



2015

# Urban Water Management Plan



Final



June 2016



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# 2015 Urban Water Management Plan

*Final*

*Prepared By:*



**June 2016**

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## Acronyms and Abbreviations

Act	Urban Water Management Planning Act
AF	Acre-feet
AFY	Acre-feet per year
AWWA	American Water Works Association
Bay-Delta	Sacramento-San Joaquin Bay-Delta
BMPs	Best management practices
CCR	California Code of Regulations
CDP	Census designated place
CII	Commercial/Industrial/Institutional
CIMIS	California Irrigation Management Information System
City	City of Escondido
CUWCC	California Urban Water Conservation Council
CWC	California Water Code
DAC	Disadvantaged community
DMM	Demand management measure
DWR	California Department of Water Resources
Escondido-Vista WTP	Escondido-Vista Water Treatment Plan
ETo	Evapotranspiration
FY	Fiscal Year
GPCD	Gallons per capita per day
Guidebook	2015 UWMP Guidebook for Urban Water Suppliers
HARRF	Hale Avenue Resource Recovery Facility
IRWM	Integrated Regional Water Management
JPA	San Elijo Joint Powers Authority
kgal	Thousand gallons
kWh	Kilowatt-hour
kWh/AF	Kilowatt-hour per acre-feet
MG	Million gallons
mgd	Million gallons per day
MHI	Median household income
MOU	Memorandum of Understanding
MWD	Metropolitan Water District of Southern California
NSDWRC	North San Diego Water Reuse Coalition
QSA	Quantification Settlement Agreement
Rincon	Rincon del Diablo Municipal Water District
SANDAG	San Diego Association of Governments
SBX7-7	Senate Bill X7-7 (Water Conservation Act of 2009)
SDCWA	San Diego County Water Authority
SDG&E	San Diego Gas and Electric
State Board	State Water Resources Control Board
SWP	State Water Project
TAF	Thousand acre-feet
UAW	Unaccounted-for water use

UWMP

Urban Water Management Plan

VID

Vista Irrigation District

VWD

Vallecitos Water District

WTP

Escondido-Vista Water Treatment Plant

## Chapter 1 Introduction and Overview

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### **CWC 10617**

*“Urban water supplier” means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems...*

### **CWC 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.*

### **CWC 10621**

*(a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero, except as provided in subdivision (d).*

*(d) Each urban water supplier shall update and submit its 2015 plan to the department by July 1, 2016.*

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This chapter addresses the need and purpose of the City of Escondido’s 2015 Urban Water Management Plan (UWMP), as well as provides a brief overview of local coordination efforts, and the UWMP adoption process. The California Department of Water Resources (DWR) has developed the *2015 UWMP Guidebook for Urban Water Suppliers* (Guidebook) to assist agencies with addressing the requirements of the California Water Code (CWC) and the Urban Water Management Planning Act (Act). A checklist identifying where each applicable portion of the CWC is addressed in this UWMP is provided as **Appendix A**. At the start of each chapter or relevant section, an excerpt of the portion of the CWC and/or California Code of Regulations (CCR) that is addressed in that section has been provided.

### 1.1 Background and Purpose

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#### **CWC 10644**

*(a)(2) The plan, or amendments to the plan, submitted to the department ... shall include any standardized forms, tables, or displays specified by the department.*

#### **CWC 10608.52**

*(a) The department, in consultation with the board, the California Bay-Delta Authority or its successor agency, the State Department of Public Health, and the Public Utilities Commission, shall develop a single standardized water use reporting form to meet the water use information needs of each agency, including the needs of urban water suppliers that elect to determine and report progress toward achieving targets on a regional basis as provided in subdivision (a) of Section 10608.28.*

*(b) At a minimum, the form shall be developed to accommodate information sufficient to assess an urban water supplier’s compliance with conservation targets pursuant to Section 10608.24... The form shall accommodate reporting by urban water suppliers on an individual or regional basis as provided in subdivision (a) of Section 10608.28.*

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**California Health and Safety Code 116275**

*(h) “Public Water System” means a system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.*

**CWC 1608.20**

*(a)(1) Urban retail water suppliers...may determine the targets on a fiscal year or calendar year basis.*

The City of Escondido (City) serves water to customers within the City’s water service area, and meets the CWC definition of an “urban water supplier”. This 2015 UWMP addresses the City’s water supply sources, including recycled water, groundwater, surface water, water conservation activities, and projected water demands. The UWMP presents a comparison of projected water supplies to water demands during normal, single-dry, and multiple-dry years, provides the framework for long-term water planning within the City, and helps to support regional long-term planning.

The City is a retail water agency as defined by CWC 10608.12(p), and provides water to its customers through a single public water system. **Table 1-1** identifies the public water system that is managed by the City of Escondido.

**Table 1-1: City of Escondido’s Public Water Systems**

DWR Table 2-1: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015 (AF)
CA3710006	City of Escondido	26,565	21,879

In addition to serving its own customers through its system, a small number of the City’s customers are served water by neighboring Rincon del Diablo Municipal Water District (Rincon). Conversely, the City also serves water to a select number of Rincon’s customers. These services are provided through long-standing exchange agreements. The City also shares the Escondido-Vista Water Treatment Plant with Vista Irrigation District. Unless otherwise noted, demands and supplies reported in this UWMP reflect only those supplies and demands directly associated with the City’s water service area. As noted in **Table 1-2**, the City is preparing this UWMP as an individual UWMP, in coordination with other agencies.

**Table 1-2: Plan Identification**

DWR Table 2-2: Plan Identification	
	Type of Plan
✓	Individual UWMP
	Regional UWMP

All figures, data, and other information in the 2015 UWMP are reported in fiscal years, utilizing the most recent available data, and all applicable data are reported in acre-feet (AF) or acre-feet per year (AFY). Information about the data included in this 2015 UWMP is summarized in **Table 1-3**.

**Table 1-3: Agency Identification**

DWR Table 2-3: Agency Identification	
Type of Agency	
	Agency is a wholesaler
✓	Agency is a retailer
Fiscal or Calendar Year	
	UWMP Tables Are in Calendar Years
✓	UWMP Tables Are in Fiscal Years
Month and Date that the Fiscal Year Begins	
<i>July 1</i>	
Units of Measure Used in UWMP	
Unit	AF

## 1.2 Urban Water Management Planning and the California Water Code

UWMPs are required to be developed every five years, per the Act, which was first adopted under Assembly Bill 797 during the 1983-1984 session of the California legislature. The Act requires urban water retailers and wholesalers to assess their supplies and demands, currently and projected, a minimum of 20 years into the future, and to incorporate this assessment into a planning document, the UWMP. Urban water suppliers are defined as those serving water for municipal purposes to more than 3,000 customers, or supplying more than 3,000 AFY of water annually. The Act states that these urban water suppliers should make every effort to assure the level of reliability in their water service is sufficient to meet the needs of their various categories of customers during normal, dry, and multiple dry years. The Act describes the contents of the Plan as well as how urban water suppliers should adopt and implement the Plan.

Since its initial passage, the Act has been revised to address a variety of issues and priorities in the state, including a substantial amendment with passage of the Water Conservation Act of 2009, which is also referred to as SBX7-7. SBX7-7 requires water suppliers to reduce their potable water use by 20% by 2020. In addition to helping meet statewide water conservation targets, compliance with SBX7-7 is mandatory for eligibility for state funds beginning in 2016.

### 1.3 Agency Coordination

**CWC 10620**

*(d)(2) Each urban water supplier shall 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.*

**CWC 10621**

*(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days before the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan*

**CWC 10631**

*(j) An urban water supplier that relies upon a wholesale agency for a source of water shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier’s plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c).*

**CWC 10642**

*Each urban water supplier shall encourage the 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...*

During preparation of this 2015 UWMP, the City coordinated its efforts with neighboring agencies and municipalities, as well as with the San Diego County Water Authority (SDCWA), the region’s water wholesaler. **Table 1-4** shows that the City coordinated with SDCWA and exchanged information in preparation of this 2015 UWMP per the CWC. This coordination helps to ensure that the regional planning efforts are consistent, and adequate to address anticipated needs. Further, as a member agency to SDCWA, a partner of the North San Diego Water Reuse Coalition (NSDWRC), and through partnerships with its neighbors, the City shares resources and infrastructure with other entities. These partnerships require adequate coordination to ensure comprehensive and cohesive planning.

**Table 1-4: Wholesale Water Supplier Information Exchange**

DWR Table 2-4: 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

## 1.4 Plan Adoption, Submittal, and Implementation

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### **CWC 10621**

*(b) Every urban water supplier required to prepare a plan pursuant to this part shall, at least 60 days prior to the public hearing on the plan required by Section 10642, notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.*

### **CWC 10621**

*(c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).*

### **CWC 10635**

*(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.*

### **CWC 10642**

*Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area.*

### **CWC 10642**

*After the hearing, the plan shall be adopted as prepared or as modified after the hearing.*

### **CWC 10643**

*An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.*

### **CWC 10644**

*(a) An urban water supplier shall submit to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be submitted to the department, the California State Library, and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption.*

### **CWC 10645**

*Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.*

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The City has encouraged community participation and public involvement in its UWMP efforts through public noticing and meetings. A public hearing was held in Council Chambers, 201 North Broadway in the City of Escondido, on June 15, 2016. Notices of public meetings were posted on the City's webpage at [www.escondido.org](http://www.escondido.org) and legal public notices for the meeting were published in the U-T San Diego on May 18<sup>th</sup> and May 25<sup>th</sup>. **Table 1-5** shows that the County of

San Diego and SDCWA were provided a 60-day notice for the public hearing regarding the consideration of the 2015 UWMP adoption. The notification letter and list of agencies that were notified is included as **Appendix B**.

**Table 1-5: Notification to Cities, Counties, and Agencies**

<b>DWR Table 10-1: Notification to Cities and Counties</b>		
County Name	60 Day Notice	Notice of Public Hearing
County of San Diego	✓	✓
Agency Name	60 Day Notice	Notice of Public Hearing
San Diego County Water Authority	✓	✓
Valley Center Municipal Water District	✓	✓
Rincon Municipal Water District	✓	✓
Vallecitos Water District	✓	✓
Vista Irrigation District	✓	✓

Immediately following the public hearing, the City Council held an adoption hearing to consider adoption of this 2015 UWMP. The adoption resolution is included as **Appendix C** in the Final 2015 UWMP. The 2015 UWMP will be submitted to DWR by the July 1, 2016 deadline, and within 30 days of Council approval. The adopted UWMP will also be submitted to the California State Library, and other agencies and municipalities as required by the Act. Should the City elect to amend this UWMP before adoption of the 2020 UWMP, such an amendment will be adopted following the same process as the 2015 UWMP, and will be submitted electronically to DWR.

This 2015 UWMP, which utilizes the most recent data available as the foundation of its analyses, brings together policies and projects of the various divisions of the City of Escondido’s Utilities department. It is the intent of the City to move forward with the best practices outlined in this UWMP.

## 1.5 UWMP Organization

This UWMP is organized into the following chapters, and generally follows the recommended outline of the Guidebook<sup>1</sup>:

- Chapter 1: Introduction and Overview
- Chapter 2: System Description
- Chapter 3: System Demands
- Chapter 4: Baselines and Targets

<sup>1</sup> Note that the City’s 2015 UWMP consolidated Introduction and Overview, Plan Preparation, and Plan Adoption, Submittal, and Implementation, into this chapter, while the Guidebook recommends these topics be Chapters 1, 2, and 10, respectively.

- Chapter 5: System Supplies
- Chapter 6: Water Supply Reliability Assessment
- Chapter 7: Water Shortage Contingency Plan
- Chapter 8: Demand Management Measures
- Chapter 9: Climate Change and Water Energy

This UWMP also includes a series of appendices intended to clarify the contents of the UWMP and to meet requirements of the CWC and Guidebook. While the Guidebook contains a series of tables that are required to be included in the UWMP, the City has elected to include additional tables, as appropriate, to clarify, highlight, or otherwise present information. All DWR-required tables are presented in the body of this UWMP. The required DWR tables and SBX7-7 tables are also included as **Appendix D**. Within chapters, tables will be presented as follows, to avoid confusion between DWR-required tables and additional tables included in this Plan:

Sequential Report Table Number

**Table 1-1: Escondido's Public Water Systems**

DWR Guidebook Table Number (omitted for non-Guidebook tables)

DWR Table 2-1 Retail Only: Public Water Systems			
Public Water System Number	Public Water System Name	Number of Municipal Connections 2015	Volume of Water Supplied 2015
<b>TOTAL</b>		<b>0</b>	<b>0</b>
NOTES:			

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## Chapter 2 System Description

Chapter 2 describes the City of Escondido's history, service area, water supply system population, climate, and demographics.

### 2.1 City of Escondido

---

*CWC 10631*

*Describe the service area of the supplier.*

*Describe the service area climate.*

*Describe other demographic factors affecting the supplier's water management planning.*

---

The City of Escondido is located in northern San Diego County, at the interchange of Interstate 15 and State Route 78 (see **Figure 2-1**). The City is located in a long valley in the coastal mountains of southern California, and provides a thriving urban environment in the midst of gentle rolling hills and avocado and citrus groves. The City lies approximately 18 miles inland from the Pacific Ocean and 30 miles northeast of the downtown area of the City of San Diego.

Founded via a city charter from the State Legislature in 1888, the City covers an area of just over 33 square miles. In recent years, the City has experienced the transformation from a rural agricultural town into a hub of north county economic activity and a vibrant urbanized community with continued growth in population and housing.

#### 2.1.1 Water Service Area

The City provides water services to customers within its water service area, shown in **Figure 2-1**, which does not correspond to the City's boundaries. As a SDCWA member agency, the City has the right to purchase water from SDCWA, which supplies a blend of imported supplies that are purchased from the Metropolitan Water District of Southern California (MWD), transfers and conservation savings from the Colorado River, and desalinated seawater. The City also operates facilities supplying local water from the San Luis Rey River watershed in conjunction with Vista Irrigation District (VID). Adjacent to the City's water service area lies the Rincon del Diablo Municipal Water District (Rincon), which was formed in 1954 in order to purchase and distribute water from SDCWA to areas outside the City boundaries. In the past, as the City grew, portions of Rincon's service area were incorporated into the City's water service area.

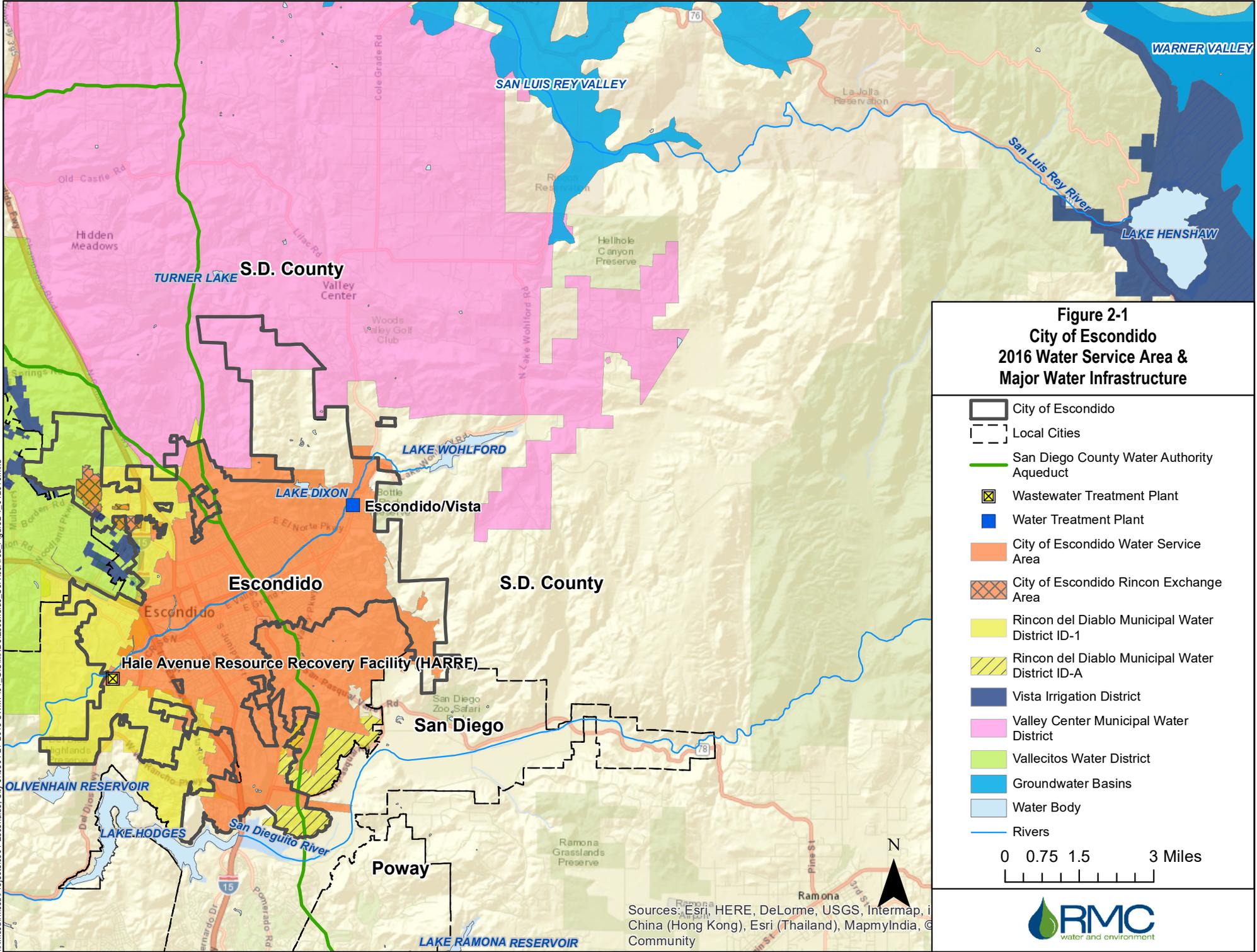
The City's water service area covers approximately 20,000 acres, and is not aligned with the City's incorporated boundary. The City and its water service area include residential, open space, commercial, industrial and agricultural land uses. There are significant agricultural endeavors in and around the City and its water service area. In particular, avocado growers located on the edges of the City's water service area are major water consumers, though many utilize private wells to pump groundwater for irrigation. A number of local growers, however, have expressed interest in buying recycled water from the City. **Table 2-1** provides a breakdown of existing (2012)

land uses within the City’s water service area, which have been provided by the San Diego Association of Governments (SANDAG). For further information on this breakdown, see the discussion in Section 3.3.1.

**Table 2-1: 2012 Land Uses in the City’s Water Service Area**

Land Use Category	Developed Acreage
Low Density Single Family	1,920
Single Family	5,701
Multi-Family	668
Mobile Home	261
Other Residential	36
Mixed Use (multi-family residential and commercial)	0
Industrial	399
Commercial	1,348
Office	94
Schools	364
Roads	2,675
Parks	502
<b>Total</b>	<b>13,969</b>

Adjacent to the City’s water service area are Rincon, VID and Vallecitos Water District (VWD) to the west, Rincon and the City of San Diego to the south, and Valley Center Municipal Water District to the north. The location of the City’s current water service area boundary, in relation to neighboring agencies, is shown in **Figure 2-1**. Water service area boundaries have the potential to change in the future as new development projects request expansion of the service area.



**Figure 2-1**  
**City of Escondido**  
**2016 Water Service Area &**  
**Major Water Infrastructure**

- City of Escondido
- Local Cities
- San Diego County Water Authority Aqueduct
- Wastewater Treatment Plant
- Water Treatment Plant
- City of Escondido Water Service Area
- City of Escondido Rincon Exchange Area
- Rincon del Diablo Municipal Water District ID-1
- Rincon del Diablo Municipal Water District ID-A
- Vista Irrigation District
- Valley Center Municipal Water District
- Vallecitos Water District
- Groundwater Basins
- Water Body
- Rivers

0 0.75 1.5 3 Miles



Sources: Esri, HERE, DeLorme, USGS, Intermap, i  
 China (Hong Kong), Esri (Thailand), MapmyIndia, ©  
 Community



I:\Rmsdl\mcsdl\Projects\0304\_Escondido\_City\030304-27 2015 UWMP\04\_GIS\MXDs\Escondido\_ServiceArea\_Figure2-1\_042016.mxd

SOURCE: City of Oceanside, ESRI

### 2.1.2 Water Service Area Population

The City had a total population of 143,911 people as of the 2010 U.S. Census, and was estimated to have a population of over 150,000 in 2014 (the latest year available for estimates from the Department of Finance). As noted above, however, the City’s water service area does not align with the City’s boundaries, and the City’s population therefore cannot be used as the water service area population. SANDAG developed population projections for each of SDCWA’s member agencies, including Escondido. These projections, provided in **Table 2-2**, are based on SANDAG’s Series 13 Growth Forecast model, which incorporates projected land uses as well as local and regional planning documents, including the proposed Safari Highlands development, to estimate populations.

**Table 2-2: Current and Projected Population for the City’s Water Service Area**

DWR Table 3-1: Population - Current and Projected							
Population Served	2010	2015	2020	2025	2030	2035	2040
	129,350	137,941	150,260	152,827	157,001	159,541	160,388

### 2.1.3 Climate

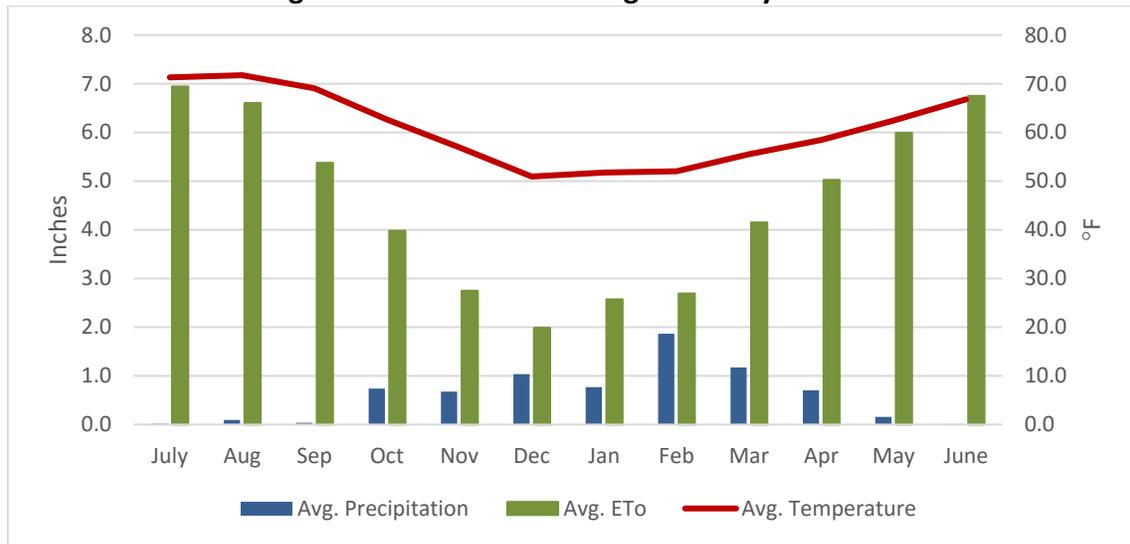
The City’s climate is characterized by mild temperatures year round. Most of the rainfall occurs between November and March (see **Figure 2-2**). Over the last 10 years, the City has experienced an annual average temperature of 60.9 degrees Fahrenheit and an average annual rainfall of 7.2 inches. **Table 2-3** shows the variation of the annual temperature, precipitation, and evapotranspiration (ETo) over the last 10 years as reported from a weather station located in Escondido, California, and recorded by the California Irrigation Management Information System (CIMIS) website. Additional details about climate change, and anticipated variations in precipitation and temperature are provided in *Chapter 9 Climate Change and Water Energy*.

**Table 2-3: Climate Data from FY 2006 through FY 2015 for the City of Escondido**

Fiscal Year	Avg. Temperature (°F)	Annual Precipitation (in)	Avg. Evapotranspiration (in)
2005/06	60.5	8.2	4.5
2006/07	60.4	5.5	4.7
2007/08	61.1	7.2	4.7
2008/09	61.4	4.0	4.6
2009/10	60.7	11.2	4.5
2010/11	59.8	12.1	4.6
2011/12	59.7	7.1	4.6
2012/13	60.9	5.5	4.5
2013/14	61.6	4.4	4.6
2014/15	62.4	6.6	4.4
<b>2005/06 - 2014/15</b>	<b>60.9</b>	<b>7.2</b>	<b>4.6</b>

Source: CIMIS, Station 153 Escondido SPV, Monthly Report, July 2005-June 2015.

Figure 2-2: Ten-Year Average Monthly Climate



## 2.2 Water System

The City maintains both a potable water system and a recycled water system to serve customers within its water service area. This section provides a brief overview of the City’s water service area infrastructure and briefly describes the different supplies and uses. Additional details on water demands are provided in *Chapter 3 System Demands* and detailed information on supplies are presented in *Chapter 5 System Supplies*. **Figure 2-1** shows major water infrastructure within the City’s water service area.

### 2.2.1 Potable Water System

The City’s potable water system currently utilizes water from two sources: local water and purchased water from SDCWA. Local water from the San Luis Rey River watershed is stored on a seasonal basis in the Lake Henshaw, Lake Wohlford, and Lake Dixon reservoirs. Local water is shared with VID, and delivered to the City via the Escondido Canal and associated pipelines. As discussed in *Chapter 5 System Supplies*, local sources supply approximately 20% of the City’s average potable water demand. Purchased water is supplied by the SDCWA; given that the City of Escondido largely purchases raw water from the SDCWA, most of this water is imported raw water. Imported water is brought into San Diego County by the SDCWA aqueducts, to which the City has two raw water connections (Escondido 3 and 4) and one off-line treated water connection (Escondido 2)(City of Escondido, 2012a). Water purchased from SDCWA supplies approximately 80% of the City’s average potable water demand. To diversify its supplies and increase local supply reliability, the City of Escondido is implementing a long-term potable reuse project that will provide an additional source of potable water in the City of Escondido’s water service area. Potable reuse efforts are described in detail in *Chapter 5 System Supplies*.

To deliver water to its approximately 26,500 connections, the City owns, operates, and maintains approximately 440 miles of pipeline, eleven reservoirs, five pump stations, and two dams (and

associated lakes). The City also co-owns the Escondido-Vista Water Treatment Plant (WTP) with VID. This WTP treats all raw water supplying the City, and is located near Dixon Lake in the northern portion of the City's water service area (City of Escondido, 2012a).

### **2.2.2 Recycled Water System**

In addition to providing potable water, the City also produces and delivers tertiary-treated recycled water, discussed in more detail in *Chapter 5 System Supplies*, at its Hale Avenue Resource Recovery Facility (HARRF). HARRF has a current capacity of 9 million gallons per day (mgd), but the City plans to expand the plant's capacity by 9 mgd in the near-term and an additional 2 mgd in the long-term, increasing total capacity to 20 mgd. The City's recycled water distribution system includes 18 miles of pipeline, and serves over 80 customers, with the majority of recycled water use serving cooling tower demands at the Sempra Energy Power Plant. Two storage sites are utilized for the City's recycled water, on-site storage at HARRF (1 million gallons [MG]) and Leslie Lane Reservoir (2 MG) (NSDWRC, 2015).

### **2.2.3 Joint Responsibilities with Neighboring Agencies**

The City neighbors a number of agencies, including Rincon, VID, VWD, the County of San Diego, the City of San Diego, and Valley Center Water District. Of these neighboring agencies, the City shares water supply responsibilities to some degree with Rincon and VID. Further, the City has exchange agreements in place with both Rincon and VID for daily operational water demands and in the event of an emergency. There are also a number of private groundwater pumpers that are not served by the City, but are located within the City's water service area.

#### **Rincon Del Diablo Municipal Water District**

Rincon serves water to customers in approximately 11 square miles of the City of Escondido, as well as additional neighboring areas. As shown in **Figure 2-1** above, Rincon's service area is generally located to the west of the City's water service area. A small portion of Rincon's service area is located southeast of the City's water service area. Within the City's northwestern area, pockets of the City's service area are interspersed with the northern portion of Rincon's ID-1 service area. Some of these areas of the City's water service area are supplied by Rincon, designated the "City of Escondido Rincon Exchange Area" in **Figure 2-1**. In exchange, the City sells potable water to a select number of Rincon's customers in Rincon's ID-A service area.

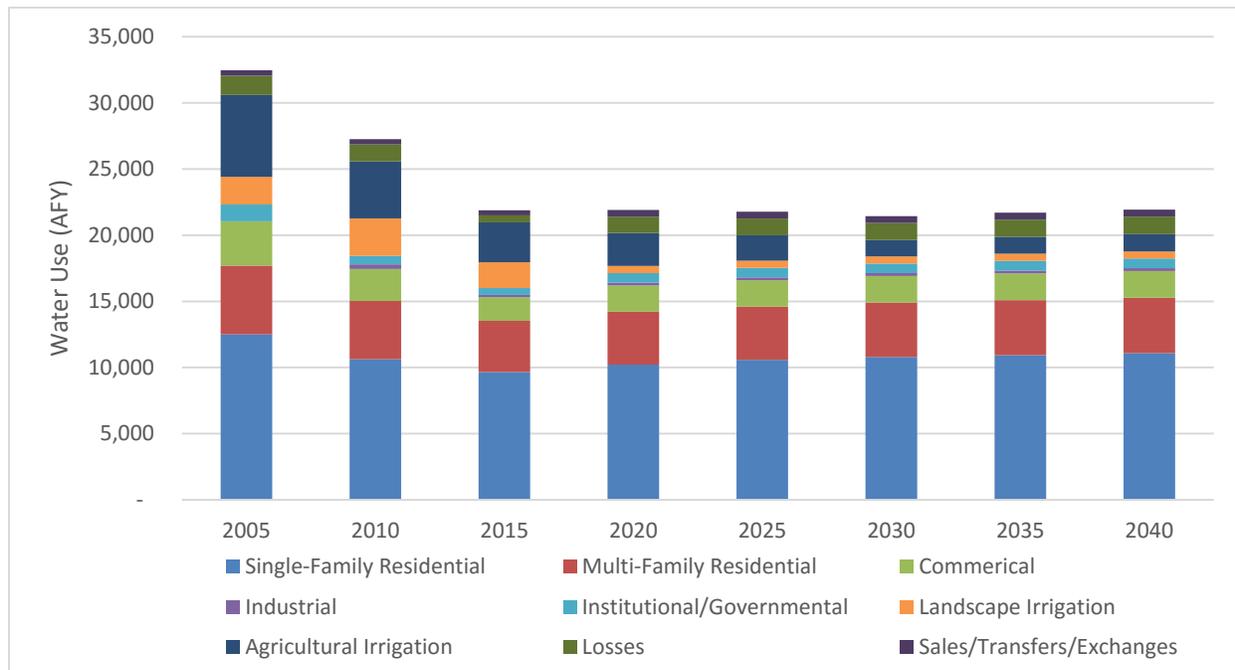
#### **Vista Irrigation District**

VID, located west of the City, co-owns the Escondido-Vista WTP. A portion of the water treated at the Escondido-Vista WTP is conveyed to VID's service area using a separate meter from the water provided to the City. VID serves approximately 124,000 people in the City of Vista, as well as portions of the cities of Escondido, Oceanside, and San Marcos, and portions of unincorporated San Diego County. VID serves water to a very small number of parcels within the City of Escondido.

## Chapter 3 System Demands

Chapter 3 describes the City of Escondido’s historic, current, and projected potable water use, which are shown in **Figure 3-1** by water use type.

**Figure 3-1: Historical and Projected Potable Water Use by Category**



### 3.1 Water Use by Sector

*CWC 10631(e)(1) and (2)*

(1) Quantify, to the extent records are available, past and current water use, and projected water use (over the same five-year increments described in subdivision (a), identifying the uses among water use sectors, including, but not necessarily limited to all of the following uses: (A) single-family residential, (B) multifamily, (C) commercial, (D) industrial, (E) institutional and governmental, (F) landscape, (G) sales to other agencies, (H) saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; (I) agricultural.

(2) The water use projections shall be in the same five-year increments described in subdivision (a).

**Tables 3-2** and **3-4** present the current and projected potable water demands within the City’s water service area by customer use type for the years 2015, 2020, 2025, 2030, 2035, and 2040. An in-depth discussion of recycled water is provided in *Chapter 5 System Supplies*, although a summary of projected recycled water demands is provided in **Table 3-5**. The City’s demand projections presented in this section fall below the City’s gallons per capita per day (GPCD) demand targets that are described in *Chapter 4 Baselines and Targets*.

Water use in the City is broken into customer use types, with primary water use falling under the Residential, Commercial/Industrial/Institutional (CII), Agricultural, and Irrigation categories. Details about each customer use type are provided in the following sections.

### **3.1.1 Residential Water Use**

Residential water use represents the largest water use category for the City, and includes both single-family and multi-family categories. Residential water consumption is composed of both indoor and outdoor uses. Indoor water use includes sanitation, bathing, laundry, cooking, and drinking. Most outdoor water use is associated with landscaping irrigation requirements. Other minor outdoor uses include pools, car washing, surface cleaning, and similar activities. In the City, outdoor residential water usage is driven by seasonal conditions, with higher demands in the warm summer months than in the cool winter months.

### **3.1.2 Commercial/Industrial/Institutional Water Use**

Commercial water demands consist, in part, of incidental uses necessary for the operation of a business or institution, such as drinking, sanitation, and landscape irrigation. Other commercial water users include service industries such as restaurants, car washes, laundries, and hotels.

Industrial water demands include a wide range of uses, including product processing and small-scale equipment cooling, sanitation, and air conditioning. Water-intensive industrial uses in the City, such as light manufacturing, typically require smaller amounts of water when compared to other water-intensive industries found elsewhere in southern California, such as petroleum refineries, chemical processors, and canneries.

Institutional water use consists primarily of schools and churches within the City's water service area. Water use characteristics tend to be similar to commercial uses, but are based on average daily attendance. Outdoor use tends to be somewhat higher for landscaped areas and active use areas. Many of these areas tend to be metered separately and categorized as irrigation.

### **3.1.3 Agricultural Water Use**

A large percentage of the City's agricultural water demand is associated with the large citrus and avocado growers, although these demands are also associated with nurseries. Agricultural water demand for potable water is projected to decrease in the future as recycled water use increases for crop irrigation and other agricultural demands.

### **3.1.4 Irrigation Sector**

Irrigation demands vary considerably based on seasonality and hydrologic conditions. More efficient technologies and climate-adapted plant palettes are being promoted as a way to curb demand. Increased use of recycled water is being encouraged as a way to reduce the draw on potable water.

### 3.1.5 Water Sold to Other Agencies and Additional Water Uses and Losses

The City sells potable water to select customers within the Rincon ID A service area, as described in Section 2, *System Description*. Sales to Rincon customers in 2015 totaled 329 AF.

System losses, or unaccounted-for water use (UAW), is unmetered water use such as for system leaks and breaks. UAW can also result from meter inaccuracies. An American Water Works Association (AWWA) Water Loss Audit completed for Fiscal Year (FY) 2014 (the most recent available) found an UAW of approximately 508 AFY, which equates to less than 3% of total water demands. Per data from the AWWA, the average water loss (50<sup>th</sup> percentile of water utilities in the United States) is 13.5% of total water demands, indicating that the City’s water loss is below the national average. Table 3-1 provides details on the water loss audit performed for FY2014.

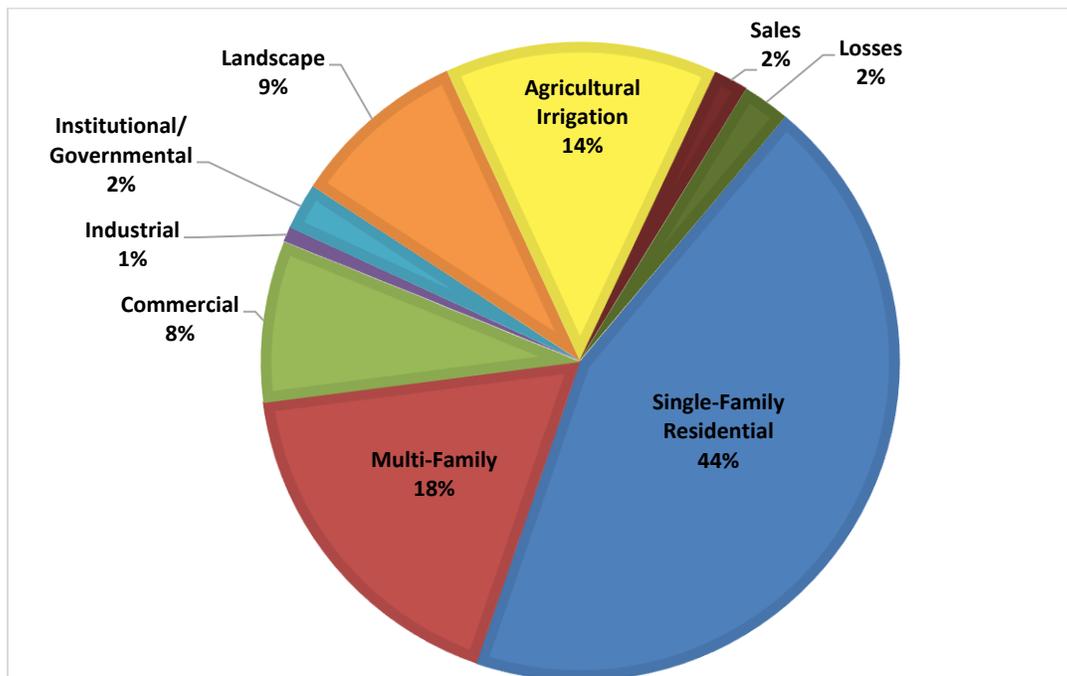
**Table 3-1: Water Loss Audit Reporting**

DWR Table 4-4: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
07/2013	508 AFY
* Taken from the field "Water Losses" from the AWWA worksheet.	

### 3.2 Current Water Use

Table 3-2 presents the actual water use for 2015, based on metering data for the City’s customers and data from the AWWA Water Loss Audit. An overview of the uses is shown in Figure 3-2.

**Figure 3-2: 2015 Potable Water Use by Use Type**



**Table 3-2: 2015 Potable Water Use**

<b>DWR Table 4-1: Demands for Potable and Raw Water - Actual</b>			
<b>Use Type</b>	<b>2015 Actual</b>		
	<b>Additional Description</b>	<b>Level of Treatment</b>	<b>Volume (AF)</b>
Single Family		Drinking Water	9,662
Multi-Family		Drinking Water	3,870
Commercial		Drinking Water	1,783
Industrial		Drinking Water	171
Institutional/Governmental		Drinking Water	517
Landscape Irrigation		Drinking Water	1,950
Agricultural Irrigation		Drinking Water	3,017
Sales/Transfers/Exchanges to other agencies	Sales to Rincon customers	Drinking Water	384
Losses		Drinking Water	508
<b>TOTAL</b>			<b>21,862</b>

### 3.3 Projected Water Use

For the 2015 UWMPs, DWR encourages water suppliers to coordinate with local planning agencies to obtain information that can be used to determine demand projections based on land use data. The City of Escondido obtained data from SANDAG to employ a land-use based methodology for projecting future water demands for the majority of its water use sectors. A secondary methodology was also employed, because land use data was not available for all of the water use sectors. Information about these methodologies is provided in the following sections.

#### 3.3.1 Land Use-Based Methodology

To project demands into the future, the City used a land use-based approach that began with obtaining land use projection data from SANDAG’s Series 13 Growth Forecast. The data provided from SANDAG included projections of the anticipated acreage for a variety of land uses within the City’s water service area from 2012-2040. For example, this data showed that in 2020, single family land uses would account for 8,223 acres in the City’s water service area, and that this acreage would grow to 8,918 acres by 2040.

Once the SANDAG data was obtained, the City reconciled land use types provided by SANDAG with water use types commonly used by the City and shown in **Table 3-2**. The reconciliation between SANDAG land use data and the City’s water use types is shown in **Table 3-3**. Please note that SANDAG land use data did not account for the use categories of agricultural, sales/transfers/exchanges to other agencies (sales to Rincon customers), or water losses. Therefore, projections for these three use categories were calculated separately, as described further in Section 3.3.2.

**Table 3-3: Reconciled Water Use and Land Use Categories**

Reconciled Category Used in 2015 UWMP	Water Use Type Used by City of Escondido	Land Use Category Provided in SANDAG Forecast
Single-Family Residential	Single-Family Residential	Low Density Single Family Single Family
Multi-Family Residential	Multi-Family Residential	Multi-Family Mobile Home Other Residential
Commercial	Commercial	Mixed Use Commercial Office
Industrial	Industrial	Industrial
Institutional/Governmental	Schools Institutional Church	Schools
Agricultural Irrigation <sup>1</sup>	Agricultural Irrigation	N/A
Landscape Irrigation	Landscape Irrigation	Roads Parks
Sales/Transfers/Exchanges to other agencies <sup>1</sup>	Sales to Rincon Customers	N/A
Losses <sup>1</sup>	N/A	N/A

<sup>1</sup> Not calculated with land use method, because land use data from SANDAG was not available

2012 was selected as the year best suited for establishing water use factors, because acreage data was available from SANDAG, and water use was near average levels. To calculate the water use factor, water demands (in AF) for 2012 by reconciled category were divided by the corresponding land use (in units of acres) to get a water use factor in units of AF/acre. For example, per the SANDAG data, there were 7,621 acres of low-density single family and single-family residential land uses in 2012 (55% of total), and per data from the City of Escondido, low-density single family and single-family residential water use totaled 9,473 AF in 2012 (58% of total). Therefore, the water use factor for single-family residential uses was calculated as 1.2 AF/acre. In 2020, single-family residential land use is projected to be 8,223 acres. Applying the water use factor to the projected land use acreage, single-family residential uses are projected to have potable demands of 10,220 AF in 2020.

This methodology takes into account both active and passive conservation. In this context, passive conservation savings are derived from the implementation of various regulations and codes, and active conservation savings are those resulting from the implementation of demand management programs (refer to *Chapter 8 Demand Management Measures*). Given that the water use factor was calculated based upon water use from the year 2012, the demand projections take into account passive and conservation savings that were being implemented in that year, and assume that conservation would remain relatively constant through 2040 in normal hydrologic years.

### 3.3.2 Additional Methodology

As shown in **Table 3-3**, land use data was not available to project demands for agricultural customers, sales to Rincon customers (sales/transfers/exchanges category,) or for water losses.

Agricultural water demands were projected based on information from the *Draft San Diego Regional Agricultural Water Management Plan*, which demonstrates that on average, agricultural water demand is anticipated to account for approximately 16% of overall water use. Land use data from SANDAG only includes “developed acres”, and therefore does not include projections about acreage for agriculture. Given the City’s history of agricultural water use and the importance that agriculture has to the local economy, it is assumed that these uses will remain fairly consistent into the future.

Deliveries to Rincon customers were projected based on an assumption that these sales would be 2% of total potable demands. This assumption is based on water delivery information from the City of Escondido for the period of 2011-2015.

Water losses were calculated as 5% of the total potable water use, based on 2005 water losses. The 2005 water loss value of 5% was used in lieu of the more recent FY2014 water loss numbers (3%), because demands were depressed in 2014 due to the drought, and therefore were not considered representative of average conditions.

### 3.3.3 Projected Total Demands

**Table 3-4** presents the projected potable water demands, by customer category, calculated as described in Section 3.3.1 and 3.3.2.

**Table 3-4: Projected Potable Water Demand**

DWR Table 4-2: Demands for Potable and Raw Water - Projected						
Use Type	Additional Description	Projected Water Use (AF)				
		2020	2025	2030	2035	2040
Single Family		10,220	10,577	10,793	10,927	11,084
Multi-Family		3,994	4,023	4,119	4,166	4,184
Commercial		1,980	1,992	2,004	2,019	2,020
Industrial		221	219	216	217	217
Institutional/Governmental		724	726	728	731	731
Landscape Irrigation		536	536	536	536	536
Agricultural Irrigation		2,485	1,917	1,235	1,276	1,313
Losses		1,245	1,271	1,292	1,305	1,316
Sales/Transfers/Exchanges to other agencies	Deliveries to Rincon customers	498	508	517	522	527
<b>TOTAL</b>		<b>21,903</b>	<b>21,769</b>	<b>21,440</b>	<b>21,699</b>	<b>21,928</b>

As described in *Section 5, System Supplies*, in addition to potable demands, there are demands for non-potable recycled water in the City’s water service area. Adding the anticipated non-potable demands to the potable demands provides total demands for the City from 2020-2040 (refer to **Table 3-5**).

As a cross-check, and to ensure that the City will be compliant with SBx7-7 regulations (refer to *Chapter 4 Baselines and Targets*), the gallons per capita per day projections for the City’s water service area from 2020-2040 were calculated, using total water use estimates (including recycled water). As shown in **Table 3-5**, water demands in the City’s service area are anticipated to be below the SBx7-7 target of 182 GPCD from 2020-2040 even if the City does not include non-potable water sources in its future supply mix, or convert potable demands to recycled water demands.

A second cross-check was completed to determine the anticipated amount of water that is saved due to conservation. For this cross-check the City of Escondido compared the baseline demands that were projected for the City’s service area by SDCWA in its 2015 UWMP to the total potable demands projected by the City’s 2015 UWMP. The difference between the baseline and the total potable demands is equivalent to anticipated conservation savings, as shown in **Table 3-5**.

**Table 3-5: Projected Demands**

	2020	2025	2030	2035	2040
Total Baseline Demands	27,012	28,933	29,953	31,005	32,216
Anticipated Conservation Savings	6,119	8,272	9,703	10,551	11,576
Projected Potable Water Demands	21,903	21,769	21,440	21,699	21,928
Projected Non-Potable Water Demands	3,000	3,650	4,400	4,400	4,400
<b>Total Water Demands (AFY)</b>	<b>24,903</b>	<b>25,419</b>	<b>25,840</b>	<b>26,099</b>	<b>26,328</b>
Projected Population	150,260	152,827	157,001	159,541	160,388
Projected Maximum GPCD	148	148	147	146	147

**Table 3-6** provides a summary overview of the potable and recycled water demand projections, based upon the format required by DWR for 2015 UWMPs. These water use projections are also shown in **Figure 3-1**.

**Table 3-6: Summary of Current and Projected Water Demand**

DWR Table 4-3: Total Water Demands						
	2015	2020	2025	2030	2035	2040
Potable and Raw Water (AF)	21,862	21,903	21,769	21,440	21,699	21,928
Recycled Water Demand (AF)	576	3,000	3,650	4,400	4,400	4,400
<b>TOTAL WATER DEMAND (AF)</b>	<b>22,438</b>	<b>24,903</b>	<b>25,419</b>	<b>25,840</b>	<b>26,099</b>	<b>26,328</b>

### 3.3.4 Estimating Future Water Savings

*CWC 10631*

*(e)(4)(A) If available and applicable to an urban water supplier, water use projections may display and account for the water savings estimated to result from adopted codes, standards, ordinance, or transportation and land use plans identified by the urban water supplier, as applicable to the service area*

*(B) To the extent that an urban water supplier reports the information described in subparagraph (A), an urban water supplier shall do both of the follow: (i) Provide citations of the various codes, standards, ordinance, or transportation and land use plans utilized in making the projections. (ii) Indicate the extent that the water use projections consider savings from codes, standards, ordinances, or transportation and land use plans. Water use projections that do not account for these water savings shall be noted of the fact.*

DWR requires urban water suppliers to indicate whether or not future water savings are included in water use projections. As described above, the water use projections are based on a water use factor from 2012; therefore, the projections assume that water savings achieved in recent years will continue, and that ongoing conversions to recycled water will further reduce potable demands. Given that additional conservation savings are anticipated to accrue due to regulation changes and other factors, the demand projections in this analysis are considered conservative, and appropriate for long-term planning purposes. **Table 3-7** explains the inclusion of water savings and lower income residential demands in the City’s 2015 UWMP. Information in Section 3.3.6 discusses how the lower income demands were calculated.

**Table 3-7: Inclusion in Water Use Projections**

DWR Table 4-5: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections?	Yes
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc. utilized in demand projections are found.	Section 3.3.1 includes land use-based methodology used to calculate projected demands
Are Lower Income Residential Demands Included In Projections?	Yes

### 3.3.5 Low-Income Residential Water Use

The City’s General Plan includes policies intended to help pursue opportunities for raising the median household income (MHI) in neighborhoods throughout the City. Disadvantaged communities (DACs), as defined by DWR, are communities with a MHI that is 80% or less than the statewide MHI. DAC mapping for the San Diego region indicates that the majority of the City meets DWR’s definition of DAC, with a MHI at or below \$48,875 (based on 2009-2013 American Community Survey data). The MHI for the City as a whole is estimated at \$56,259, per SANDAG’s estimates using 2010 Census data.

The City’s General Plan, which projects housing out to 2030, has identified low income households as those earning 80% or less of the area-wide MHI. Based on the General Plan, 46%

were Extremely Low, Very Low, or Low income between 2005 and 2009. In this 2015 UWMP, the term “low-income” refers to all three of these classifications from the City’s General Plan. The General Plan indicates that 19,598 households were considered low-income in 2000. Total housing is anticipated to grow from 45,050 in 2000 to 52,778 in 2030, with housing in 2010 equal to 48,044 units. Assuming that the current proportion of low-income households continues into the future, the City anticipates 26,578 households will be low-income by 2030 (see **Table 3-8**). No information is available regarding how many of these households are multi-family versus single-family households. **Table 3-8** assumes that the proportion of low-income households that are multi-family and those that are single-family are consistent with the overall ratio of multi-family to single-family households. Projected low-income water use, which is already incorporated into overall projected water use, is shown in **Table 3-8**.

**Table 3-8: Low Income Households and Projected Water Use**

	2010	2020	2030
Total Households <sup>1</sup>	48,044	50,287	52,778
Low Income Households <sup>2</sup>	22,100	23,132	24,278
Low-Income Multi-Family Water Use (AFY) <sup>3</sup>	2,026	1,837	1,895
Low-Income Single-Family Water Use (AFY) <sup>3</sup>	4,888	4,701	4,965
<b>Total Low-Income Water Use</b>	<b>6,914</b>	<b>6,539</b>	<b>6,860</b>

<sup>1</sup> City of Escondido, 2012

<sup>2</sup> Estimated as 46% of total households, based on the City’s General Plan

<sup>3</sup> Estimated as 46% of residential water demands, based on proportion of households qualified as low income in the General Plan

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## Chapter 4 Baselines and Targets

The Water Conservation Act of 2009 was signed into law in November 2009 as part of a comprehensive water legislation package. Known as SBX7-7, the legislation sets a goal of achieving a 20% reduction in urban per capita water use statewide by 2020. This chapter establishes the City of Escondido's baseline periods and water use targets in accordance with SBX7-7, and confirms that the City is in compliance with the 2015 interim target.

### 4.1 Baseline Periods

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#### **CWC 10608.12**

(b) "base daily per capita water use" means the following:

(1) The urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(3) For the purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period that ends no earlier than December 31, 2007 and no later than December 31, 2010.

#### **CWC 10608.20**

(e) An urban retail supplier shall include in its urban water management plan due in 2015... the baseline daily per capita water use... along with the bases for determining those estimates, including references to supporting data.

(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan required pursuant to Part 2.6 (commencing with Section 10610).

#### **CWC 10608.22**

Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.

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Senate Bill SBX7-7 requires all water suppliers to increase per capita water use efficiency by 20% by 2020. Because the legislation requires efficiency on a per capita basis, figures associated with SBX7-7 are generally provided in terms of GPCD. The manner in which SBX7-7 compliance is calculated is outlined in the DWR document entitled, *Methodologies for Calculating Baseline and Compliance Urban per Capita Water Use*.

DWR developed the technical methodologies document to guide the consistent development of baseline per capita water use and water use reduction targets across California. The SBX7-7 legislation requires the calculation of four primary figures to determine compliance:

1. 2010 Base Daily per Capita Water Use: this provides the water use baseline against which compliance with the legislation is measured, and can be based on a 10-year or a 15-year baseline period.
2. 2020 Water Use Target: this is the agency’s target water use by the year 2020
3. 2015 Interim Water Use Target: the mid-point between the 2010 baseline and the 2020 water use target, which is used as an interim target against which to evaluate compliance in 2015
4. 2020 Target Confirmation: this is a five-year calculation that is used to ensure an agency’s water use target meets minimum standards established by DWR

**Table 4-1** provides the base period ranges use to determine the City’s baseline water use and target confirmation.

**Table 4-1: Baseline Period Ranges**

DWR SB X7-7 Table-1: Baseline Period Ranges			
Baseline	Parameter	Value	Units
10- to 15-year baseline period	2008 total water deliveries	29,339	Acre Feet
	2008 total volume of delivered recycled water	3,517	Acre Feet
	2008 recycled water as a percent of total deliveries	10.70%	Percent
	Number of years in baseline period <sup>1,2</sup>	10	Years
	Year beginning baseline period range	1999	
	Year ending baseline period range	2008	
5-year baseline period	Number of years in baseline period	5	Years
	Year beginning baseline period range	2003	
	Year ending baseline period range	2007	

<sup>1</sup> 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.

<sup>2</sup> The Water Code requires that the baseline period is between 10 and 15 years. However, DWR recognizes that some water suppliers may not have the minimum 10 years of baseline data.

## 4.2 Service Area Population

### *CWC 10608.20*

*(f) When calculating per capita values for the purposes of this chapter, an urban retail water supplier shall determine population using federal, state, and local population reports and projections.*

### *CWC 10644*

*(a)(2) The plan... shall include any standardized forms, tables, or displays specified by the department.*

As explained in *Chapter 2 System Description*, the City of Escondido’s water service area does not align with the boundary of the incorporated City of Escondido. Therefore, the water service area is not consistent with a census designated place (CDP). Per the 2015 UWMP Guidebook, the City’s service area population was calculated using DWR’s online population tool, because population data from the Department of Finance is only available for CDPs. The population figures for the City’s water service area from 1995-2010, as calculated with DWR’s online population tool, are shown in **Table 4-2**. The population figures shown in **Table 4-2** were used to update the City’s baseline per capita water use and water use targets.

**Table 4-2: 1995-2010 City of Escondido Water Service Area Population**

Year	Population
1995	108,884
1996	110,879
1997	112,911
1998	114,980
1999	117,087
2000	117,654
2001	120,432
2002	121,433
2003	123,025
2004	125,135
2005	125,647
2006	126,451
2007	128,203
2008	128,768
2009	129,035
2010	129,350

Source: DWR Population Tool, March 2016

### 4.3 Baseline Daily per Capita Water Use

*CWC 10608.12*

(b) “Base daily per capita water use” means any of the following:

(1) The urban retail water supplier’s estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

(2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.

To determine the City’s baseline water use, the per capita water use (in terms of GPCD) for each year in the baseline period must be determined. Because the City’s recycled water use in 2008 was greater than 10% of total water deliveries, the City may use a 10-year or 15-year baseline period (see **Table 4-1**). However, the City’s analysis demonstrates that the 10-year baseline period from 1999-2008 is the most favorable period. As shown in **Table 4-3**, the average GPCD for this period was 227 GPCD, which is the City’s selected 10-year baseline.

**Table 4-3: 10-Year Baseline**

Year	Population	Gross Water Use	GPCD
<b>10-Year Baseline – Gross Water Use</b>			
1999	117,087	28,752	219
2000	117,654	31,489	239
2001	120,432	30,417	225
2002	121,433	33,304	245
2003	123,025	31,387	228
2004	125,135	35,171	251
2005	125,647	29,503	210
2006	126,451	31,495	222
2007	128,203	32,578	227
2008	128,768	29,339	203
<b>10-Year Average Baseline GPCD</b>			<b>227</b>

## 4.4 2020 Target

### *CWC 10608.20*

*(e) An urban retail water supplier shall include in its urban water management plan due in 2010. . . urban water use target, interim urban water use target, ...along with the bases for determining those estimates, including references to supporting data (10608.20(e)).*

*(g) An urban retail water supplier may update its 2020 urban water use target in its 2015 urban water management plan...*

### *CWC 10608.22*

*Notwithstanding the method adopted by an urban retail water supplier pursuant to Section 10608.20, an urban retail water supplier's per capita daily water use reduction shall be no less than 5 percent of base daily per capita water use as defined in paragraph (3) of subdivision (b) of Section 10608.12. This section does not apply to an urban retail water supplier with a base daily per capita water use at or below 100 gallons per capita per day.*

SBX7-7 requires urban water suppliers to establish a per capita water use target for 2020, which can be calculated by using one of four methods:

- **Method 1:** The per capita water use that is 80% of the urban retail water supplier's baseline per capita daily water use using a 10-year average starting no earlier than 1995.
- **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 CII use.
- **Method 3:** 95% of the applicable state hydrologic region target, as set forth in the DWR Guidebook. The City, 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 that develops the target based on indoor residential, CII, outdoor, and water loss components.

The City has selected to use **Method 1**, which is calculated based on the selected 10-year baseline of 227 GPCD (refer to **Table 4-3**). As shown in **Table 4-4**, the City's selected 2020 target is 182 GPCD.

**Table 4-4: Baselines and Targets Summary**

DWR Table 5-1: Baselines and Targets Summary					
Baseline Period	Start Year	End Year	Average Baseline GPCD	2015 Interim Target	Confirmed 2020 Target
10 Year	1999	2008	227	204	182
5 Year	2003	2007	228		

After selecting the 2020 water use target, all agencies must complete an additional calculation to confirm that the target meets a minimum threshold established by DWR. The minimum reduction ensures that an agency’s 2020 water use reduction is less than 95% of an established 5-year baseline. As shown in **Table 4-5**, the City’s 5-year baseline from 2003-2007 is 228 GPCD. Therefore, the City’s minimum reduction target is 95% of the 5-year baseline GPCD, or 216 GPCD. Because the City’s 2020 target of 182 GPCD is lower than the minimum reduction target of 216 GPCD, the calculation confirms that the 2020 target of 182 GPCD meets DWR’s minimum threshold.

**Table 4-5: Confirm Minimum Reduction for 2020 Target**

<b>DWR SBX7-7 Table 7-F: Confirm Minimum Reduction for 2020 Target</b>			
5-Year Baseline GPCD	Maximum 2020 Target	Calculated 2020 Target	<b>Confirmed 2020 Target</b>
228	216	182	<b>182</b>

#### 4.5 2015 Compliance Daily per Capita Water Use

**CWC 10608.12**

*(e) “Compliance daily per-capita water use” means the gross water use during the final year of the reporting period...*

**CWC 10608.24**

*(a): Each urban retail water supplier shall meet its interim urban water use target by December 31, 2015.*

**CWC 10608.20**

*(e): An urban retail water supplier shall include in its urban water management plan due in 2010... compliance daily per capita water use, along with the bases for determining those estimates, including references to supporting data.*

Upon calculating the baseline and 2020 target, an agency must also establish a 2015 interim target. The interim target is the value halfway between the 10-year baseline (227 GPCD) and the confirmed 2020 target (182 GPCD). Therefore, for Escondido, the 2015 interim target is 204 GPCD. As described in *Chapter 3 System Demands*, the City’s 2015 potable water use was 21,879 AFY or 19,532,312 gallons per day. Dividing the 2015 water use figure by the City’s water service area population in 2015 (137,941) shows that the City’s per capita 2015 water use is 142 GPCD. As shown in **Table 4-6**, the City of Escondido is in compliance with the 2015 water use target.

**Table 4-6: 2015 Compliance**

DWR Table 5-2: 2015 Compliance				
Actual 2015 GPCD*	2015 Interim Target GPCD*	Adjustments to 2015 GPCD	2015 GPCD*	Did Supplier Achieve Targeted Reduction for 2015?
142	204	N/A	142	Yes

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

## 4.6 Meeting the 2020 Target

Since 2008, the City’s per capita water use has been experiencing a decline. The water use reduction can be partially attributed to increased retail water cost, an economic recession, enhanced conservation efforts, and drought conditions. The City’s per capita water use in 2015 was 142 GPCD, which is already below the 2020 water use target of 182 GPCD. Water use is expected to remain at relatively low levels due to the current drought and the statewide mandatory water use restrictions currently in place. However, water use is anticipated to rebound to some degree as the drought subsides and drought-related mandatory water use restrictions are rescinded.

The City’s approach to meeting the 2020 per capita water use target has several elements that are detailed in *Chapter 8 Demand Management Measures*. In summary, the City will continue to implement demand management measures to increase water use efficiency, especially in landscaping and other outdoor uses, increase saturation into the customer base of low flow plumbing devices and fixtures, increase the use of recycled water, and increase public information and education. The City will continue to implement existing and additional demand management measures as necessary to ensure compliance with the 2020 water use target of 182 GPCD.

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## Chapter 5 System Supplies

This chapter discusses the City's sources of water supply, the quality of the supply, exchanges and transfers of water, and new supply opportunities.

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### **CWC 10631**

*(b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a).*

*(b) If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan. (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater.*

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

*(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater as a long-term supply.*

### **CWC 10633**

*Provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area.*

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## 5.1 Existing Potable Water Supplies

Currently, the City has two potable (drinking water) supplies: purchased water and local surface water. These existing supplies, which are discussed in detail in the following sections, have historically accounted for approximately 80% and 20% of the City's total drinking water supplies, respectively.

### 5.1.1 Purchased Water

On average, the City purchases approximately 80% of its water from SDCWA. Supplies purchased from SDCWA are largely imported water, which is conveyed into the San Diego region via facilities owned by the MWD and SDCWA. The City joined SDCWA in order to acquire the right to purchase and distribute imported water throughout its service area. SDCWA has 24 member agencies, including the City, and is the regional wholesaler in San Diego County.

### **Metropolitan Water District of Southern California**

MWD was created in 1928 following the passage of the Metropolitan Water District Act. The purpose of MWD is to provide supplemental water for cities and communities on the south coastal plain of California. MWD has 26 member agencies, including SDCWA, and covers an area that includes all, or portions, of Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties. MWD serves as a water wholesaler, and provides water to its member agencies from both the Colorado River and the State Water Project (SWP). MWD's water supplies and management programs are discussed in its 2015 Regional Urban Water Management Plan (MWD, 2016).

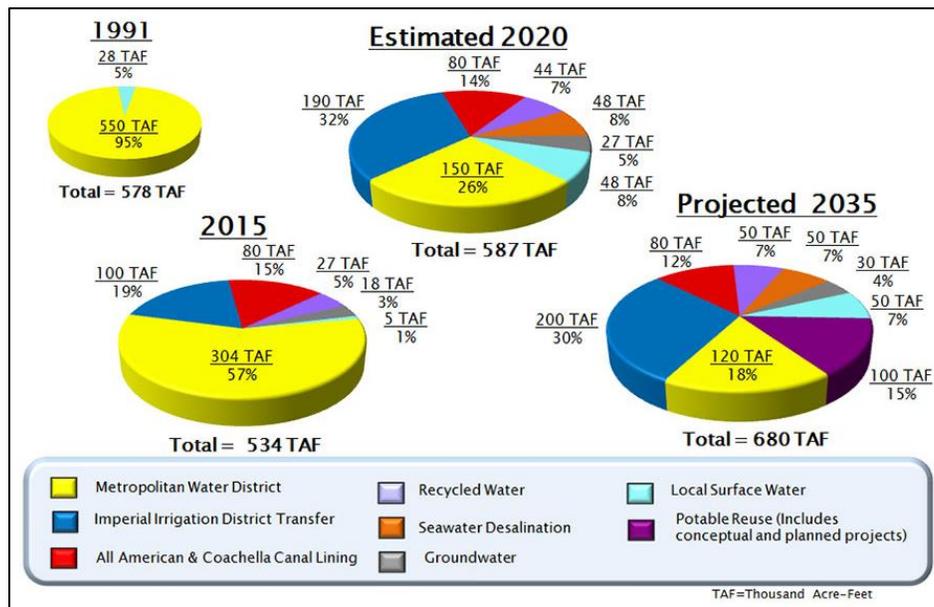
### San Diego County Water Authority

SDCWA was organized on June 9, 1944 under the County Water Authority Act for the express purpose of importing Colorado River water into San Diego County. SDCWA annexed to MWD in 1946, and is now MWD’s largest customer.

The City is one of SDCWA’s 24 member agencies. Each member agency is independent and is represented on the Board of Directors, setting local policies and water pricing structures. The representatives on the Board of Directors are appointed by each member agency, and the number of representatives for each agency is based on a ratio of each member’s assessed valuation compared to the total of all member agencies.

Member agency status entitles the City to directly purchase water from SDCWA on a wholesale basis. The City also looks to SDCWA to ensure, to the best of its ability, that adequate amounts of water will be available for purchase to satisfy future potable water requirements. SDCWA has made a concerted effort to work with its member agencies to increase water supply reliability in the San Diego region through supply diversification. **Figure 5-1** shows SDCWA’s current and future projected supply mix in terms of thousand acre-feet (TAF). SDCWA’s water supplies and management programs are discussed in detail in its 2015 UWMP (SDCWA, 2016).

**Figure 5-1: San Diego County Water Authority Supply Diversification**



#### 5.1.2 Local Surface Water

The City, in conjunction with Vista Irrigation District (VID), operates facilities for local surface water from the San Luis Rey River watershed. Local surface water is stored on a seasonal basis in Lake Henshaw, Lake Wohlford, and Lake Dixon reservoirs. This water is delivered to the City via the Escondido Canal, the Bear Valley Hydroelectric plant, and associated pipelines. Local surface water is shared between the City and VID, and accounts for approximately 20% of the

City's average water demand. However, the amount of available local surface water varies year to year with hydrologic patterns; in wet years, local surface water can provide up to 30% of the City's total supplies.

The City is entitled to all of the water from Lake Dixon, a portion of the water from Lake Henshaw, and all of the water derived from runoff in Lake Wohlford. The primary facilities associated with local surface water supplies include the Warner Basin aquifer, Lake Henshaw, Warner Ranch Well Field, Escondido Canal, Lake Wohlford, Dixon Lake, Bear Valley Pipeline, and the Escondido-Vista Water Treatment Plant (Escondido-Vista WTP).

### 5.1.3 Water Quality

The Escondido-Vista WTP treats all raw water from SDCWA and local sources to drinking water levels before the water is delivered to customers. Water treatment processes include coagulation, sedimentation, filtration, and disinfection to ensure inactivation and removal of pathogenic organisms. Water enters the Escondido-Vista WTP through a 54-inch diameter pipe. Once in the plant, chemicals are added to the water to assist in the treatment process. After chemical treatment and removal of organic components and suspended materials, the water is filtered through beds of anthracite coal and sand supported by graded rock. Bacteriological, physical, and chemical tests are performed on water samples taken from the source and from throughout the distribution system to assure the water that is delivered to customers meets all relevant water quality parameters associated with protecting human health. Given the nature of treatment and testing that is conducted, potable water supply availability is not expected to be impacted by water quality issues.

## 5.2 Groundwater

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### *CWC 10631*

*(b) ...If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:*

*(1) A copy of any groundwater management plan adopted by the urban water supplier... or any other specific authorization for groundwater management.*

*(2) ...For basins that a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater*

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Minimal groundwater sources are found throughout the City's service area. Groundwater wells located throughout the City's service area are privately owned and maintained. The City does not participate in any groundwater withdrawal, storage, or replenishment programs, as shown in **Table 5-1**.

**Table 5-1: Groundwater Volume Pumped**

DWR Table 6-1: Groundwater Volume Pumped	
<input checked="" type="checkbox"/>	Supplier does not pump groundwater.

### 5.3 Storm Water

The City does not currently divert dry-weather storm water in urbanized areas for beneficial reuse on a large scale. The City encourages individuals to maximize the benefits of storm water through programs such as landscape conversions and rebates for rain barrels. The City is also exploring green street standards which will, in part, encourage roadway landscaping that takes advantage of storm water resources.

### 5.4 Wastewater and Recycled Water

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**CWC 10633**

*The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:*

- (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.*
  - (b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.*
  - (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.*
  - (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, indirect potable reuse, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.*
  - (e) 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 pursuant to this subdivision.*
  - (f) A description of actions, including financial incentives, 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.*
  - (g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.*
-

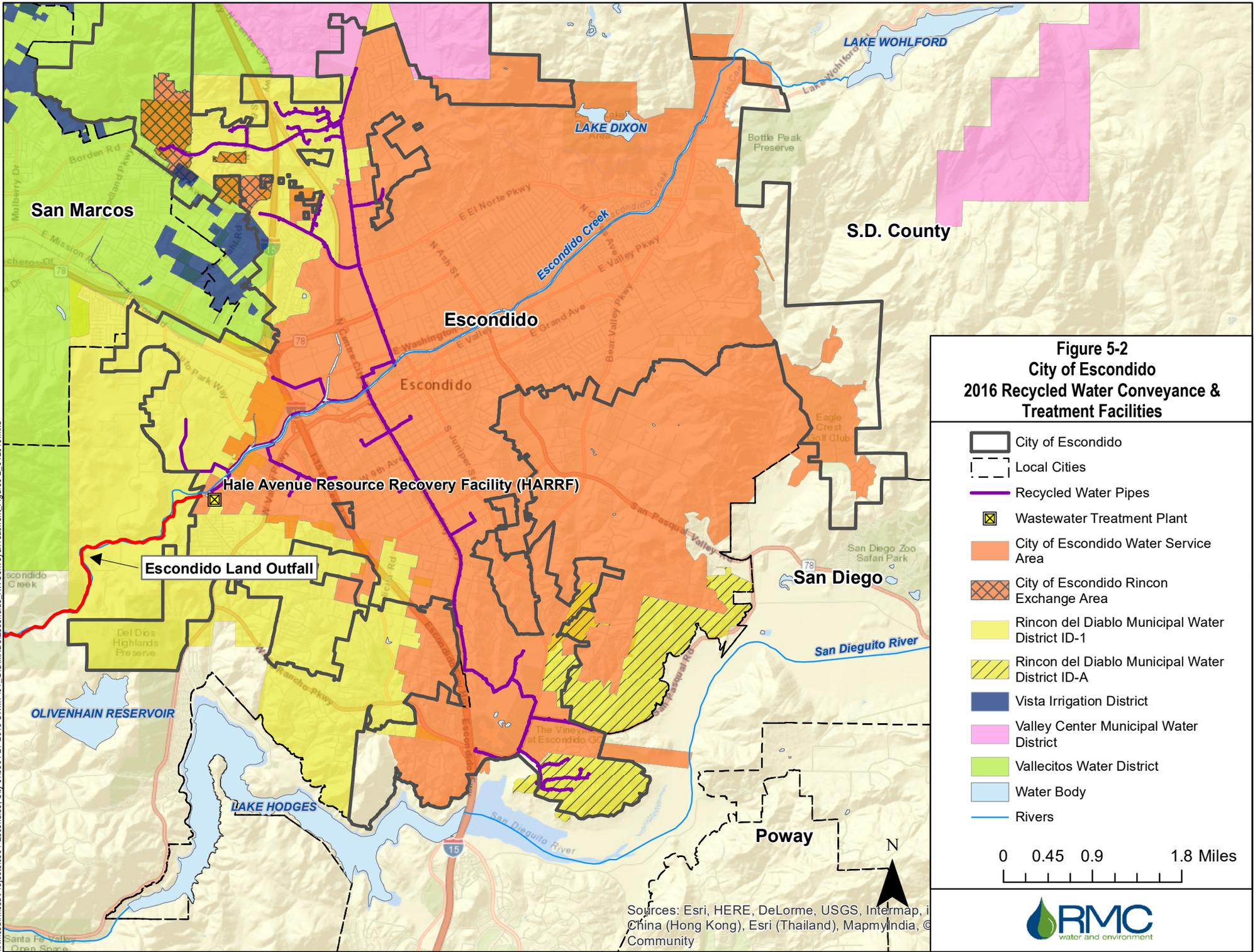
### 5.4.1 Wastewater Collection and Treatment Facilities

The City owns and operates its own wastewater treatment and disposal facility. The City's HARRF is an 18.0 mgd capacity secondary-treatment wastewater treatment facility that is located in the southwest section of the City, and includes conventional treatment facilities and associated operations and maintenance buildings (see **Figure 5-2**). The HARRF treats influent from the entire City of Escondido and the City of San Diego's Rancho Bernardo Community. The City manages wastewater collection and treatment through a network of lift stations and sanitary sewer mains. Elevation differences require flows to be pumped to the HARRF. The City of San Diego maintains the collection system from Rancho Bernardo to the HARRF.

The HARRF currently produces 9.0 mgd of tertiary treated recycled water for landscape and industrial use. In the future, the City will continue to produce recycled water and utilize much of that water for distribution within the City's service area, which will help offset the need for additional potable water supplies. Additional treated recycled water produced at the HARRF is sold to other agencies, and provides a source of revenue to the City.

Water that is treated at the HARRF, but is not beneficially reused, is disposed of through the Escondido Land Outfall. The land outfall is approximately 14 miles long, and connects to the San Elijo Ocean Outfall, which is shared with the San Elijo Joint Powers Authority (JPA), and then to the Pacific Ocean. The effluent exits the pipeline approximately 1.5 miles offshore at a depth of 110-feet.

**Table 5-2** shows the amount of wastewater collected in 2015 in the City's water service area. This number was calculated as 60% of the total water demands within the City's water service area for 2015, which was shown as the average sewer return rate reported in the City's *2012 Wastewater Master Plan* (City of Escondido, 2012c). **Table 5-3** provides the volumes of wastewater treated, discharged, and recycled within the City's service area in 2015. The table reports the total amount of wastewater collected and treated at the HARRF, as this is the maximum amount of collected wastewater that is potentially available to the City's water service area. The amount of recycled water reported in **Table 5-3** refers to the amount recycled within the City's water service area.



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**Table 5-2: Wastewater Collected within the City’s Water Service Area in 2015**

<b>DWR Table 6-2: Wastewater Collected Within Service Area in 2015</b>						
Wastewater Collection			Recipient of Collected Wastewater			
Name of Wastewater Collection Agency	Wastewater Volume Metered or Estimated?	Volume of Wastewater Collected from UWMP Service Area 2015 (AF)	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 Escondido	Metered	11,388	City of Escondido	HARRF	Yes	No
<b>Total Wastewater Collected from Service Area in 2015:</b>		<b>11,388</b>				

**Table 5-3: Wastewater Treatment and Discharge from the HAARF within the City’s Water Service Area in 2015**

<b>DWR Table 6-3: Wastewater Treatment and Discharge Within Service Area in 2015</b>									
Wastewater Treatment Plant Name	Discharge Location Name or Identifier	Discharge Location Description	Method of Disposal	Does This Plant Treat Wastewater Generated Outside the Service Area?	Treatment Level	2015 volumes (AF)			
						Wastewater Treated	Discharged Treated Wastewater	Recycled Within Service Area	Recycled Outside of Service Area
HARRF	Escondido Land Outfall	The land outfall connects to the San Elijo Ocean Outfall	Land disposal to ocean	Yes	Secondary	11,388	10,858	0	0
HARRF	Recycled Water Customers	Recycled Water Customers	Other - Reuse	Yes	Tertiary	576	0	576	0
<b>Total</b>						<b>11,964</b>	<b>10,858</b>	<b>576</b>	<b>0</b>

### 5.4.2 Recycled Water

Water recycling, defined as the treatment and disinfection of municipal wastewater to provide additional water supply, is an important component of Southern California's water resources. Non-potable reuse is the term applied to recycled water that is treated for non-drinking water purposes such as filling lakes, ponds, and ornamental fountains; irrigating parks, campgrounds, golf courses, freeway medians, community green belts, school athletic fields, crops, and nursery stock; and controlling dust at construction sites. Recycled water can also be used in certain industrial processes and for flushing toilets and urinals in certain nonresidential buildings. However, current regulations allow only new buildings to be dual-plumbed for this specific use. Additional uses for recycled water are being identified and approved as local agencies, regulators, and customers become more comfortable with its use.

The City began serving recycled water to customers in 2004. Since 2004, the City has constructed treatment facilities, pumping stations, reservoirs, and pipelines. In certain circumstances, the City has required developers to install pipelines within their projects for distribution of recycled water. The largest existing user of recycled water in the City's sewer service area is Palomar Energy Center, a water customer of Rincon. Other recognized sites using recycled water for irrigation include local golf courses and schools. In addition, recycled water is also supplied to parks, median strips, shopping areas, the common areas of numerous homeowners associations, and industrial parks. **Table 5-4** provides the current and projected recycled water direct beneficial uses within the City's water service area.

In the future, the City will continue to produce recycled water and utilize much of that water for distribution within the City's water service area, which will help offset the need for additional potable water supplies. Recycled water master planning efforts demonstrate that there is sufficient demand for all tertiary water that can be produced from the HARRF. The HARRF and its distribution infrastructure are planned to expand incrementally to increase production as customer demand increases in future years.

In addition to non-potable uses, wastewater can be treated by using advanced water purification technology to produce water that can be used for potable (drinking water) purposes. The City of Escondido recently completed a Feasibility Study for its Potable Reuse Program that outlines a methodology for implementing potable reuse in the City's service area by 2030. Potable reuse may take place indirectly via surface water augmentation where advanced treated water would be blended with reservoir water, treated again, and then distributed as drinking water. The City is also exploring direct potable reuse, whereby advanced treated water would be treated at a water treatment plant and distributed into the potable water system. The City is working very closely with SDCWA, the San Diego Regional Water Quality Control Board, the State Water Resources Control Board, and the County Department of Health Services in pursuing and developing its potable reuse program. Anticipated potable reuse projections are also shown in **Table 5-4**.

**Table 5-4: Current and Projected Recycled Water and Reuse**

<b>DWR Table 6-4: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area</b>							
Name of Agency Producing (Treating) the Recycled Water:		City of Escondido					
Name of Agency Operating the Recycled Water Distribution System:		City of Escondido					
Beneficial Use Type	Level of Treatment	2015	2020	2025	2030	2035	2040
Agricultural irrigation	Tertiary	144	750	913	1,100	1,100	1,100
Landscape irrigation	Tertiary	288	1,500	1,825	2,200	2,200	2,200
Industrial use	Tertiary	144	750	913	1,100	1,100	1,100
Potable Reuse	Advanced	0	0	0	4,000	5,000	5,000
<b>Total (AF):</b>		<b>576</b>	<b>3,000</b>	<b>3,650</b>	<b>8,400</b>	<b>9,400</b>	<b>9,400</b>

Table 5-5 presents the differences between the 2010 Plan projections for 2015 recycled water use and the actual 2015 recycled water use. The differences in actuals compared to projected numbers reflect the impact of a down economy on the infrastructure additions and private development projects that had been planned, as well as the shift towards future planning for potable reuse.

**Table 5-5: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual**

<b>DWR Table 6-5: 2010 UWMP Recycled Water Use Projection Compared to 2015 Actual</b>		
Use Type	2010 Projection for 2015 (AF)	2015 Actual Use (AF)
Agricultural irrigation	1,825	144
Landscape irrigation	1,825	288
Industrial use	1,150	144
<b>Total</b>	<b>4,800</b>	<b>576</b>

### 5.4.3 City’s Commitment to Recycled Water

The City charges a rate of \$3.85 per thousand gallons (kgal) for recycled water as of March 2016 per Resolution No. 2015-17R.

It is the policy of the City that recycled water shall be used within the jurisdiction wherever its use is economically justified, financially and technically feasible, and consistent with legal requirements, preservation of public health, safety and welfare, and the environment. This policy requires the City to prepare and adopt a Recycled Water Master Plan to define, encourage, and develop the use of recycled water, and to update this plan at a frequency of no less than once every five years.

The City policy, as established in 2009, requires that recycled water be used “after the department has provided to the customer an analysis showing that recycled water, if available, is a cost-effective alternative to potable water and the customer has had a reasonable amount of time, as determined by the director or the director’s designee, to make the conversion to recycled water.” (Escondido Municipal Code 31-230.a.7)

Each year, SDCWA hosts a one-day certification course designed to provide irrigation supervisors with a basic understanding of recycled water. Completion of the Recycled Water Site Supervisor Training fulfills the training requirement as mandated by regulatory authorities. The class provides information to supervisors on the water recycling process, recycled water quality and safety issues, the duties and responsibilities of the supervisor, landscape irrigation fundamentals, maintenance and management, and cross connection control shut-down tests and inspections. Understanding similarities and differences between recycled and potable water is important to the successful operation of a recycled water system.

Methods used by the City to encourage recycled water use are summarized in **Table 5-6**. Given the cost to implement recycled water activities, it is anticipated that financial incentives, including grant and loan funding, will have the largest impact on increasing recycled water use.

**Table 5-6: Methods to Expand Future Recycled Water Use**

DWR Table 6-6: Methods to Expand Future Recycled Water Use		
Name of Action	Planned Implementation Year	Expected Increase in Recycled Water Use (AF)
Financial incentives	Ongoing	2,200
Assist with onsite retrofits	Ongoing	550
Provide ongoing technical assistance to recycled water customers at no charge	Ongoing	550
Ensure recycled water supply reliability even during shortages and planned outages (excluding disaster conditions)	Ongoing	550
Continue proactive public education campaign regarding safety and reliability of recycled water	Ongoing	550
<b>Total</b>		<b>4,400</b>

## 5.5 Seawater Desalination

### *CWC 10631*

*(i) Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater as a long-term supply.*

The City is not a direct participant in the development of desalinated water. The City is a member of SDCWA, which purchases desalinated water from the Claude “Bud” Lewis Carlsbad

Desalination Plant. The desalinated water is then mixed with SDCWA's other water sources and distributed to its member agencies. The City does not purchase desalinated water directly.

## 5.6 Transfer and Exchange Opportunities

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### *CWC 10631*

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

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The City has exchange agreements with four neighboring water agencies, Rincon, Valley Center Municipal Water District, Vista Irrigation District, and Vallecitos Water District, in the event of an emergency.

## 5.7 Future Water Supply Projects

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### *CWC 10631*

*(g) ...The urban water supplier shall include a detailed description of expected future projects and programs... that the urban water supplier may implement to increase the amount of water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.*

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Development of new plans and improvements to existing infrastructure are incorporated in the City's Capital Improvement Program. Water system requirements for proposed development projects are consistent with the City's Recycled Water Master Plan, Wastewater Master Plan, and Water Master Plan. The City is currently considering a variety of projects that would enhance the local supply. The City is actively studying the requirements of developing local potable reuse water supplies, which are anticipated to be implemented by 2030 under the Potable Reuse Program. The City's Potable Reuse Program includes potable reuse (either direct or indirect), expansion of the recycled water system, and additional off-site storage volume for the peak wet-weather effluent disposal management as well as for generating new water resources supply. The City plans to implement the Potable Reuse Program in phases, and in the near-term, is in the process of implementing an expansion of the recycled water distribution system to deliver non-potable recycled water to agricultural customers. This will allow the City to divert discharge flows from the outfall, which is needed due to capacity issues of the Escondido Land Outfall, while reducing demands on potable water use for agricultural irrigation. Additionally, providing a reliable, high-quality, and relatively low cost water source to agricultural growers will improve growers' crop yield and the City's economy.

To accommodate the increase in non-potable and potable reuse as planned under the Potable Reuse Program, the City intends to expand the HARRF to a capacity of 27 mgd for secondary wastewater treatment and 20 mgd for tertiary treatment. The City's expected future water supply projects are presented in **Table 5-7**.

**Table 5-7: Expected Future Water Supply Projects or Programs**

<b>DWR Table 6-7: Expected Future Water Supply Projects or Programs</b>				
Name of Future Projects or Programs	Joint Project with other agencies?	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Agency (AF)
HARRF Expansion for Recycled Water (Phase I)	No	2020	Average Year	2,500
HARRF Expansion for Recycled Water (Phase II)	No	2025	Average Year	650
HARRF Expansion for Recycled Water (Phase III)	No	2030	Average Year	750
Potable Reuse Program (Phase I)	No	2030	Average Year	4,000
Potable Reuse Program (Phase II)	No	2035	Average Year	1,000

## 5.8 Total Water Supplies

Current water supplies for the City from 2015 are shown in **Table 5-8**, and projections in the future for normal water year conditions are presented in **Table 5-9**. As shown in **Table 5-9**, the City plans to increase local supplies by expanding recycled water facilities and implementing potable reuse. These additional supplies will provide a reliable local water source for the City and will assist in reducing dependence on supplies that are purchased from SDCWA, which are largely imported.

**Table 5-8: Water Supplies – Actual**

<b>DWR Table 6-8: Water Supplies — Actual</b>		
Water Supply	2015	
	Actual Volume (AF)	Water Quality
Purchased or Imported Water	21,253	Drinking Water
Surface Water	626	Drinking Water
Recycled Water	576	Recycled Water
<b>Total</b>	<b>22,455</b>	

**Table 5-9: Water Supplies – Projected**

<b>DWR Table 6-9: Water Supplies — Projected</b>					
	Projected Water Supply (AF)				
	2020	2025	2030	2035	2040
	Reasonably Available Volume				
Purchased or Imported Water	14,643	14,509	10,180	9,439	9,668
Surface water	7,260	7,260	7,260	7,260	7,260
Recycled Water	3,000	3,650	4,400	4,400	4,400
Potable Reuse	0	0	4,000	5,000	5,000
<b>Total</b>	<b>24,903</b>	<b>25,419</b>	<b>25,840</b>	<b>26,099</b>	<b>26,328</b>

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## Chapter 6 Water Supply Reliability Assessment

Chapter 6 describes factors that affect the City's water supply reliability by identifying constraints on the City's water sources and comparing total projected water use with expected water supply through 2040. The assessment also addresses supply reliability in a single dry year, and multiple dry years.

### 6.1 Constraints on Water Sources

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#### *CWC 10631*

*(c)(2) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.*

#### *CWC 10634*

*The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.*

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The City's sources of supply are water that is purchased from SDCWA, local surface water, and recycled water. The following sections describe the constraints on the City's purchased supplies, and local supplies.

#### 6.1.1 Purchased Supply Reliability

The City's supplies that are purchased from SDCWA are subject to some factors that could result in inconsistency of supply due to legal, environmental, water quality, or climatic factors. As described in *Chapter 5 System Supplies*, the City receives an average of approximately 80% of its water supplies from SDCWA, and SDCWA supplies include water from the State Water Project (SWP), water from the Colorado River, and alternative supplies such as desalinated seawater.

SWP water is imported from the Sacramento-San Joaquin Bay-Delta (Bay-Delta). There are increasing concerns about the reliability of imported water, particularly from the Bay-Delta, driven by climate change, competing demands, and environmental constraints. Imported water from the SWP may be subject to restrictions during droughts or certain times of the year as a result of legal decisions to maintain minimum flows for environmental needs, or other legal agreements. During recent years, SWP supplies have faced allocations due to drought conditions; the risk of allocation is projected to continue in the next few years. As a part of the 2015 UWMP, SDCWA evaluated the reliability of these supplies and stated that in a normal year, deliveries are anticipated to be 51% of SDCWA's maximum potential allotment, and that in a single dry year scenario, deliveries are anticipated to be 12% of SDCWA's maximum potential allotment.

Colorado River supplies are subject to the Quantification Settlement Agreement (QSA), which may change as a result of legal decisions. Additionally, the Colorado River Basin has been

experiencing a multi-year drought, which has diminished supply storage by 50% with respect to total capacity. Continued drought conditions and climate change impacts may potentially impact Colorado River water supplies. Even with potential changes to the QSA and climate change impacts, Colorado River supplies are considered substantially more secure than SWP supplies. As a part of its Administrative Draft 2015 UWMP, SDCWA evaluated the reliability of these supplies and stated that, based on information from MWD, Colorado River supply availability for an average, single dry, and multiple dry year is 1.20 million AF, which is the maximum Colorado River Aqueduct delivery capacity. This estimate includes water management programs, including SDCWA's transfers and canal lining projects.

SDCWA has been working with its member agencies to diversify its water supply with alternative sources to increase supply reliability. Through these diversification efforts, there is increased chance that the reduced availability of any one supply source would be buffered, because the region would not be reliant on a single supply source. These efforts include canal lining and the Claude "Bud" Lewis Carlsbad Desalination Plant. SDCWA funded a canal lining project for the All-American and Coachella Canals, which conserved water by preventing unplanned loss to incidental recharge. The volume of water conserved by lining a portion of the canal is guaranteed for SDCWA. SDCWA also enabled construction of the Claude "Bud" Lewis Desalination Plant by agreeing to a minimum annual purchase of desalinated water from the facility. SDCWA anticipates that desalinated seawater from the Claude "Bud" Lewis Desalination Plant will meet approximately 10% of the region's potable water demands.

Due to the recent SWP allocations as a result of drought conditions, the majority of imported water supplied by SDCWA is currently Colorado River water. Colorado River water has several water quality issues including salinity, which can impact local water users such as agricultural water users. Raw water purchased from SDCWA is treated at the Escondido-Vista WTP, which substantially reduces water quality issues associated with this water supply.

SDCWA's 2015 UWMP should be consulted for details regarding their actions to ensure consistency of the wholesale water supply.

### **6.1.2 Local Supply Reliability**

The City's local supplies include local surface water and recycled water supplies. Several constraints can impact the City's local supplies.

The City's local surface water supplies are primarily constrained by seasonal and climatic factors. During a year with higher than average precipitation, local surface water can provide the City with approximately 30% of its total supplies. Local surface water is stored in Lake Dixon, Lake Henshaw, and Lake Wohlford reservoirs. An expansion of the capacity at Lake Wohlford is planned. These storage reservoirs provide increased reliability of local surface supplies, keeping available supplies relatively level under drought conditions. Under a multiple dry year, surface water storage can decrease, which places a constraint on local supplies.

The City’s recycled water supplies are relatively reliable, and the amount of recycled water is expected to remain consistent across normal, single dry, and multiple dry years. A constraint on recycled water supplies that the City is addressing is water quality. A large portion of recycled water used in the City’s service area is for agricultural irrigation. Agricultural growers are concerned with the salinity of the recycled water used for agricultural irrigation. The City is addressing this issue by upgrading the HARRF with advanced treatment to improve the water quality of its recycled water.

The City has taken steps to ensure a more reliable water supply is available in the future by implementing advanced treatment at the HARRF for future potable reuse, and encouraging the development of the regional seawater desalination project. With a successful conservation program already in place, the City has also effectively implemented additional, temporary water use reduction measures and demand management measures as discussed in *Chapter 7 Water Shortage Contingency Plan* and *Chapter 8 Demand Management Measures*, respectively, to assist in increasing supply reliability.

## 6.2 Reliability by Type of Year

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*CWC 10631*

*(c)(1) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:*

- (A) an average year,*
  - (B) a single dry water year,*
  - (C) multiple dry water years.*
- 

The water supply available to the City is defined based on three water supply condition scenarios: average/normal water year, single dry water year, and multiple dry water years. The City has used local hydrologic data to determine the appropriate water years, and has also consulted SDCWA’s Administrative Draft 2015 UWMP to ensure consistency with regional planning documents. The years selected for this analysis are shown in **Table 6-1**.

**Table 6-1: Basis of Water Year Data**

DWR Table 7-1: Basis of Water Year Data		
Year Type	Base Year	% of Average Supply
Average Year	2006	100%
Single Dry Year	2015	100%
Multiple Dry Years 1st Year	2013	100%
Multiple Dry Years 2nd Year	2014	100%
Multiple Dry Years 3rd Year	2015	91%

## 6.3 Supply and Demand Assessment

### CWC 10635

*(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projects within the service area of the urban water supplier.*

### 6.3.1 Normal Year

Information for a normal water year is based on the supply and demand information included in this 2015 UWMP. As demonstrated in **Table 6-2**, in a normal water year, the City of Escondido would purchase enough water from SDCWA to fulfill demands. Therefore, in a normal water year, supplies and demands would be equal and there would be no surplus or deficit.

**Table 6-2: Normal Year Supply and Demand Comparison**

<b>DWR Table 7-2: Normal Year Supply and Demand Comparison</b>					
	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Purchased Water	14,643	14,509	10,180	9,439	9,668
Surface Water	7,260	7,260	7,260	7,260	7,260
Recycled Water	3,000	3,650	4,400	4,400	4,400
Potable Reuse	0	0	4,000	5,000	5,000
<b>Supply Total (AF)</b>	<b>24,903</b>	<b>25,419</b>	<b>25,840</b>	<b>26,099</b>	<b>26,328</b>
<b>Demand Total (AF)</b>	<b>24,903</b>	<b>25,419</b>	<b>25,840</b>	<b>26,099</b>	<b>26,328</b>
<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 6.3.2 Single Dry Year

For a single dry year condition based on the year 2015, it is anticipated that approximately 12% of the City's surface water supplies would be available based on information about local surface supply availability from SDCWA's 2015 UWMP, which was confirmed by reviewing data from the City of Escondido for 2015. Given that recycled water is considered drought-proof, this analysis assumes that 100% of recycled water and potable reuse water would be available in a single dry year.

Based upon modeling performed by SDCWA, which was confirmed by reviewing local trends in the City of Escondido, demands would increase by 7% in a single dry year; therefore, the City would purchase additional supplies from SDCWA to meet increased demands. As shown in **Table 6-3**, in a single dry water year, supplies and demands would be equal and there would be no surplus or deficit.

**Table 6-3: Single Dry Year Supply and Demand Comparison**

<b>DWR Table 7-3: Single Dry Year Supply and Demand Comparison</b>					
	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
Purchased Water	23,273	23,186	18,894	18,177	18,426
Surface Water	871	871	871	871	871
Recycled Water	3,000	3,650	4,400	4,400	4,400
Potable Reuse	-	-	4,000	5,000	5,000
<b>Supply Total (AF)</b>	<b>27,144</b>	<b>27,707</b>	<b>28,165</b>	<b>28,448</b>	<b>28,697</b>
<b>Demand Total (AF)</b>	<b>27,144</b>	<b>27,707</b>	<b>28,165</b>	<b>28,448</b>	<b>28,697</b>
<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

### 6.3.3 Multiple Dry Years

The multiple dry year condition is based on the period of 2013-2015. It is anticipated that surface supplies would be 26% of normal, 20% of normal and 8% of normal for years 1, 2, and 3 of a multiple dry year condition, based on data from the City about the availability of local supplies in 2013, 2014, and 2015. Given that recycled water is considered drought-proof, this analysis assumes that 100% of recycled water and potable reuse water would be available in all three dry year periods.

Based upon modeling data from SDCWA, which is confirmed with local demand data from the City, demands would increase to 107% of normal and 111% of normal in the first two years of a multiple dry year period. SDCWA’s Draft 2015 UWMP demonstrates that there would be supply reliability for the first two years of a multiple dry year scenario, due to local carryover storage and supply availability from MWD. Therefore, in the first two years of a multiple dry year scenario, supplies and demands would be equal and there would be no surplus or deficit.

Information from SDCWA indicates that moving forward, demands are anticipated to increase at a greater rate than local supply development, which could lead to a small shortage in purchased water availability in the third year of a multiple dry year period. The potential deficit would result in a shortage of approximately 9% per SDCWA’s Draft 2015 UWMP. This analysis assumes that conservation would be implemented locally to account for the potential 9% supply deficit in purchased supply availability such that supplies and demands would be equal and there would be no surplus or deficit.

Details about supply and demands for each year of a multiple dry year period are shown in **Table 6-4**.

**Table 6-4: Multiple Dry Years Supply and Demand Comparison**

<b>DWR Table 7-4: Multiple Dry Years Supply and Demand Comparison</b>						
		<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>
<b>First Year</b>	Purchased Water	21,759	21,661	17,361	16,638	16,883
	Surface Water	1,888	1,888	1,888	1,888	1,888
	Recycled Water	3,000	3,650	4,400	4,400	4,400
	Potable Reuse	-	-	4,000	5,000	5,000
	<b>Supply Total (AF)</b>	<b>26,647</b>	<b>27,199</b>	<b>27,649</b>	<b>27,926</b>	<b>28,171</b>
	<b>Demand Total (AF)</b>	<b>26,647</b>	<b>27,199</b>	<b>27,649</b>	<b>27,926</b>	<b>28,171</b>
	<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Second Year</b>	Purchased Water	23,190	23,113	18,830	18,118	18,372
	Surface Water	1,452	1,452	1,452	1,452	1,452
	Recycled Water	3,000	3,650	4,400	4,400	4,400
	Potable Reuse	-	-	4,000	5,000	5,000
	<b>Supply Total (AF)</b>	<b>27,642</b>	<b>28,215</b>	<b>28,682</b>	<b>28,970</b>	<b>29,224</b>
	<b>Demand Total (AF)</b>	<b>27,642</b>	<b>28,215</b>	<b>28,682</b>	<b>28,970</b>	<b>29,224</b>
	<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Third Year</b>	Purchased Water	20,892	21,214	17,454	16,640	16,809
	Surface Water	581	581	581	581	581
	Recycled Water	3,000	3,650	4,400	4,400	4,400
	Potable Reuse	-	-	4,000	5,000	5,000
	<b>Supply totals (AF)</b>	<b>24,473</b>	<b>25,445</b>	<b>26,435</b>	<b>26,621</b>	<b>26,790</b>
	Additional Conservation	2,420	2,516	2,614	2,633	2,650
	<b>Demand totals (AF)</b>	<b>24,473</b>	<b>25,445</b>	<b>26,435</b>	<b>26,621</b>	<b>26,790</b>
	<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

## 6.4 Regional Supply Reliability

*CWC 10620*

*(f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.*

The City is increasing efforts to maximize the use of local water resources and reduce overall dependence on imported supplies. The City plans to increase local water resources through increased recycled water use for its agricultural customers and the implementation of potable reuse by 2030. The City’s future water projects and efforts to maximize local supplies are described in *Chapter 5 System Supplies*. Furthermore, in years when water supplies are reduced, the City would manage its overall water supply and demand balance through implementation of its voluntary and mandatory water use restrictions that are detailed in *Chapter 7 Water Shortage*

*Contingency Plan.* Together, water supply diversification and demand management tools and options will be used by the City to maximize resources and reduce the need to purchase imported water from SDCWA.

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## Chapter 7 Water Shortage Contingency Plan

Chapter 7 discusses water shortage contingency planning undertaken by the City to prepare for and respond to water supply shortages. The City's Water Conservation Plan (refer to **Appendix E**) and its components, including stages of action, water use prohibitions, consumption reduction methods, and penalties associated with excess water use, are also discussed in this chapter.

### 7.1 Drought Planning

The City has experienced three recent droughts, which occurred in the 1990's, in the late 2000's, and the current, ongoing drought that began in 2013. The current drought has substantially reduced available water supplies, necessitating mandatory water use restrictions.

In January 2014, the Governor of California issued an executive order declaring a State of Emergency, and directing officials to take necessary actions to respond to the drought. In April 2015, the Governor issued Executive Order B-29-15, which ordered the California State Water Resources Control Board (State Board) to implement regulations and restrictions to achieve a 25% reduction in potable water use statewide. To address this executive order, the State Board then amended its emergency drought regulations requiring the City to reduce its water use by 20% compared to its 2013 water use. In response to the State's declaration and the regional drought situation in the San Diego region, the City activated a Drought Response Level 2, making its water use restrictions and prohibitions mandatory in accordance with the State mandated restrictions.

### 7.2 Stages of Action

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#### *CWC 10632*

*(a)(1) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50% reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.*

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The City adopted its Water Conservation Plan in 2008 under Article 5, Chapter 31 (Water Conservation Plan) of the Escondido Municipal Code. The Water Conservation Plan was most recently updated in 2015 via adoption of Ordinance No. 2015-12R (refer to **Appendix E**). The Water Conservation Plan establishes priorities and restrictions during various levels of water shortages, including 10% to greater than 40% reduction in water use. The City's Water Conservation Plan sets forth the following objectives:

- 1) To prevent water supply shortages through aggressive and effective water management programs such as water conservation, water education, and use restrictions and penalties.
- 2) To minimize the impact of a water supply shortage on the City's population and economy.
- 3) To provide first for public health and fire protection and other essential services, then to provide for the economic health of the City, and then to provide for other uses of water.

- 4) To ensure that water users who have implemented exemplary conservation practices during normal-year hydrology and wet-year hydrology are not disadvantaged by the plan during shortages, a “lifeline allowance” will be established by the City Council to reflect the minimum amount necessary to sustain an average household.

The City’s Water Conservation Plan includes measures that are always in place, and four stages that are in place during water shortage conditions, as shown in **Table 7-1**. The City sets drought response levels in accordance with drought response levels determined by SDCWA. SDCWA has a *Water Shortage and Drought Response Plan* that can be activated by SDCWA’s Board of Directors as needed in response to drought conditions. Upon being activated, the Board of Directors will set forth a drought level for SDCWA, and SDCWA encourages its member agencies to adopt similar drought response levels. This region-wide approach to water shortage contingency planning increases consistent messaging across the San Diego region to facilitate implementation of drought-related restrictions.

**Table 7-1: Stages of Water Conservation Plan**

DWR Table 8-1: Retail Stages of Water Shortage Contingency Plan		
Stage	Percent Supply Reduction	Water Supply Condition
1	up to 10	Water Shortage Watch
2	up to 20	Water Shortage Alert
3	up to 40	Water Shortage Critical
4 <sup>1</sup>	greater than 40	Water Shortage Emergency

<sup>1</sup> This stage includes water shortages of 50%

In addition to the established drought response levels, the City has water use restrictions and measures that are in place at all times, as described below.

**Water Use Restrictions and Measures (Always In-Place)**

Per the City’s Ordinance No. 2015-12R, the following water uses are prohibited at all times:

- Watering or irrigating lawns or landscape areas in a manner causing significant runoff
- Operating a fountain or other water feature that does not recirculate water
- Washing any vehicle with a hose not having a water shut-off nozzle
- Allowing water to run continuously from a hose while washing any vehicle
- Washing driveways, sidewalks, parking areas, patios, or other hardscape areas with water, except when necessary to alleviate safety or sanitation hazards
- Using water (unnecessarily) for construction operations, receiving water from a construction meter or water truck for any purpose other than those required by regulatory agencies

- Watering or irrigating outdoor landscaping with potable water during a measurable rainfall event or within 48 hours of measurable rainfall
- The installation of single pass cooling systems in buildings requesting new water connections
- The installation of non-recirculating systems in new or remodeled conveyor or automatic car wash systems

The following water use restrictions are required at all times:

- The loss or escape of water by means of breaks, leaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within five days of notification by the utilities department, or within such other time as determined by the director of utilities or designee.
- Golf courses, parks, school grounds, landscapes, and recreational fields must only be watered between the hours of 6:00 p.m. and 10:00 a.m., except for very short periods of time for the express purpose of adjusting or repairing the irrigation system. Tees and greens may be watered at any time. New plantings including grass may be watered as needed until established.
- Recycled water must be used, after the department has provided to the customer an analysis showing that recycled water, if available, is a cost-effective alternative to potable water and the customer has had a reasonable amount of time, as determined by the director or the director's designee, to make the conversion to recycled water.
- A hotel or motel must provide guests the option of refusing daily laundering of towels and linens. The hotel or motel shall prominently display notice of this option in each bathroom and sleeping room using clear and easily understood language. The department shall make suitable displays available.
- Restaurants or other public places where food is served, sold, or offered for sale, will not serve drinking water to any customer unless expressly requested by the customer. The department shall make "table tents" available to restaurants and these types of other public places alerting customers to this restriction.
- All conveyor or automatic car wash systems shall have installed operational water recycling systems, or shall have secured a waiver of this requirement from the director.
- All laundromats shall have converted 100% of their washers to high efficiency models, as determined by the Consortium for Energy Efficiency, by November 22, 2015.
- Irrigating landscapes with potable water for new construction must be consistent with regulations established by the California Building Standards Commission and the Department of Housing and Community Development.

The City's drought response levels are described below.

### **Water Shortage Response Level 1**

A Level 1 Drought Response may be declared by the City Council via resolution when there is reasonable probability that there will be water supply shortages and that a consumer demand reduction of up to 10% is required. At this stage restrictions are voluntary, and the City would increase its public awareness and education efforts, and encourage compliance with the voluntary water use prohibitions and restrictions.

### **Water Shortage Response Level 2**

A Level 2 Drought Response may be declared when there is reasonable probability that there will be water supply shortages and that a consumer demand reduction of up to 20% is required. Under a Level 2 Drought Response, all water use prohibitions and restrictions under Level 1 become mandatory, with several additional mandatory measures.

### **Water Shortage Response Level 3**

A Level 3 Drought Response may be declared when there is reasonable probability that there will be water supply shortages and that Level 2 actions have been put in place, but additional consumer demand reduction is needed to achieve required reductions of up to 40% for the City to meet anticipated demands. All mandatory restrictions and prohibitions under Level 2 remain mandatory under a Level 3 Drought Response with the addition of several mandatory measures.

### **Water Shortage Response Level 4**

A Level 4 Drought Response may be declared when there is reasonable probability that there will be water supply shortages and that a consumer demand reduction greater than 40% is required in order to meet anticipated demands. All mandatory restrictions and prohibitions under Level 3 remain mandatory under a Level 4 Drought Response with the addition of several mandatory measures.

### 7.3 Prohibitions, Penalties, and Consumption Reduction Methods

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#### *CWC 10632*

*(a)(4) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.*

*(a)(5) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.*

*(a)(6) Penalties or charges for excessive use, where applicable.*

*(b) Commencing with the urban water management plan update due July 1, 2016, for purposes of developing the water shortage contingency analysis pursuant to subdivision (a), the urban water supplier shall analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas, as defined in subdivision (a) of Section 115921 of the Health and Safety Code.*

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The water use restrictions and prohibitions established under the Drought Response Levels described in Section 7.2 are listed in **Table 7-2**. In addition to the water use restrictions required at all times, under a Drought Response Level 1, the City increases its public outreach efforts. Additional restrictions and prohibitions are implemented under Levels 2, 3, and 4. Violations of any of the water use restrictions may be enforced with penalties. **Table 7-2** indicates whether a penalty or charge is implemented for each restriction or prohibition.

The Escondido City Council declared a Level 2 Drought Response in August 2014, which was revised in June 2015 due to the current and ongoing drought. Ordinance No. 2015-12R, which was implemented in June 2015, includes additional mandatory restrictions that aim to meet statewide mandates to reduce potable water use by 20% compared to 2013 levels. The additional restrictions included as part of Ordinance No. 2015-12R are not included in **Table 7-2**, as they make potentially temporary specifications for restrictions listed in **Table 7-2**. These specifications are as follows:

- Watering days for homes with odd-numbered addresses are Sunday, Tuesday, and Thursday.
- Watering days for homes with even-numbered addresses are Saturday, Monday, and Wednesday.
- Watering days for apartments, condos, mobile homes parks, and businesses are Monday, Wednesday, and Friday.
- Landscape irrigation is limited to a maximum of 7 minutes per station – this provision does not apply to drip/micro-irrigation systems and stream rotor sprinklers.

**Table 7-2: Restrictions and Prohibitions from the Water Conservation Plan**

<b>DWR Table 8-2: Restrictions and Prohibitions on End Uses</b>			
<b>Level</b>	<b>Restrictions and Prohibitions on End Users</b>	<b>Additional Explanation or Reference</b>	<b>Penalty, Charge, or Other Enforcement?<sup>1</sup></b>
1	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
1	Water Features - Restrict water use for decorative water features, such as fountains	Water features must recirculate the water used.	Yes
1	Other - Require automatic shut of hoses	Washing any vehicle with a hose not having a water shut-off nozzle is prohibited.	Yes
1	Other	Allowing water to run continuously from a hose while washing any vehicle is prohibited.	Yes
1	Other - Prohibit use of potable water for washing hard surfaces		Yes
1	Other - Prohibit use of potable water for construction and dust control	Using water unnecessarily for construction operations, receiving water from a construction meter or water truck for any purpose other than those required by regulatory agencies is prohibited.	Yes
1	Landscape - Other landscape restriction or prohibition	Watering or irrigating outdoor landscaping with potable water during a measurable rainfall event or within forty-eight (48) hours of measurable rainfall is prohibited.	Yes
1	Other	The installation of single pass cooling systems in buildings requesting new water connections is prohibited.	Yes
1	CII - Other CII restriction or prohibition	The installation of non-recirculating systems in new or remodeled conveyor or automatic car wash systems is prohibited.	Yes
1	CII - Other CII restriction or prohibition	The installation of non-recirculating systems in new commercial laundry systems is prohibited.	Yes

**Table 7-2: Restrictions and Prohibitions from the Water Conservation Plan**

<b>DWR Table 8-2: Restrictions and Prohibitions on End Uses</b>			
<b>Level</b>	<b>Restrictions and Prohibitions on End Users</b>	<b>Additional Explanation or Reference</b>	<b>Penalty, Charge, or Other Enforcement?<sup>1</sup></b>
1	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner	The loss or escape of water by means of breaks, leaks, or other malfunctions in the water user's plumbing or distribution system must be repaired within five (5) days of notification.	Yes
1	Landscape - Limit landscape irrigation to specific times	Golf courses, parks, school grounds, landscapes, and recreational fields must only be watered between the hours of 6 p.m. and 10 a.m.	Yes
1	Landscape - Other landscape restriction or prohibition	Recycled water must be used, after the department has provided to the customer an analysis showing that recycled water, if available, is a cost-effective alternative to potable water and the customer has had a reasonable amount of time to make the conversion.	Yes
1	CII - Lodging establishment must offer opt out of linen service		Yes
1	CII - Restaurants may only serve water upon request		Yes
1	CII – Other CII restriction or prohibition	All conveyor or automatic car wash systems shall have installed operational water recycling systems, or shall have secured a waiver of this requirement.	Yes
1	CII - Other CII restriction or prohibition	All laundromats shall have converted 100% of their washers to high efficiency models by November 22, 2015.	Yes
1	Landscape - Other landscape restriction or prohibition	Irrigating landscapes with potable water for new construction must be consistent with the regulations established by the California Building Standards Commission and the department of housing and community development.	Yes
1	Other	Increased education and awareness on the existing restrictions.	No
2	Landscape - Limit landscape irrigation to specific days	Irrigating landscapes with potable water shall be limited in frequency as determined necessary by City Council.	Yes

**Table 7-2: Restrictions and Prohibitions from the Water Conservation Plan**

<b>DWR Table 8-2: Restrictions and Prohibitions on End Uses</b>			
<b>Level</b>	<b>Restrictions and Prohibitions on End Users</b>	<b>Additional Explanation or Reference</b>	<b>Penalty, Charge, or Other Enforcement?<sup>1</sup></b>
2	Landscape - Other landscape restriction or prohibition	Irrigating landscapes shall not exceed ten (10) minutes per station. This provision does not apply to irrigating landscapes using water efficient devices including, but not limited to, drip-micro-irrigation systems and stream rotor sprinklers.	Yes
2	Landscape - Restrict or prohibit runoff from landscape irrigation	Operating irrigation systems that result in water not being applied to the landscaped area by virtue of any or all of the following: excessive overspray, misting, over pressurization, misaligned or tilted spray heads, or any other malfunction or out-of-adjustment condition, is prohibited.	Yes
2	Landscape - Limit landscape irrigation to specific times	Water from a construction meter or water truck for irrigation purposes must be applied between the hours of 6 p.m. and 10 a.m.	Yes
3	Water Features - Restrict water use for decorative water features, such as fountains	Maintaining ornamental lakes, ponds, or fountains is prohibited, except to the extent needed to sustain aquatic life, provided that such aquatic life is of significant value and have been actively managed within the water feature prior to declaration of a water shortage.	Yes
3	Pools and Spas - Require covers for pools and spas	A pool or spa must be covered during non-use periods.	Yes
3	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water	Any washing of vehicles must be done at commercial car washes or by mobile high pressure/low volume commercial services that recycle water.	Yes
3	Other	Other water uses may be prohibited as determined by the Director, after public notice to customers.	Yes
4	Other	In addition to all prohibited or restrictions uses of water identified in Stages 1-3, the City Council may adopt a resolution to impose additional restrictions or prohibitions on the use of water to achieve reductions.	Yes

<sup>1</sup> All prohibitions and restrictions under the Water Shortage Response Level 1 are in effect at all time, including when no drought response is in effect. Violation of these measures carries the possibility of penalties, charges, or other enforcement.

Enforcement and penalties for violation of water use restrictions and prohibitions include administrative fines starting at \$100.00. A violation of any provision of the Water Conservation Plan may be prosecuted as a misdemeanor, including imprisonment for no more than thirty days, or by fine not to exceed one thousand dollars, or both. Additionally, a violation of any provision of this policy is subject to enforcement through installation of a flow-restricting device. In addition to the administrative fines for violating the Water Conservation Plan policies, the City may issue a water rate penalty for excessive water usage during a Level 2, 3, or 4 Drought Response. The water rate penalties are established via City Council resolution.

As described above, the City’s Water Conservation Plan includes regulations to encourage and, at times require, customers to use water efficiently. In addition to the City’s water use restrictions and prohibitions, the City has implemented consumption reduction measures to reduce demands within its service area. The actions available to the City to reduce demands are provided in **Table 7-3**. The City’s consumption reduction measures are described in *Chapter 8 Demand Management Measures*.

**Table 7-3: Available Consumption Reduction Measures**

DWR Table 8-3: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier	Additional Explanation or Reference
All Stages	Expand Public Information Campaign	
All Stages	Offer Water Use Surveys	
All Stages	Provide Rebates on Plumbing Fixtures and Devices	
All Stages	Provide Rebates for Landscape Irrigation Efficiency	
Stages 3 and 4	Other	Annexations to the City's water service area will be suspended
Stages 3 and 4	Moratorium or Net Zero Demand Increase on New Connections	
Stage 4	Implement or Modify Drought Rate Structure or Surcharge	

## 7.4 Determining Water Shortage Reductions

### *CWC 10632*

*(a)(9) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.*

The City will use a variety of methods to determine changes in the actual water use throughout its service area pursuant to the Water Conservation Plan. The City is fully metered, and records water use data for its customers on a regular basis. This raw data about water use is used for

determining individual water use, as well as the City's total water use. Currently, water use data is synthesized and reported to the State Board on a monthly basis to determine whether or not the City is in compliance with its mandate to reduce water use by 20% compared to 2013 levels. Additionally, reporting on implementation of best management practices is required by the California Urban Water Conservation Council, and includes reporting on water use reductions achieved through implementing conservation measures (refer to *Chapter 8 Demand Management Measures* for more information).

## 7.5 Analysis of Revenue Impacts of Reduced Sales during Shortages

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### *CWC 10632*

*(a)(7) An analysis of the impacts of each of the actions and conditions described in paragraphs (1) to (6), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as development of reserves and rate adjustments.*

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Rates were reviewed and set most recently in February 2015, and included rate increases for water and wastewater. The most recent rate increases were due to development of critical capital improvement projects and repair and replacement of at-risk facilities that are designed to increase service reliability and help the City reduce its risk of water shortages in the future. Therefore, actions taken by the City to respond to current or potential water shortages can result in rate increases if they involve substantial capital improvements or repairs.

In general, water shortages of the types discussed above necessitate selling less water. Selling less water would result in lower revenue from sales. The various sources of water that are within the City's supply portfolio come with different costs for purchasing, transporting, and treating. In the event of a water shortage, the amount of water pulled from each source could possibly be rebalanced to lower costs. This could include drawing more water from City's increased local storage at Lake Wohlford once the scheduled dam replacement project has been completed, which is estimated to be complete in mid-2018. The City's Utilities Department maintains robust reserves that include consideration of emergency needs.

## 7.6 Catastrophic Supply Interruption

The Director may declare a catastrophic water supply shortage in accordance with the City's emergency response plan and at the direction of the City Manager. When a catastrophic water supply shortage is in effect, the Director may impose any emergency water allocation or conservation actions that are deemed necessary to protect the reliability and quality of the City's water supply. Details on the authority and provisions associated with a sudden catastrophic water supply shortage are detailed in Section 31-233 of the City's Municipal Code.

## 7.7 Three-Year Minimum Water Supply

#38. An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply (10632 (h)).

The minimum water supply from each source that may be available to the City during each of the next three years (2016, 2017, and 2018) is presented in **Table 7-4**. This information reflects the combined availability of all water sources, and assumes the same hydrology as was noted during a historical multiple dry year period (refer to *Chapter 6 Water Supply Reliability Assessment*).

**Table 7-4: Minimum Supply Next Three Years**

<b>DWR Table 8-4: Minimum Supply Next Three Years</b>			
	<b>2016</b>	<b>2017</b>	<b>2018</b>
Purchased Water from SDCWA	19,616	20,294	20,971
Local Water	2,000	2,000	2,000
Recycled Water	576	576	576
<b>Total Available Water Supply</b>	<b>22,192</b>	<b>22,870</b>	<b>23,547</b>

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## Chapter 8 Demand Management Measures

Chapter 8 describes the City's compliance with the seven Demand Management Measures (DMMs) required to be reported as part of this Urban Water Management Plan.

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### *CWC 10631*

*A plan shall be adopted in accordance with this chapter and shall do all of the following:*

*(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(A) ...a narrative description that addresses the nature and extent of each water demand management measure implemented over the past five years. The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

*(B) The narrative pursuant to this paragraph should include description of the following water demand management measures:*

*(i) Water waste prevention ordinances.*

*(ii) Metering.*

*(iii) Conservation pricing.*

*(iv) Public education and outreach.*

*(v) Programs to assess and manage distribution real loss.*

*(vi) Water conservation program coordination and staffing support.*

*(vii) Other demand management measures that have a significant impact on water use as measured in gallons per capita per day, including innovative measures, if implemented.*

*(i) For purposes of this part, urban water suppliers that are members of the California Urban Water Conservation Council shall be deemed in compliance with the requirement of subdivision (f) by complying with all the provisions of the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated December 10, 2008, as it may be amended, and by submitting the annual reports required by Section 6.2 of that memorandum.*

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Water conservation, or demand management, continues to be a significant part of regional water resource planning strategies in San Diego County. The City is committed to supporting these regional water conservation activities, and provides staffing and direct and indirect financial assistance. In addition, the City implements local DMMs to augment and complement regional programs.

The unpredictable water supply and ever-increasing demands on California's complex water resources have resulted in a coordinated effort by DWR, water utilities, environmental organizations, and other interested groups to develop a list of urban best management practices (BMPs) for conserving water. This consensus-building effort resulted in a Memorandum of Understanding Regarding Urban Water Conservation in California (MOU), which formalizes an agreement to implement these BMPs and makes a cooperative effort to reduce the consumption of California's water resources.

The MOU is administered by the California Urban Water Conservation Council (CUWCC). The City is currently a signatory to the MOU, and is therefore permitted to submit the most current BMP Activity Reports to comply with this section of the UWMP. The City's BMP Reports for 2011-2014 are included as **Appendix F**.

Section 10631 of the CWC, which addresses DMMs, was revised in 2014 to simplify the DMMs from fourteen specific measures to six general measures and an "other" category. The DMMs implemented by the City over the past five years are discussed in the following section.

## 8.1 Implementation of DMMs

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### **CWC 526**

*(a) Notwithstanding any other provision of law, an urban water supplier that, on or after January 1, 2004, receives water from the federal Central Valley Project under a water service contract or subcontract... shall do both of the following:*

*(1) On or before January 1, 2013, install water meters on all service connections to residential and nonagricultural commercial buildings... located within its service area.*

### **CWC 527**

*(a) An urban water supplier that is not subject to Section 526 shall do the following:*

*(1) Install water meters on all municipal and industrial service connections located within its service area on or before January 1, 2025.*

### **CWC 10631**

*(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1)(A) ... a narrative description that addresses the nature and extent of each water demand management measure implemented over the last five years.*

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### **8.1.1 Water Waste Prevention Ordinance**

In 2008, the City adopted Ordinance No. 2008-30(R), § 2, 10-22-08 to include the Water Conservation Plan in the Escondido Municipal Code. The code was most recently revised in 2015 to implement additional water use restrictions. The City's Water Conservation Plan established water use restrictions and prohibitions that apply at all times, and additional prohibitions under the various drought response levels. As explained in *Chapter 7 Water Shortage Contingency Plan*, the restrictions and prohibitions set forth in the Water Conservation Plan explicitly prohibit the waste of water in addition to the restriction and prohibition of specific actions that waste water.

The City has additional water waste prevention regulations including the *Escondido Municipal Code, Chapter 33, Article 62, Water Efficient Landscape Regulations*, and the *Escondido Municipal Code, Article 7, Plumbing Code*.

### 8.1.2 Metering

All connections within the City’s service area are metered. The City uses metering data to apply water rates based on water consumption. Additionally, when water allocations are in effect, the City could use metering data to determine whether customers are in compliance with mandatory water use restrictions. The City has the ability to impose an additional surcharge to any customer showing excess water usage above the allocation amount.

### 8.1.3 Conservation Pricing

The City has an inclining block rate structure for residential customers, as established by Resolution No. 2015-17R that was most recently revised in February 2015. **Table 8-1** provides the City’s block rate structure for potable water per an updated rate structure that went into effect on March 1, 2016. As described above, when water allocations are in effect, additional charges may be incurred for water use in excess of set allocation amounts.

**Table 8-1: Residential Tiered Water Rates for Potable Water**

Tier	Water Use	Cost per 1,000 Gallons
<b>Single Family Residential</b>		
Tier 1	0 to 7k gal	\$5.33
Tier 2	>7 to 15k gal	\$6.88
Tier 3	>15k gal	\$8.75
<b>Residential/Agricultural Use</b>		
Tier 1	0 to 7k gal	\$5.33
Tier 2	>7k gal	\$7.00
<b>Multi-Family Residential</b>		
Tier 1	0 to 5k gal	\$5.33
Tier 2	>5 to 7k gal	\$6.89
Tier 3	>7k gal	\$8.73
<b>Commercial, Industrial, and Schools</b>		\$6.66
<b>Irrigation – Institutional</b>		\$7.18
<b>Landscape Districts</b>		\$7.18
<b>San Diego Zoo Safari Park</b>		\$6.66
<b>Special Unfiltered</b>		\$4.12
<b>Agricultural Use</b>		\$3.31

#### **8.1.4 Public Outreach and Education**

The City has an ongoing outreach program to inform the public of the City's water use restrictions and other conservation efforts. Public outreach includes providing general water conservation information to customers, flyers and brochures, bill stuffers, messages included with bills, information packets, social media, Speakers Bureau, attendance at public events, classes, workshops and the City's water conservation webpage. Water conservation messages are incorporated into all environmental outreach materials whenever possible.

The City has an active education program, and provides education material including in-person presentations, worksheets, and physical models for grades K-5, with support for other grades available upon request, along with water quality testing science kits for grades 7-12, "Splash Van" mobile field trips and other resources through SDCWA.

#### **8.1.5 Water Loss Management**

The City conducts monthly water meter readings, and the water meter data can indicate when a leak or break is present. The City works with its customers to monitor for leaks through meter data and customer service appointments. The City's Water Conservation webpage (<http://www.escondido.org/water-conservation.aspx>) includes a link to instructions on how to read a water meter so customers can monitor their own water usage and monitor for water leaks. Additionally, the City completed a water audit consistent with the AWWA water audit guidelines for fiscal year 2014 to assess existing water loss figures, refer to **Appendix G**. The results of the City's water audit are discussed in *Chapter 3 System Demands*.

#### **8.1.6 Water Conservation Program Coordinator and Staffing**

The City has a conservation coordinator position with the title of Environmental Programs Specialist who leads a group with the responsibilities of addressing the City's water conservation efforts.

#### **8.1.7 Other DMMs**

The City participates in additional DMM programs, which are described below.

##### **SoCal Water\$mart Rebate Program**

MWD offers financial incentives through the SoCal Water\$mart Rebate Program for the following water efficient devices:

- High-efficiency clothes washers
- High-efficiency toilets
- Rotating sprinkler nozzles
- Rain barrels
- Weather based irrigation controller
- Soil moisture sensor system

Additional information on these rebates is available at [www.socalwatersmart.com](http://www.socalwatersmart.com).

### **Be Water Wise Water Savings Incentive Program for CII and Agricultural Customers**

MWD offers financial incentives through the Be Water Wise Water Savings Incentive Program for commercial customers to replace old equipment with water efficient equipment, or for agricultural customers to improve existing irrigation systems to improve water use for agricultural operations. Additional information on this program is available at <http://www.bewaterwise.com/water-savings-incentive-program.html>

### **Artificial Turf Program**

SDCWA launched a pilot program in partnership with artificial turf companies to provide customers with a 10% discount on turf materials and installation through participating retailers. This program is available to residential and commercial customers in the City's service area.

### **SDG&E Rebates for Residential and Business Customers**

San Diego Gas and Electric (SDG&E) provides rebates to residential and commercial customers. The residential program includes rebates for clothes washers and water heaters, among other rebates. Additional information on the residential rebates are available at [www.sdge.com/rebates-finder/residential](http://www.sdge.com/rebates-finder/residential). Additional information on the commercial program rebates is available at <http://www.sdge.com/rebates-finder/business>.

### **Indoor and Outdoor Water Savings Evaluations**

Free evaluations of single-family homes, multi-family, commercial, public and industrial buildings are available through SDCWA's Water\$mart Checkup Program. These evaluations identify indoor and outdoor water savings opportunities and include the following:

- Evaluation of the performance of the site's irrigation system
- A list of recommendations
- A proposed watering schedule

### **Turf Replacement Program**

The City participated in two turf replacement programs. Approximately 22 residential sites and one CII site within the City of Escondido participated in SDCWA's program to replace water intensive turf with water efficient landscaping. Under this program, a total of 32,057 square feet of turf was converted in the City. Approximately 625 applicants within the City of Escondido participated in MWD's program, replacing approximately 927,631 square feet of turf. The City will continue to participate as programs are available.

## 8.2 Planned Implementation to Achieve Water Use Targets

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### *CWC 10631*

*(f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:*

*(1)(A) ... The narrative shall describe the water demand management measures that the supplier plans to implement to achieve its water use targets pursuant to Section 10608.20.*

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The following DMMs will be implemented to achieve its water use targets associated with the Water Conservation Act of 2009 (SBX7-7).

### **Water Waste Prevention**

The City's Water Conservation Plan, which prohibits water waste, will be updated as necessary via City Council Resolution. The City Council most recently updated the Water Conservation Plan in June 2015 to implement additional water use restriction in response to the current drought conditions. The Water Conservation Plan is provided in **Appendix E**, and *Chapter 7 Water Shortage Contingency Plan* provides a detailed discussion of the Water Conservation Plan, including the City's water waste prohibitions.

### **Conservation Pricing**

The City will maintain its inclining block rate structure for single-family residential, residential agricultural use, and multi-family residential. In accordance with the City's Water Conservation Plan, under a Drought Response Level 2, 3, or 4, the City Council has the ability adopt a resolution to implement adjustments to the City's water rates based on increased costs to provide water to its customers.

### **Public Outreach and Education**

The City will continue its ongoing public information and education programs that are focused on reaching out to customers through mailings, billing messages, social media, events, and the City's water conservation webpage. The City will update these programs as necessary to educate customers about current water conservation efforts, and will continue to leverage programs from MWD and SDCWA.

The City will continue to keep its water conservation webpage up to date, providing its customers with information and access to available water conservation programs.

### **Potable Water Demand Offset**

The City will increase utilization of recycled water to offset potable water demands as one of its priorities. As explained in *Chapter 5 System Supplies*, the City is implementing a recycled water program to increase local water supply reliability and offset demands for potable water. The City is also working toward implementing a Potable Reuse Program by 2030.

### **Other DMMs**

The City will continue to provide access to available water conservation programs and rebates through its Water Conservation Program and Rebates webpage. The webpage provides links to regional resources, programs and rebates. The City will update the webpage as necessary to provide access to additional programs as they become available.

### **8.3 CUWCC Compliance**

As noted above, the City is a member of the CUWCC and is in compliance with the CUWCC's MOU. As such, the City's 2011-2014 CUWCC BMP Reports are included as **Appendix F** to supplement the information provided in this chapter.

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## Chapter 9 Climate Change and Water Energy

Chapter 9 provides information about climate change planning as it relates to the City’s water supplies and demands. Further, information about the energy intensity of each of the City’s supplies is provided. Please note that CWC sections are not included in this chapter as climate change and water-energy data is optional for 2015 UWMPs.

### 9.1 Regional Climate Change Information

Climate change has the potential to affect multiple aspects of water supply and demand, and should be considered when conducting long-term water resources planning. The City participates in the San Diego Integrated Regional Water Management (IRWM) Program as an interested party and grant funding recipient, and has participated in the IRWM planning process.

In 2013, the San Diego IRWM Plan was prepared, which describes an integrated approach for addressing water management issues in the San Diego IRWM Region. As part of the 2013 IRWM Plan update, the region completed a number of focused studies, including a Climate Change Analysis.

The anticipated effects of climate change on the San Diego Region will affect the City as well, with the exception of some site-specific effects relative to geography and location, such as sea level rise. In general, the region anticipates an increase in average temperature, increased variability in rainfall, a decrease in available imported supplies, an increase in demands, sea level rise, and an increase in wildfires. **Table 9-1** details the anticipated effects of climate change in the Region as a whole that are anticipated to occur by the year 2050, as identified by the Climate Change Planning Study completed in support of the 2013 IRWM Plan.

**Table 9-1: Impacts and Effects of Climate Change on the San Diego IRWM 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 State Water Project 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: San Diego IRWM Plan, 2013

The 2013 IRWM Plan also identified and prioritized climate change vulnerabilities for the Region. The majority of these vulnerabilities are applicable to the City, though potentially at a different priority level. The highest priority vulnerability to the San Diego Region is the decrease in available imported water, which could reduce the region’s overall water supply. Other high priority concerns include increased droughts leading to potential water supply limitations, and adverse water quality impacts. **Table 9-2** identifies the prioritized vulnerability issues relevant to the City of Escondido.

**Table 9-2: Prioritized Climate Change Vulnerabilities Issues for the City of Escondido**

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 Ecosystem/Habitat: Decrease in ecosystem services
Medium	Water Demand: Crop demand would increase Water Demand: Industrial demand would increase Water Quality: Increase in treatment cost
Low	Water Demand: Limited ability to conserve further Water Quality: Increased eutrophication Flooding: Increases in inland flooding
Very Low	Water Demand: Limited ability to meet summer demand Water Supply: Invasive species can reduce supply available Water Quality: Decrease in recreational opportunity Ecosystem/habitat: Decrease in environmental flows Hydropower: Decrease in hydropower potential

Source: Adapted from San Diego IRWM Plan, 2013.

## 9.2 Local Climate Change Information

As indicated in the regional analysis of climate change completed for the San Diego IRWM Plan, climate change is anticipated to impact temperature and rainfall patterns, which could affect supplies and demands. Potential impacts to supplies and demands within the City’s water service area are identified in the following sections.

### 9.2.1 Water Supply

The City’s water supply portfolio includes: water purchased from SDCWA, local surface water, recycled water, and potable reuse (anticipated in 2030). Potential climate change impacts to these sources vary, and are described below.

#### Purchased Water

Water that is purchased from SDCWA includes imported supplies from the SWP and Colorado River, and desalinated seawater.

SWP deliveries are considered by DWR to be susceptible to climate change (DWR, 2015). In past years, snowpack in the Sierra Nevada mountain range, which serves as the primary source for SWP water, has functioned as a storage reservoir, melting and slowly releasing water supplies into the summer months when supplies are most needed. Increased temperatures and decreased precipitation that are anticipated as a result of climate change, will decrease the snowpack, thereby decreasing the availability of water into the spring and summer months. DWR projects that the Sierra Nevada snowpack will be reduced from its historical average by 25% to 40% by 2050 (DWR, 2013). MWD's Draft 2015 Integrated Water Resources Plan reports that the combined impact of climate change and more restrictive regulations and operating conditions associated with SWP supplies could lead to a reduction in average year SWP deliveries to 837,000 AF, a potential 30% reduction over average deliveries expected in 2016.

Water supplies from the Colorado River are also anticipated to be affected by climate change. The United States Bureau of Reclamation conducted a Water Supply Assessment of Colorado River supplies in 2012, including an analysis of the impacts of climate change on water supply from this source. This analysis included robust temperature and precipitation modeling, which showed that median temperatures across the Colorado River Basin are expected to increase by 1.3°C, 2.4°C, and 3.3°C for 2025, 2055, and 2080, respectively. Precipitation patterns vary across the basin, but were found to trend downward, with an overall decrease in precipitation during the spring months. Based on this analysis, climate change will decrease the reliability of Colorado River supplies and increase the frequency of supply shortages from this source.

In late 2015, SDCWA added desalinated seawater to its supply mix. This supply is locally produced at the Claude "Bud" Lewis Carlsbad Desalination Plant. This source of local supply is considered to be reliable, even with climate change, as these supplies would not be substantially affected by temperature or precipitation patterns.

### **Local Surface Water**

Local surface water is available to the City of Escondido from Lake Dixon, Lake Henshaw, and Lake Wohlford. Cumulatively, these supplies account for an approximate average of 20% of the City's overall demands; however these supplies are highly susceptible to hydrologic patterns, and can provide anywhere from 0 to 30% of the City's supplies. Given that climate change is anticipated to result in variable hydrologic patterns, local supply reliability will continue to vary, and could become more unreliable due to climate change.

### **Recycled Water and Potable Reuse**

The City of Escondido currently uses recycled water that is produced at the HARRF. The system infrastructure is currently being expanded to produce additional non-potable supplies, and is also being upgraded with advanced treatment facilities to produce potable reuse supplies. These supplies are considered to be reliable, even with climate change, as these supplies would not be substantially affected by temperature or precipitation patterns.

### 9.2.2 Water Demand

The City’s water demands are linked to hydrologic patterns; cool, wet conditions are associated with lower demands, and hot, dry conditions are associated with higher demands. It is generally accepted that climate change will result in increased temperatures over time, which are anticipated to increase irrigation demands in the City’s service area. Precipitation patterns also are anticipated to vary over time as a result of climate change, with increased occurrence of both droughts and floods. These precipitation patterns are anticipated to result in demand fluctuations, with demands increasing in dry years and decreasing in wet years.

### 9.2.3 Supply and Demand Summary

Overall, the City and SDCWA have been conducting efforts to increase local supply reliability through the development of local, drought-proof supplies. These efforts are anticipated to help the region adapt to climate change, by decreasing dependence on SWP and Colorado River supplies that are highly susceptible to climate change.

On the demand side, demands will continue to be linked to climatic conditions, and will fluctuate year to year based on temperature and precipitation patterns. The City of Escondido is well-suited to adapt to this anticipated variability in demands, and currently has a portfolio of successful demand management programs that can be implemented as needed to adapt to changing conditions.

## 9.3 Water Sector Energy Intensity

Another method for incorporating climate change into water resources planning involves considering the energy intensity of an agency’s water supply system. The energy intensity is reported in terms of kilowatt-hours (kWh) of energy used per AF of water (kWh/AF), and is included in **Table 9-3**. The information in **Table 9-3** is sourced as follows:

- Recycled water data: provided in a regional analysis for the NSDWRC
- Local surface water data: provided by the City’s internal billing records
- Distribution data: provided by the City’s internal billing records

Please note that the energy intensity associated with water purchased from the Water Authority is detailed in the Water Authority’s 2015 UWMP.

**Table 9-3: Energy Intensity Information for Escondido**

	Recycled Water	Local Treatment	Distribution
Volume of Water Entering Process (AF)	576	21,879	22,455
Energy Consumed (kWh)	338,688	1,110,386	683,155
<b>Energy Intensity (kWh/AFY)</b>	<b>588</b>	<b>51</b>	<b>30</b>

## **Chapter 10 References**

### **Chapter 1**

No citations.

### **Chapter 2**

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### **Chapter 3**

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### **Chapter 4**

No citations.

### **Chapter 5**

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### **Chapter 6**

No citations.

### **Chapter 7**

No citations.

### **Chapter 8**

No citations.

### **Chapter 9**

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