity Name	Description	Source
Measure	CII Rebate Program	-
Sector	CII	-
Unit	Per Toilet	-
Savings Per Unit (gpy)	209,880	AWE Conservation Tracking Tool (CII Cooling Tower)
Useful Life (years)	5	AWE Conservation Tool estimate
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (CII Cooling Tower)
Utility Cost ($/Unit)	$625[1]	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	AWE Conservation Tracking Tool (CII Cooling Tower)
Participant Cost ($)	$2,470	AWE Conservation Tracking Tool (CII Cooling Tower)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (CII Cooling Tower)
Participation (FY 19-20)	0	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

1. This is the amount for Cooling Tower Conductivity Controllers

C.5 CII Water Surveys

Description: CII Water Survey would provide free water surveys to large accounts such as hotels, restaurants, stores and schools. Water savings would be focused on indoor processes and devices. Assumes 15% water savings on CII customer accounts that use at least twice the average water use per account.

Table C-5: CII Water Surveys Assumptions

Activity Name	Description	Source
Measure	CII Rebate Program	-
Sector	CII	-
Unit	Per Toilet	-
Savings Per Unit (gpy)	173,960	Savings of 10-15% per site. *BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Useful Life (years)	10	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Natural Replacement Rate (%)	0%	-
Utility Cost ($/Unit)	$1,000	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Utility Cost (Year)	2020	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Participant Cost ($)	$500	Cost/time to install fixtures and address survey recommendations.
Participant Cost (Year)	2020	-
Participation (FY 19-20)	0	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.6 CII Self Surveys

Description: Provide self-auditing software and materials for smaller CII customers to evaluate ways to save water and money. Assumes 15% water savings on CII customer accounts that use less than half the average water use per account. This measure is not currently being implemented.

Table C-6: CII Self Surveys Assumptions

Activity Name	Description	Source
Measure	CII Rebate Program	-
Sector	CII	-
Unit	Per Toilet	-
Savings Per Unit (gpy)	43,490	Based on ¼ of savings from CII Water Surveys.
Useful Life (years)	10	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Natural Replacement Rate (%)	0%	-
Utility Cost ($/Unit)	$0	-
Utility Cost (Year)	2020	-
Participant Cost ($)	$125	Cost/time to install fixtures and address survey recommendations. Based on ¼ costs of CII Water Surveys
Participant Cost (Year)	2020	-
Participation (FY 19-20)	-	Not current program.

C.7 Landscape Rebate Program - Large Land. Irrigation Controller

Description: SoCal WaterSmart provides financial incentives for Weather Based Irrigation Controllers or "Smart" controllers that adjust for weather changes and irrigate based on the needs of the landscape and soil conditions. This program provides rebates at $80 per controller for more than 1 acres of landscaping. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-7: Landscape Rebate Program - Large Land. Irrigation Controller Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	Landscape	-
Unit	Per Controller	-
Savings Per Unit (gpy)	7,600	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	10	AWE Conservation Tracking Tool (Large Land. Irrigation Controller)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Large Land. Irrigation Controller)
Utility Cost ($/Unit)	$35	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$1665	AWE Conservation Tracking Tool (Large Land. Irrigation Controller)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Large Land. Irrigation Controller)
Participation (FY 19-20)	2	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.8 Landscape Rebate Program - Residential Rain Barrels

Description: The SoCal WaterSmart provides financial incentives to rain barrels that collect and re-using rainwater for lawns and gardens and minimize the amount of water flowing into storm drains, sewer systems and local waterways. This program provides incentives of $35 per barrel (50-199 gallons) with a maximum quantity of 2 per application.

Applicants may not submit a rebate claim for both rain barrels and cisterns. Participant cost information is based on similar measures in AWE Conservation Tracking Tool. Assumes all participants are single family residences.

Table C-8: Landscape Rebate Program - Residential Rain Barrels Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	SF/MF	-
Unit	Per Rain Barrel	-
Savings Per Unit (gpy)	1,300	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	5	MWD 2015 IRP: Conservation Savings Model TM; App B
Natural Replacement Rate (%)	0%	
Utility Cost ($/Unit)	$35	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$100	Based on low end cost models from online sellers. Costs vary widely.
Participant Cost (Year)	2020	-
Participation (FY 19-20)	20	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.9 Landscape Rebate Program - Residential Cisterns

Description: The SoCal WaterSmart provides financial incentives to rain cisterns that collect and re-using rainwater for lawns and gardens and minimize the amount of water flowing into storm drains, sewer systems and local waterways. This program provides incentives from $250 to $350 based (200-1,000+ gallons) with a maximum quantity of 1 per application. Applicants may not submit a rebate claim for both rain barrels and cisterns. Participant cost information is based on similar measures in AWE Conservation Tracking Tool. Assumes all participants are single family residences.

Table C-9: Landscape Rebate Program - Residential Cisterns Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	SF/MF	-
Unit	Per Cistern	-
Savings Per Unit (gpy)	1,300	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	5	
Natural Replacement Rate (%)	0%	
Utility Cost ($/Unit)	$300	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	MWD 2015 IRP: Conservation Savings Model TM; App B
Participant Cost ($)	$1,000	Based on low end cost models from online sellers. Costs vary widely.
Participant Cost (Year)	2020	-
Participation (FY 19-20)	3	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.10 Landscape Rebate Program – Rotating Sprinkler Nozzles

Description: The SoCal WaterSmart provides financial incentives for rotating sprinkler nozzles that distributing water more slowly and uniformly to the landscape. This program provides incentives of $2 per nozzle with a minimum quantify of 30 nozzles per application. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-10: Landscape Rebate Program – Rotating Sprinkler Nozzles Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Water Use Sector	SF/MF	-
Unit	Per Customer	Assumed minimum 30 nozzles per customer application.
Savings Per Unit (gpy)	39,000	30 nozzles with 1,500 gpy savings per nozzle
Useful Life (years)	5	AWE Conservation Tracking Tool (Residential Efficient Irrigation Nozzles)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Residential Efficient Irrigation Nozzles)
Utility Cost ($/Unit)	$60	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$0	AWE Conservation Tracking Tool (Residential Efficient Irrigation Nozzles)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Residential Efficient Irrigation Nozzles)
Participation (FY 19-20)	5	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.11 Landscape Rebate Program - Residential Soil Moisture Sensor System

Description: The SoCal WaterSmart provides financial incentives for Soil Moisture Sensors that measures soil moisture content in the active root zone of a landscape. This program provides rebates at $80 or $35 per Irrigation Controller Station, with a maximum of 11 stations per controller. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-11: Landscape Rebate Program - Residential Soil Moisture Sensor System Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	SF/MF	-
Unit	Per Station	-
Savings Per Unit (gpy)	1,500	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	10	AWE Conservation Tracking Tool (Large Land. Irrigation Controller)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Large Land. Irrigation Controller)
Utility Cost ($/Unit)	$57	Average of controller station
Utility Cost (Year)	2020	-
Participant Cost ($)	$165	Based on low end cost models from online sellers. Costs range from $200-230.
Participant Cost (Year)	2020	-
Participation (FY 19-20)	4	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.12 Landscape Rebate Program - Residential Irrigation Controller

Description: The SoCal WaterSmart program provides financial incentives for Weather Based Irrigation Controllers or "Smart" controllers that adjust for weather changes and irrigate based on the needs of the landscape and soil conditions. This program provides rebates at $35 per station for less than one acre of landscaping. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-12: Landscape Rebate Program - Residential Irrigation Controller Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	SF/MF	-
Unit	Per Controller	-
Savings Per Unit (gpy)	7,600	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	10	AWE Conservation Tracking Tool (Residential Irrigation Controller, SF)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Residential Irrigation Controller, SF)
Utility Cost ($/Unit)	$35	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$278	AWE Conservation Tracking Tool (Residential Irrigation Controller, SF)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Residential Irrigation Controller, SF)
Participation (FY 19-20)	146	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.13 Landscape Rebate Program - Large Land. Turf Replacement

Description: The SoCal WaterSmart program provides financial incentives for commercial properties to replace their existing grass with organic, drought tolerant landscaping. This program provides rebates of $2.00 per square foot for up to 5,000 square feet of conversions per water meter per year. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-13: Landscape Rebate Program - Large Land. Turf Replacement Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	Landscape	-
Unit	Per Customer	Based on assumption of 1,600 square feet per customer (FY 19-20 Device Rebates.xlsx savings)
Savings Per Unit (gpy)	175,273	Calculated value in AWE Conservation Tracking Tool
Useful Life (years)	10	AWE Conservation Tracking Tool (Large Land. Turf Replacement)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Large Land. Turf Replacement)
Utility Cost ($/Unit)	$30,000	AWE Conservation Tracking Tool (Large Land. Turf Replacement)
Utility Cost (Year)	2014	AWE Conservation Tracking Tool (Large Land. Turf Replacement)
Participant Cost ($)	$60,000	AWE Conservation Tracking Tool (Large Land. Turf Replacement)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Large Land. Turf Replacement)
Participation (FY 19-20)	0	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.14 Landscape Rebate Program - Residential Turf Replacement

Description: The SoCal WaterSmart program provides financial incentives for homeowners to replace their existing grass with organic, drought tolerant landscaping. This program provides rebates of $2.00 per square foot up to 50,000 square feet of converted yard per year. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-14: Landscape Rebate Program - Residential Turf Replacement Assumptions

Activity Name	Description	Source
Measure	Landscape Rebate Program	-
Sector	SF/MF	-
Unit	Per Customer	Based on assumption of 1,600 square feet per customer (FY 19-20 Device Rebates.xlsx savings)
Savings Per Unit (gpy)	69,179	MWD Assumption (FY 19-20 Turf Rebates.xlsx savings)
Useful Life (years)	10	AWE Conservation Tracking Tool (Residential Turf Replacement)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Residential Turf Replacement)
Utility Cost ($/Unit)	$1,125	AWE Conservation Tracking Tool (Residential Turf Replacement)
Utility Cost (Year)	2014	AWE Conservation Tracking Tool (Residential Turf Replacement)
Participant Cost ($)	$2,250	AWE Conservation Tracking Tool (Residential Turf Replacement)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Residential Turf Replacement)
Participation (FY 19-20)	45	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.15 Large Landscape Outdoor Water Audits - Large Landscape Surveys

Description: Outdoor water audits are offered for existing large landscape customers. Those with high water use are targeted and provided a customized report on how to save water. All large multiple family residential, CII, and public irrigators of large landscapes would be eligible for free landscape water audits upon request. Program is currently part of the WaterSmart Checkup.

Table C-15: Large Landscape Outdoor Water Audits - Large Landscape Surveys Assumptions

Activity Name	Description	Source
Measure	Large Landscape Water Outdoor Water Audits	-
Sector	Landscape	-
Unit	Per Customer	-
Savings Per Unit (gpy)	9,660	AWE Conservation Tracking Tool (Large Landscape Surveys)
Useful Life (years)	10	AWE Conservation Tracking Tool (Large Landscape Surveys)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Large Landscape Surveys)
Utility Cost ($/Unit)	$1,500	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Utility Cost (Year)	2019	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Participant Cost ($)	$1,000	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Participant Cost (Year)	2019	*BAWSCA Phase 1 study on Making Conservation a California Way of Life*
Participation (FY 19-20)	0	Not a current program.

C.16 Large Landscape Water Budgeting/Monitoring - Large Landscape Water Budgets

Description: Software to compare water use to a budget benchmark based on site-specific characteristics and real-time weather. Combined with landscape survey.

Table C-16: Large Landscape Water Budgeting/Monitoring - Large Landscape Water Budgets Assumptions

Activity Name	Description	Source
Measure	Large Landscape Water Budgeting/ Monitoring	-
Sector	Landscape	-
Unit	Per Customer	-
Savings Per Unit (gpy)	262,910	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Useful Life (years)	10	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Utility Cost ($/Unit)	$3,277	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Utility Cost (Year)	2014	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Participant Cost ($)	$3,330	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Large Landscape Water Budgets)
Participation (FY 19-20)	-	Not current program.

C.17 Agricultural Program - Agricultural Conservation

Description: Offer water audits for existing agricultural customers. Those with high water use would be targeted, offered a survey, and provided a customized report on how to save water. Water audits will be performed by Mission Resource Conservation District.

Table C-17: Agricultural Program - Agricultural Conservation Assumptions

Activity Name	Description	Source
Measure	Agricultural Program	-
Sector	Agriculture	-
Unit	Per Customer	-
Savings Per Unit (gpy)	32,585	MWD Board Memo
Useful Life (years)	5	AWE Conservation Tracking Tool (Large Landscape Surveys)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Large Landscape Surveys)
Utility Cost ($/Unit)	$1,000	*SDCWA Agricultural Water Management Program Evaluation - Report*
Utility Cost (Year)	2011	*SDCWA Agricultural Water Management Program Evaluation - Report*
Participant Cost ($)	$7,500	*City of Oceanside 2015 Water Conservation Master Plan*
Participant Cost (Year)	2015	*City of Oceanside 2015 Water Conservation Master Plan*
Participation (FY 19-20)	-	Not current program.

C.18 Recycled Water Retrofits - Recycled Water Hook-Up

Description: The SoCal WaterSmart On-site Retrofit Program provides financial incentives to commercial, industrial and institutional property owners, including Homeowner Associations, who convert potable water irrigation or industrial water systems to recycled water use. This program provides incentives of $195 per acre-foot of projected recycled water use with potable offset based on for five years of estimated water use, up to actual retrofit costs. This program is administered on a first come, first served basis. Applications will be accepted until funding for this Program is exhausted.

Table C-18: Recycled Water Retrofits - Recycled Water Hook-Up Assumptions

Activity Name	Description	Source
Measure	Recycled Water Retrofits	-
Sector	Recycled Water	-
Unit	Per Account	-
Savings Per Unit (gpy)	325,900	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Useful Life (years)	25	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Natural Replacement Rate (%)	0%	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Utility Cost ($/Unit)	$11,700	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Utility Cost (Year)	2015	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Participant Cost ($)	$9,167	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Participant Cost (Year)	2015	MWD Conservation and Local Resources Committee Presentation (September 11, 2018)
Participation (FY 19-20)	-	Projected participation based on Recycled Water Master Plan.

C.19 Residential Rebate Program – Premium High Efficiency Toilets

Description: Premium High Efficiency Toilets using 1.1 gallons per flush (gpf) or less, are offered by SoCal WaterSmart at $40 per toilet. Eligible toilets must replace existing toilets using at least 1.6 gpf. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-19: Residential Rebate Program – Premium High Efficiency Toilets Assumptions

Activity Name	Description	Source
Measure	Residential Rebate Program	-
Sector	SF/MF	-
Unit	Per Toilet	-
Savings Per Unit (gpy)	15,000	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	25	AWE Conservation Tracking Tool (Residential HE Toilets, SF)
Natural Replacement Rate (%)	4%	AWE Conservation Tracking Tool (Residential HE Toilets, SF)
Utility Cost ($/Unit)	$40	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$320	AWE Conservation Tracking Tool (Residential HE Toilets, SF)
Participant Cost (Year)	2020	AWE Conservation Tracking Tool (Residential HE Toilets, SF)
Participation (FY 19-20)	10	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.20 Residential Rebate Program – High Efficiency Clothes Washers

Description: Washers must meet or exceed the Consortium for Energy Efficiency (CEE) Tier 1 standard. Savings and utility costs estimates from SoCal WaterSmart. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-20: Residential Rebate Program – High Efficiency Clothes Washers Assumptions

Activity Name	Description	Source
Measure	Residential Rebate Program	-
Sector	SF/MF	-
Unit	Per Washer	-
Savings Per Unit (gpy)	5,000	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)
Useful Life (years)	15	AWE Conservation Tracking Tool (Residential 4.0 WF Washer)
Natural Replacement Rate (%)	7.14%	AWE Conservation Tracking Tool (Residential 4.0 WF Washer)
Utility Cost ($/Unit)	$85	Rebate amount (SoCalWaterSmart.com)
Utility Cost (Year)	2020	Rebate amount (SoCalWaterSmart.com)
Participant Cost ($)	$167	AWE Conservation Tracking Tool (Residential 4.0 WF Washer)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Residential 4.0 WF Washer)
Participation (FY 19-20)	172	MWD Assumption (FY 19-20 Device Rebates.xlsx savings)

C.21 Residential Program - Residential Water Surveys

Description: The WaterSmart Checkup provides surveys for indoor and outdoor water savings. Staff will provide site-specific recommendations to save water from certified irrigation auditors, including, plan alternatives and a proposed watering schedule. Residential sites also receive an indoor evaluation that identifies fixtures and practices. Participation in the program is limited per City capacity. Participant cost information is based on similar measures in AWE Conservation Tracking Tool.

Table C-21: Residential Program - Residential Water Surveys Assumptions

Activity Name	Description	Source
Measure	Residential Water Surveys	-
Sector	SF/MF	-
Unit	Per Customer	-
Savings Per Unit (gpy)	12,373	AWE Conservation Tracking Tool (Residential Surveys, SF)
Useful Life (years)	5	AWE Conservation Tracking Tool (Residential Surveys, SF)
Natural Replacement Rate (%)	0%	AWE Conservation Tracking Tool (Residential Surveys, SF)
Utility Cost ($/Unit)	$18.50	*City of Oceanside 2015 Water Conservation Master Plan*
Utility Cost (Year)	2015	*City of Oceanside 2015 Water Conservation Master Plan*
Participant Cost ($)	$50	*City of Oceanside 2015 Water Conservation Master Plan*
Participant Cost (Year)	2015	*City of Oceanside 2015 Water Conservation Master Plan*
Participation (FY 19-20)	162	Per Oceanside (Water Use Efficiency Measures.docx)

C.22 Residential Device Giveaways

Description: The City will purchase high-efficiency devices such as efficient showerheads and faucets in bulk and give them away at the City office or community events. Measure assumptions, including Utility and participant cost, information is based on similar measures in AWE Conservation Tracking Tool.

Table C-22: Residential Device Giveaways Assumptions

Activity Name	Description	Source
Measure	Residential Device Giveaways	-
Sector	SF/MF	-
Unit	Per Customer	-
Savings Per Unit (gpy)	2,062	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Useful Life (years)	-	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Natural Replacement Rate (%)	12%	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Utility Cost ($/Unit)	$6	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Utility Cost (Year)	2014	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Participant Cost ($)	$50	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Participant Cost (Year)	2014	AWE Conservation Tracking Tool (Residential LF Showerhead, SF)
Participation (FY 19-20)	-	No data provided.

APPENDIX D - LIST OF CONTACTS

Company	Name	Phone Number	E-mail	Role
City of Oceanside	Sarah Davis	760-435-5830	SDavis@oceansideca.org	Senior Management Analyst, Water Conservation Department
Woodard & Curran	Sally Johnson	858-875-7427	sjohnson@woodardcurran.com	Water Resources Planner/ Project Manager

Page intentionally left blank

APPENDIX E - REFERENCES

Alliance for Water Efficiency. The Status of Legislation, Regulation, Codes & Standards on Indoor Plumbing Water Efficiency, January 2016. Online: http://www.allianceforwaterefficiency.org/Codes-Standards-White-Paper.aspx

American Water Works Association. *Manual of Water Supply Practice, M36, Water Audits and Loss Control Programs*, (3rd edition). AWWA, 2009. Online: http://www.awwa.org

American Water Works Association. *Manual of Water Supply Practice, M52, Water Conservation Programs –A Planning Manual*. AWWA, 2006. Online: http://www.awwa.org

American Water Works Association. *Manual of Water Supply Practice, M50, Water Resources Planning*. AWWA, 2007. Online: http://www.awwa.org

California Green Building Standards Code (CALGreen). Online: http://www.usgbc-ncc.org/index.php?option=com_content&view=article&id=401&Itemid=90

California Urban Water Conservation Council. *Best Management Practices (BMP) Cost and Savings Study.* CUWCC, 2005.

California Urban Water Conservation Council. *Memorandum of Understanding,* CUWCC, adopted December 1991, amended January 2016. Online: https://www.cuwcc.org/About-Us/Memorandum-of-Understanding

City of Oceanside. Multiple Family Residential Rates, website accessed on April 4, 2016. http://www.ci.oceanside.ca.us/civicax/filebank/blobdload.aspx?blobid=32915

East Bay Municipal Utility District (EBMUD). 2013. *Pilot of WaterSmart Home Water Reports.* December 2013.

Ibid. Single Family Residential Rates, website accessed on April 4, 2016. http://www.ci.oceanside.ca.us/civicax/filebank/blobdload.aspx?blobid=32914

Ibid. Final Technical Memorandum Updated Population Forecasts for 2015 UWMP, January 2016.

Ibid. Water Division Overview, website accessed on April 4, 2016. http://www.ci.oceanside.ca.us/gov/water/div/default.asp

Ibid. Water, Wastewater and Solid Waste Rates, website accessed on April 4, 2016. http://www.ci.oceanside.ca.us/gov/finance/revenue/utility/rates.asp

Consortium for Efficient Energy website. www.cee1.org

CUWCC Website: https://www.cuwcc.org/Resources/Planning-Tools-and-Models?folderId=776&view=gridview&pageSize=10

DeOreo, W.B., P.W. Mayer, Leslie Martien, Matthew Hayden, Andrew Funk, Michael Kramer-Duffield, Renee Davis, James Henderson, Bob Raucher, Peter Gleick, and Matt Heberger. *California Single-Family Water Use Efficiency Study*. Sacramento, California: Department of Water Resources, 2011. Online: http://www.energy.ca.gov/appliances/2013rulemaking/documents/responses/Water_Appliances_12-AAER-2C/California_IOU_Response_to_CEC_Invitation_to_Participate-Water_Meters_REFERENCE/DeOreo_2011_California_Single-Family_Water_Use_Efficiency_Study.pdf

Appendix M - Energy Intensity

Page intentionally left blank.

Urban Water Supplier: *City of Oceanside*

Table O-1C: Recommended Energy Reporting - Multiple Water Delivery Products

Enter Start Date for Reporting Period 1/1/2020
End Date 12/30/2020

☐ Is upstream embedded in the values reported?

		Urban Water Supplier Operational Control							
		Water Management Process						**Non-Consequential Hydropower (if applicable)**	
		Extract and Divert	Place into Storage	Conveyance	Treatment	Distribution	Total Utility	Hydropower	Net Utility
Water Volume Units	*Total Volume of Water Entering Process (volume units)*	*2302*	*12266.52*	*12266.52*	*12267*	*23964*	*N/A*	*0*	*N/A*
	Retail Potable Deliveries (%)	*100%*	*100%*	*100%*	*100%*	*100%*		*0%*	
	Retail Non-Potable Deliveries (%)	*0%*	*0%*	*0%*	*0%*			*0%*	
	Wholesale Potable Deliveries(%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Wholesale Non-Potable Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Agricultural Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Environmental Deliveries (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Other (%)	*0%*	*0%*	*0%*	*0%*	*0%*		*0%*	
	Total Percentage [must equal 100%]	*100%*	*100%*	*100%*	*100%*	*100%*	*N/A*	*0%*	*N/A*
	Energy Consumed (kWh)	*420455*	*264240*	*4117*	*3419777*	*992910*	*5101499*	*0*	*5101499*
	Energy Intensity (kWh/vol. converted to MG)	*182.7*	*21.5*	*0.3*	*278.8*	*41.4*	*N/A*	*0.0*	*N/A*

Water Delivery Type	*Production Volume (volume units defined above)*	*Total Utility (kWh/volume)*	*Net Utility (kWh/volume)*
Retail Potable Deliveries	*23964*	*212.9*	*0.0*
Retail Non-Potable Deliveries	*0*	*0.0*	*0.0*
Wholesale Potable Deliveries	*0*	*0.0*	*0.0*
Wholesale Non-Potable Deliveries	*0*	*0.0*	*0.0*
Agricultural Deliveries	*0*	*0.0*	*0.0*
Environmental Deliveries	*0*	*0.0*	*0.0*
Other	*0*	*0.0*	*0.0*
All Water Delivery Types	*23964*	*212.9*	*0.0*

Quantity of Self-Generated Renewable Energy

0 kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Metered Data

Data Quality Narrative:

Metered data was provided for: 1) treatment of raw imported water and groundwater, 2) extraction of groundwater from the Basin, 3) distribution of water to all customers.

Narrative:

Urban Water Supplier: *City of Oceanside*

Table O-2: Recommended Energy Reporting - Wastewater & Recycled Water

Enter Start Date for Reporting Period	1/1/2020	**Urban Water Supplier Operational Control**			
End Date	#########				
		Water Management Process			
☐ Is upstream embedded in the values reported?		Collection / Conveyance	Treatment	Discharge / Distribution	Total
Volume of Water Units Used	AF				
Volume of Wastewater Entering Process (volume units selected above)		*12499*	*11924*	*11123*	*11924*
Wastewater Energy Consumed (kWh)		*5567002*	*2018589*	*0*	*7585591*
Wastewater Energy Intensity (kWh/volume)		*445.4*	*169.3*	*0.0*	*636.2*
Volume of Recycled Water Entering Process (volume units selected above)		*204*	*204*	*204*	*204*
Recycled Water Energy Consumed (kWh)		*0*	*5117*	*9989*	*15106*
Recycled Water Energy Intensity (kWh/volume converted to MG)		*0.0*	*25.1*	*49.0*	*74.0*

Quantity of Self-Generated Renewable Energy related to recycled water and wastewater operations

0 kWh

Data Quality *(Estimate, Metered Data, Combination of Estimates and Metered Data)*

Metered Data

Data Quality Narrative:

Metered data was provided for the collection/conveyance, treatment, and distribution of both wastewater and recycled water.

Narrative:

Table 4.13 Pressure Regulating Stations
Water Master Plan
City of Oceanside

Name	Location	Valve Size (in)	Standby(2)	Regulating Type	Elevation (ft-msl)	Upstream Zone	Downstream Zone	Pressure Setting (psi)
Airport	Airport Road / Bennett Hill Road	4, 8	N	PRV	60	511	320(5)	155, 148
Buddy Todd Bypass	Buddy Todd Pump Station Site	3, 8	Y	PRV	210	480	320	55, 50
Buena Hills	Buena Hills Drive / North Way	3, 6	Y	PRV	272	511	409	55, 50
College and Adams East	College Boulevard / Adams Street	3, 8	Y	PRV	85	511	320	
College and Adams West	College Boulevard / Adams Street	3, 10	Y	PRV	85	511	320	
Darwin	Darwin Drive / Santa Fe Avenue	3, 6	Y	PRV	200	511	450	75, 70
Darwin / Crestview	Darwin Drive / Crestview Drive	4, 10	Y	PRV	398	626	511	88, 80
Darwin e/o Whispering Palms	Darwin Drive / Whispering Palms	3, 8	N	PRV	256	511	450	75
Del Rio Elementary	Parker Street / North River Road	2, 4	N	PRV MS	98	420	420	100, 95
El Camino Country Club	Palmer Drive / Valley Glen Drive	3, 8	N	PRV	48	409	340	125
El Camino Real & Vista Oceana PRS	El Camino Real / Vista Oceana		N		222	511	511	
El Camino Real & Oceanside PRS	Oceanside Boulevard / El Camino Real	4, 10	Y	PRV	120	511	320	80, 70

Table 4.13 Pressure Regulating Stations
Water Master Plan
City of Oceanside

Name	Location	Valve Size (in)	Standby(2)	Regulating Type	Elevation (ft-msl)	Upstream Zone	Downstream Zone	Pressure Setting (psi)
F-1	Village Drive s/o Championship	3, 6	N	PSV/PRV	338	738	560	86, 96
F-2	Straightaway Lane Cul de Sac	3, 6	N	PSV/PRV	406	738	560	64, 72
Farel	Farel Street / Via Robles	3, 8	Y	PRV	150	409	320	65, 60
Fire Mountain & Laurel	Fire Mountain Drive / Laurel Road	4, 10	N	PRV	250	450	390	57, 48
Fire Mountain Reservoir	Fire Mountain Reservoir Site	3, 8	N	PRV	302	511	450	70, 65
Gallery	Gallery Drive / Pointillist Court	4, 8	Y	PRV	140	511	320	70, 65
Granada & Rose	Granada Drive / Rose Drive	3, 8	N	PRV	303	626	526	102, 92
Granite	Granite Place / Vandegrift Boulevard	3, 6	N	PSV PRV	154	511	450	132, 124
Guajome Reservoir Aqueduct	Guajome Reservoir Site	18, 18, 18	N	PSV	480	626	511	52, 55
Guajome Reservoir Bypass	Guajome Reservoir Site	12	Y		490			
Henie Hills Drive and Lynn Court	Henie Hills Road / Lynn Court	3, 8	/N	PRV	254	511	395	58, 52
Hutchinson	Hutchinson Street / Osborne Street	6, 12	N	PRV	358	511	450	40, 35
Leisure Village	San Francisco Peak Reservoir Site	4, 8	N	PRV	430	800	569	45, 40

Table 4.13 Pressure Regulating Stations Water Master Plan City of Oceanside

Name	Location	Valve Size (in)	Standby(2)	Regulating Type	Elevation (ft-msl)	Upstream Zone	Downstream Zone	Pressure Setting (psi)
Leisure Village 2	Cannon Road / Wisteria Drive	6	N	PRV	456	800	569	95
Mesa Drive	Mesa Drive / Foussat Road	4, 8	N	PRV	218	511	480	85, 78
Morro Hills Pump Station	Morro Hills Reservoir Site		N	Relief	714	1,000	800	
N Santa Fe/Omoris 2	Santa Fe Avenue / Darwin Drive	8, 12	N	PSV	206	800	511	
N Santa Fe/Omoris 3	Santa Fe Avenue / Darwin Drive	8, 12	N	PSV	206	800	626	
North River Road	Old River Road / College Boulevard	4, 12	N	PRV	84	511	420	150, 140
North River Road & Wilshire	Wilshire Road / North River Road	4, 12	Y	PRV	110	800	480	205, 200
Peacock	Oceanside Boulevard / Peacock Boulevard	10	N		342	626	600	112
Oceanview & Carriage	Oceanview Road / Carriage Circle	3, 8	Y	PRV	212	511	409	82, 76
Old Grove – 511	Old Grove Road / Ocean Ranch Boulevard	12, 16	N	PSV, PRV	326	800	511	205, 77
Old Grove – 626	Old Grove Road / Ocean Ranch Boulevard	6, 12	N	PRV	326	800	626	125, 115
Palmer Drive	Palmer Drive / Sonja Court	8	N	PRV	187	395	340	

Table 4.13 Pressure Regulating Stations
Water Master Plan
City of Oceanside

Name	Location	Valve Size (in)	Standby(2)	Regulating Type	Elevation (ft-msl)	Upstream Zone	Downstream Zone	Pressure Setting (psi)
Pilgrim Creek Reservoir	Pilgrim Creek Reservoir Site	6, 12	Y	PSV/PRV, PRV	288	738	511	160, 90
Pilgrim Creek Reservoir Arrowood Regs	Pilgrim Creek Reservoir Site	3, 6	N	PRV	288	738	450	86, 74
Poplar Ridge Pump Station	Carey Road Pump Station Site	8	Y	PSV	204	320	320	42
San Francisco Peak Generator Bypass	San Francisco Peak Reservoir Site	8, 10, 12	Y	PSV PRV	534	800	569	180
San Francisco Peak Irrigation	San Francisco Peak Reservoir Site	16	N		548	800	569	
Shadowtree	Shadow Tree Drive / Hollow Tree Drive	6, 12	N	PRV	98	511	346	133, 125
Sonoma Hills	Castellano Way / Vandegrift Boulevard	4, 8	N	PRV	158	511	450	115, 108
Valley Heights	Valley Heights Drive / Twins Haven Road	3, 6	N	PRV	140	511	320	70, 62
Via Esmarca	Via Esmarca / Costa Vista Way	4, 10	N	PRV	232	511	400	65, 60
Viscaya	Viscaya Way / Anda Lucia Way	3, 8	Y	PRV	172	511	409	100, 92
Wendella	Wendella / Sagewood	3, 6	N	PRV	196	511	450	104, 95
Wilmont 1	Vandegrift / Papgallo	4, 6	N	PRV	262	511	480	
Wilmont 2	Papagallo / Cockatoo Court	3, 6	N	PSV, PRV	262	560	480	122
Wilshire Pump Station	Wilshire Pump Station Site	6, 12	Y	PSV	344	800	800	

Table 4.13 Pressure Regulating Stations
Water Master Plan
City of Oceanside

Name	Location	Valve Size (in)	Standby(2)	Regulating Type	Elevation (ft-msl)	Upstream Zone	Downstream Zone	Pressure Setting (psi)
Wilshire River	Wilshire Road	3, 8	Y	PRV	220	480	420	90, 80
Wilshire Road	Wilshire Road / Las Tunas Drive	4, 8	N	PRV	346	800	480	115, 100
Strawberry	Wilshire Road (in strawberry field)	4, 10	N	PRV	326	738	480	105, 95

Notes:

(1) This list excludes PRS supplying individual sites.
(2) Standby indicates whether the PRS functions as a backup supply. “N”, for No, indicates that the PRS is the primary supply for the associated pressure zone and is utilized under the typical operating configuration. “Y”, for Yes, indicates that the PRS is not utilized under the typical operating configuration, and instead the PRS would function during a low pressure condition. Typically, the HGL corresponding to the pressure setpoint of a standby PRS would be significantly lower than that of the primary PRS for the pressure zone.
(3) Acronyms: PSV – Pressure Sustaining Valve; PRV – Pressure Reducing Valve.
(4) Not listed in this table are Avenida del Gado PRS and Magdalena PRS, pressure regulating stations physically connected to the distribution system but not used and planned for abandonment.
(5) The pressure setting of Airport PRS is consistent with the HGL of the Talone Zone (320), but it supplies an isolated area of the Talone Zone.

Table 4.11 Booster Pumping Stations
Water Master Plan
City of Oceanside

Booster Station Name(2,3,4)	Total Capacity (gpm)	Pumping Units	Elev (ft)	Power (hp)	Year Constructed(5)	Backup Power	Standby(1)	From Pressure Zone	To Pressure Zone
Buddy Todd	1,200	3	280	50 50 50		N	Y	Talone (320)	Buddy Todd (480)
Fire Mountain	320	2	298	20 20		N	Y	Talone (320)	Fire Mountain (450)
Carey Road (Poplar Ridge)	625	3	204	40 40	1988	N	Y	Talone (320)	Poplar Ridge (320)
Rivertree (Mar Lado)	1,435	3	118	7.5 10 40	1989	Y	Y	Talone (320)	Mar Lado (346)
Sleeping Indian	1,600	3	655	50 [VFD] 50 60		Y	N	Morro Hills (738)	Morro Hills PS (1,000)
Morro Hills	900	2	712	30 [VFD] 30 [VFD]		N	N	Morro Hills (738)	Morro Hills PS (1,000)
Wilshire	2,250	3	343	75 75 75	1992	N	Y	Transmission (800)	Transmission (800)

Table 4.11 **Booster Pumping Stations**
Water Master Plan
City of Oceanside

Booster Station Name$^{(2,3,4)}$	Total Capacity (gpm)	Pumping Units	Elev (ft)	Power (hp)	Year Constructed$^{(5)}$	Backup Power	Standby$^{(1)}$	From Pressure Zone	To Pressure Zone
Lake Boulevard (San Francisco Peak PS)	1,800	2	289	50 50		N	Y	Guajome (511)	San Francisco Peak 1 (569)
Mesa Loma	700	2	345	50 50		N	Y	Guajome (511)	Peacock Hills Reduced (600)
Total	**10,830**	**23**		**972.5**					

Notes:

(1) Standby indicates whether the pump station is as a backup supply. “N”, for No, indicates that the pump station is the primary supply for the associated pressure zone and is utilized under the typical operating configuration. “Y”, for Yes, indicates that the pump station is not utilized under the typical operating configuration, and instead the pump station would be used as a backup or under supply outage or emergency conditions.

(2) Acronyms: AV – Altitude Valve (generally supplying a reservoir from an upper pressure zone); FCF – Flow Control Facility; PRS – Pressure Regulating Stations (can include Pressure Regulating Valves and Pressure Sustaining Valves; see Table 4.13 for specific details on each PRS); PS – Pump Station.

(3) In addition to the booster pump stations listed in this table by pressure zone, the Zone 320 PS and the Zone 511 PS deliver water supply from the MBGPF to the Guajome and Talone pressure zones.

(4) Fire Mountain PS is currently not operated by the City and is planned for abandonment within the near-term. Carey Road (Poplar Ridge) PS is also not operated by the City, but can be utilized under fire flow conditions.

Table 4.12 Storage Reservoirs and Tanks
Water Master Plan
City of Oceanside

Reservoir Name	Volume (MG)	High Water Line (ft-msl)	Floor Elevation (ft-msl)	Height (ft)	(Equivalent) Diameter[1] (ft)	Construction Type[2]	Year Constructed	Pressure Zone
Fire Mountain	3	322	292	30	130	PST	1956	Talone (320)
Talone	5	320	290	30	168	PST	1982	Talone (320)
Pilgrim Creek	5	321	285	35.5	155	PST	1978	Talone (320)
John Paul Steiger	3	320	290	30	130	PST	1975	Talone (320)
Henie Hills	3	409	380	29	133	PST	1960	Henie Hills (409)
Morro Hills 1	5	738	708	30	168	PST	1963	Morro Hills (738)
Morro Hills 2	5	738	708	30	168	STL	1990	Morro Hills (738)
Guajome 1	5	511	481	30	168	PST	1962	Guajome (511)
Guajome 2	5	511	481	30	168	PST	1982	Guajome (511)
San Francisco Peak 1	1.5	569	545	24	103	PST	1960	San Francisco Peak 2 (511)
San Francisco Peak 2	5	511	481	30	168	PST	1984	Guajome (511)
Wire Mountain	5	320	290	30	168	PST	1995	Talone (320)
Total	**50.5**							

Notes:

(1) Geometry of reservoirs is assumed to be cylindrical. Diameter shown is effective diameter, or what would be the diameter if a reservoir of the same volume were cylindrical with the same height.

(2) Acronyms: PST – Pre-stressed Concrete (above ground); STL – Steel (above ground)

Table 4.7 Lift Station Characteristics Sewer Master Plan City of Oceanside

Lift Station	Address	Year Constructed	Station Capacity (gpm)	Flow per Pump (gpm)	# of Pumps	Force Main Diameter (in.)
Bandstand	250 North Strand	1999	300	300	2	6
Buena Vista	2501 Haymar Drive	1976	2,550	N/A(1)	3	18
New Buena Vista	2501 Haymar Drive	N/A(1)	1,900	N/A(1)	3	N/A(1)
Vista Bypass(2)	3800 Vista Way	1961	N/A(1)	N/A(1)	N/A(1)	N/A(1)
Calaveras	3636 Sky Haven Lane	N/A(1)	1,500	850	3	12
Harbor #1	200 North Harbor Drive	1961	150	150	2	6
Harbor #2	1830 North Harbor Drive	1961	175	175	2	6
Harbor #3	1325 North Harbor Drive	1961	250	250	2	6
Harbor #4	284 North Harbor Drive	1961	500	500	2	8
Harbor #5	North Pacific Street	1961	150	150	2	6
Harbor #7	1384 North Harbor Drive	1986	50	50	2	4
Lake Blvd	4700 1/2 Lake Boulevard	1993	1,000	1,000	4	16
Leisure Village #1	4706 Cannon Road	1984	800	800	3	8
Leisure Village #2	4300 Leisure Village Way	1986	500	600	2	8
Loretta	1261 Loretta Street	1953	400	400	2	6
Mar Lado	401 North Foussat Road	1986	800	600	3	8
Mission Avenue	3476 Mission Avenue	2002	4,000	2,900	4	24
North Bridge	304 South Harbor Drive	1988	1,200	1,200	2	10
Ninth Street	997 North Pacific Road	1975	500	500	2	16
North Valley	3930 North River Road	2001	2,960	2,960	3	20
Oceanside Blvd	1664 Oceanside Boulevard	1975	3,000	1,700	3	10
Pacifica School	4991 Marcario Road	1971	400	400	2	6

Table 4.7 Lift Station Characteristics
Sewer Master Plan
City of Oceanside

Lift Station	Address	Year Constructed	Station Capacity (gpm)	Flow per Pump (gpm)	# of Pumps	Force Main Diameter (in.)
Pilgrim Creek	855 Douglas Drive	1976	2,000	2,000	2	10
Roja	703 Roja Street	1975	250	250	2	6
Roymar	110 Jones Road	1992	1,600	1,600	4	12
St. Malo	52 St. Malo Beach	N/A(1)	200	200	2	4
Sky Haven	3521A Sky Haven Lane	1973	150	150	2	4
South Pacific	1330 South Tait Street	1955	700	700	2	6
South Ridge Trails	4900 Cannon Road	N/A(1)	600	600	2	8
Wisconsin	Wisconsin and Pacific Streets	N/A(1)	300	300	2	6
Restrooms	On the Pier	N/A(1)	200	200	2	6
Bait Shop	On the Pier	1973	50	50	2	6
Ruby's	On the Pier	N/A(1)	200	200	2	6

Notes:

Source: Lift Station Condition Assesment, Appendix G.

(1) Information not available.
(2) Pump station allows the City to pump flow to Vista for emergency situations.

4.3.3 Force Mains

This section provides an overview of the City's force mains. The previous pipeline section, Section 4.3.1, described the City's gravity mains. The differences between these two types of pipelines are the methods of conveyance used to transport wastewater from sewer system to the treatment facilities. Gravity pipelines use the force of gravity to deliver wastewater from higher elevations to lower elevations, and are typically not pressurized. Force mains are pipelines that flow from lower to higher elevations. In a force main, wastewater is pumped (via a lift station) up gradient and is discharged into a gravity main or treatment facility.

The City maintains 135 miles of force mains ranging in diameter from 3 inches to 42 inches. The following charts and figures provide a summary of the length of the collection system force mains based on diameter, material, and age.