



CITY OF CHINO HILLS

URBAN WATER MANAGEMENT PLAN 2015





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4. Chino Basin Watermaster 36rd Annual report, Fiscal year 2012-13
5. Chino Basin Watermaster, Optimum Basin Management Program, Status Report 2011-1: January to June 2011.
6. Chino Basin Watermaster, Optimum Basin Management Program, Status Report 2009-1: January to June 2009
7. Inland Empire Utilities Authority 2010 UWMP, June 2011
8. Monte Vista Water District 2010 UWMP, June 2011
9. Water Facilities Authority 2010 UWMP, May 2011
10. City of Chino 2010 UWMP, June 2011
11. 2015 UWMP Guidebook, CA Department of Water Resources

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
Act	Urban Water Management Planning Act of 1983
AF	Acre Feet
AFY	Acre Feet per Year
AWWA	American Water Works Association
BMO	Basin Management Objective
BMP	Best Management Practices
CA	California
CBFIP	Chino Basin Facilities Improvement Program
CCWRP	Carbon Canyon Water Reclamation Plant



CDA	Chino Basin Desalter Authority
CDPH	Department of Public Health
CEQA	California Environmental Quality Act
CII	Commercial, Industrial and Institutional
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CUWCC	California Urban Water Conservation Council
DFG	Department of Fish and Game (California)
DMM	Demand Management Measures
DWR	Department of Water Resources (California)
DYY	Dry Year Yield
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
ETo	Evapotranspiration
GIS	Geographic Information System
GP	General Plan
gpcd	Gallons Per Capita per Day
gpd	Gallons Per Day
gpf	Gallons Per Flush
gpm	Gallons Per Minute
GW	Groundwater
GWMP	Groundwater Management Plan
HET	High Efficiency Toilets
IEUA	Inland Empire Utilities Agency
Inst	Institutional
JCSD	Jurupa Community Services District
LS	Landscape
MCL	Maximum Contaminant Level
MF	Multi-Family
MG	Million Gallons



MGD	Million Gallons per Day
mg/L	Milligrams Per Liter
MOU	Memorandum of Understanding
MVWD	Monte Vista Water District
MWDSC	Metropolitan Water District of Southern California
NPDES	National Pollution Discharge Elimination System
OBMP	Optimum Basin Management Plan
Res	Residential
RO	Reverse Osmosis
RP	Regional Plant
RW	Recycled Water
RWQCB	Regional Water Quality Control Board
SAWCo	San Antonio Water Company
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBVMWD	San Bernardino Valley Municipal Water District
SBx7-7	Senate Bill 7 of Special Extended Session 7
SCADA	Supervisory Control Data Acquisition System
SCAG	Southern California Association of Governments
SF	Single Family
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TVMWD	Three Valleys Municipal Water District
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
WMWD	Western Municipal Water District
WFA	Water Facilities Authority



Chapter 1

Introduction and Overview

1.1 Background

The 2015 update of the City of Chino Hills (City) Urban Water Management Plan (UWMP) is prepared in accordance with the California Urban Water Management Planning Act (Act) of 1983 and its amendments. The Act requires that an Urban Water Management Plan be prepared by all water purveyors having more than 3,000 accounts or supplying more than 3,000 acre-feet of water annually. Since its passage in 1983, several amendments have been added to the Act. Plans are required to be submitted every five years. The City adopted previous Plans for 1995, 2000, 2005, and 2010.

As with the 2010 UWMP, the 2015 UWMP incorporates Senate Bills 610 and 221, as well as Senate Bill 7, legislation and serves as the primary source documentation for future Water Supply Assessments and Written Verifications.

The purpose of this 2015 UWMP is to update the 2010 UWMP and include the requirements of the Delta Legislation of 2009. Senate Bill 7 (SBx7-7), also known as the Water Conservation Act, is recent legislation that is required to be included with the 2015 UWMP, which specifically mandates that a water agency outline water use reduction targets and procedures for achieving those targets. It's a demand-side solution aimed at reducing overall water demands within California, which could directly result in improvements to the reliability of the State Water Project. Appendix A includes a copy of the Water Conservation Act.

The 2015 UWMP was prepared in accordance with State requirements. The State Department of Water Resources (DWR) published the Guidebook to assist Urban Water Suppliers to Prepare a 2015 Urban Water Management Plan (February, 2016) which includes a checklist to assist DWR staff in reviewing UWMPs. Appendix B includes a completed checklist for the 2015 UWMP.

1.2 Urban Water Management Planning and the California Water Code

1.2.1 Urban Water Management Planning

The City of Chino Hills' 2015 UWMP provides a framework for long term water planning and inform the public of the supplier's plans for long-term resource planning that ensures adequate water supplies for existing and future demands. The City's 2015 UWMP will report, describe, and evaluate water deliveries and uses, water supply sources, efficient water uses, demand management measures, and water shortage contingency planning.



1.2.2 Applicable Changes to the Water Code since 2010

The City's 2015 UWMP addressed the applicable changes to the water code since 2010.

1.2.3 Water Conservation Act of 2009 (SB X7-7)

In accordance with the Water Conservation Act of 2009, the City of Chino Hills' 2015 UWMP will report Base Daily per Capita Water Use (Baseline GPCD), 2015 Interim Urban Water Use Target, 2020 Urban Water Use Target, and Compliance Daily per Capita Water Use. Calculations of baselines and water use targets are included in Appendix G.

1.3 Urban Water Management Plans in Relation to Other Planning Efforts

The City of Chino Hills' 2015 UWMP was prepared by integrating information from the City Water Master Plan, Recycled Water Master Plan, Groundwater Management Plan, General Plan, and other documents.



Chapter 2 Plan Preparation

2.1 The City of Chino Hills Public Water System

The City of Chino Hills operates a public water system that is regulated by the State Water Resources Control Board (SWRCB). According to CWC 10617, an “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. Since the City of Chino Hills supply water to more than 3,000 customers and supply more than 3,000 acre-feet of water annually, the City is required to prepare an UWMP every five years. Table 2-1 provides the public water system number, the number of municipal connections, and the volume of water supplied in 2015.

Table 2-1: Public Water Systems

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
CA 3610020	Chino Hills, City of	21,491	14,260
TOTAL			
TOTAL		21,491	14,260
NOTES: Includes potable water and losses			

2.2 Regional Alliance

The City of Chino Hills elected to determine and report progress toward achieving targets on an individual level basis as provided in subdivision (a) of Section 10608.28. Table 2-2 presents the City of Chino Hills’ 2015 UWMP as an individual plan.



Chapter 2 – Plan Preparation

Table 2-2: Plan Identification

Table 2-2: Plan Identification (Select One)	
☒	Individual UWMP
☐	Regional UWMP (RUWMP) <i>(checking this triggers the next line to appear)</i>
	Select One:
	☐ RUWMP includes a Regional Alliance
	☒ RUWMP does not include a Regional Alliance
NOTES:	

2.3 Fiscal or Calendar Year and Units of Measure

Table 2-3 shows the City of Chino Hills as a retail agency. The City's UWMP presents water supply and demand data in fiscal year beginning July 1. The unit of measurement used in the 2015 UWMP is acre-feet (AF).

Table 2-3: Agency Identification

Table 2-3: Agency Identification	
Type of Agency (select one or both)	
☐	Agency is a wholesaler
☒	Agency is a retailer
Fiscal or Calendar Year (select one)	
☐	UWMP Tables Are in Calendar Years
☒	UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Day that the Fiscal Year Begins (dd/mm)	
7/1	
Units of Measure Used in UWMP (select from Drop down)	
Unit	AF



NOTES:

Chapter 2 – Plan Preparation

2.4 Coordination and Outreach

The City is one of eight members of the Inland Empire Utilities Agency (IEUA), a wholesale water agency which provides the City's imported water purchased from the Metropolitan Water District of Southern California (MWDSC). The remainder of the City's supply is from local wells and recycled water. Other agencies involved with the water supply to the City of Chino Hills include the Water Facilities Authority, Monte Vista Water District (MVWD), and the Chino Basin Desalter Authority (CDA). Therefore, preparation of the 2015 UWMP involved consultation with these agencies. Table 2-4 lists the agencies that were informed prior to the preparation of the City of Chino Hills' 2015 UWMP.

Table 2-4: Coordination with Appropriate Agencies

Table 2-4 Retail: Water Supplier Information Exchange
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name <i>(Add additional rows as needed)</i>
Inland Empire Utilities Agency
Water Facilities Authority
City of Chino
Monte Vista Water District
Chino Basin Desalter Authority
NOTES:

2.5 Coordination with Other Agencies and the Community

In accordance with the UWMP Act and the California Water Code, the City provided a public review period for the 2015 UWMP draft; as well as, sent electronic mail notices for the intent to adopt the 2015 UWMP to the following interested parties:

- Inland Empire Utilities Agency
- Water Facilities Authority
- City of Chino
- City of Ontario



Chapter 2 – Plan Preparation

- City of Upland
- City of Pomona
- Cucamonga Valley Water District
- Monte Vista Water District
- Chino Basin Desalter Authority
- Fontana Water Company
- San Bernardino County

Pursuant to the Water Code, the City provided general public notifications via the local *Champion* newspaper with the first notification occurring at least 14 days prior to the public hearing. The City held its public hearing on July 12, 2016 and adopted the 2015 UWMP at that time.



Chapter 3

System Description

3.1 City Description

The City is located in the southwest corner of San Bernardino County and immediately adjacent to three other southern California counties. A small portion of the southern and eastern City boundaries coincides with the Riverside County boundary. The southwestern City boundary is the Orange County border and the western and northern city boundaries are defined by the Los Angeles County border. The southeastern City boundary is the Riverside County border. The northeastern City boundary is generally defined as State Route 71 with the exception of developed and agricultural land east of SR71 between Chino Hills Parkway and Pine Avenue. The surrounding cities include Pomona to the north, Chino to the east, Brea and Yorba Linda to the southwest, and Diamond Bar to the northwest. Figure 3-1 shows the vicinity and location of the City of Chino Hills.

The City was incorporated in 1991. The City boundaries encompass approximately 29,500 acres (46 square miles). Chino Hills State Park Reserve dominates the southern portion of the City for approximately 6,915 acres (10.8 square miles). The City's natural terrain consists of rolling hills and valleys, with elevations ranging from approximately 410 feet to 1,780 feet above mean sea level.

The vast majority of developable land within the City is zoned residential. Residential development is more predominantly located along the City's significant transportation corridors, such as Chino Hills Parkway, Carbon Canyon Road, Butterfield Ranch Road, Peyton Drive and Grand Avenue. According to the 2010 Census, approximately 85 percent of the residential units are owner-occupied. Commercial development within the City is predominantly situated along the State Highway 71 corridor. Other land uses include ranch, agriculture, parks, institutional, and landscaping.

3.2 Service Area Boundary

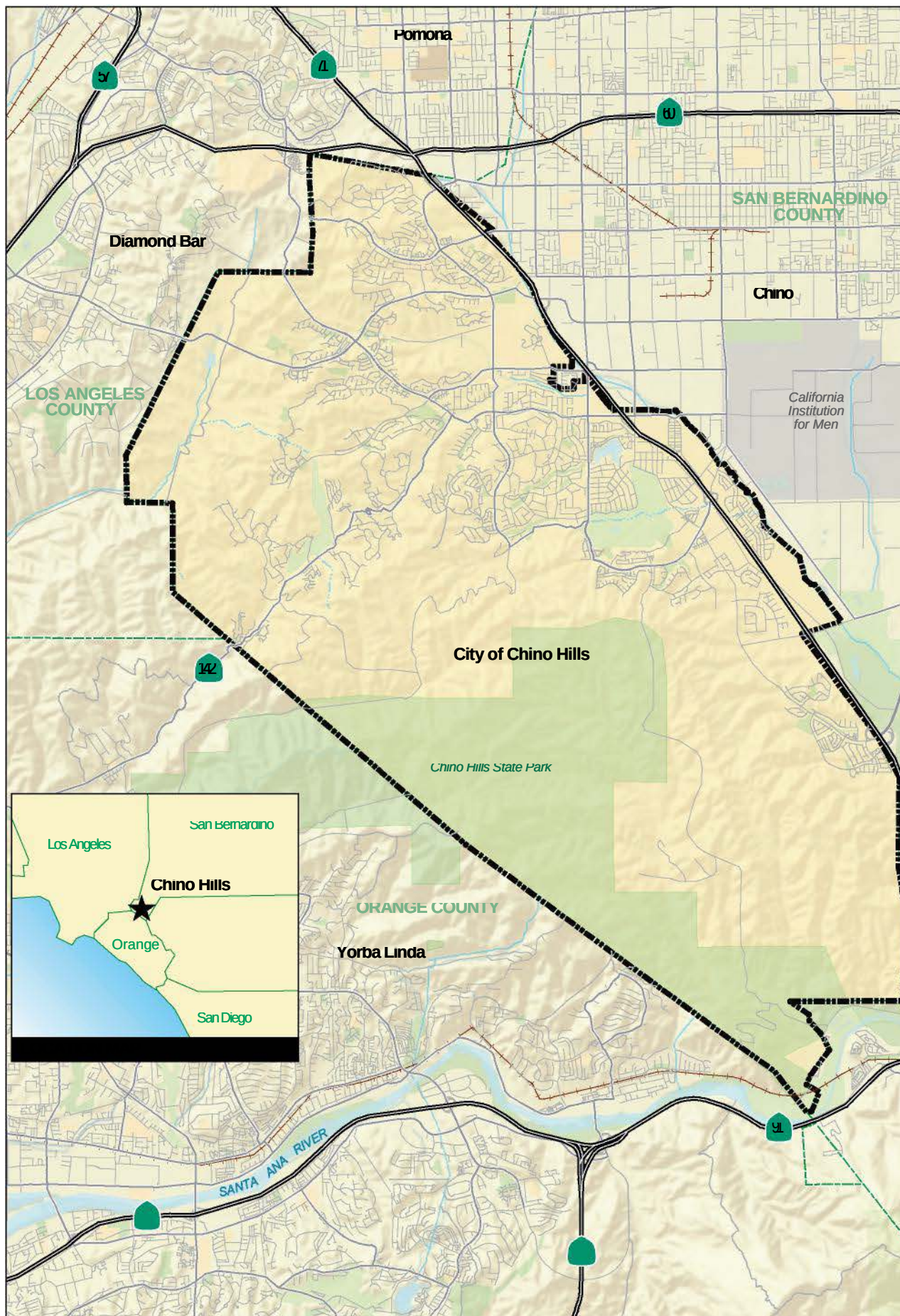


Figure 3-1: City of Chino Hills Service Area



3.3 Climate

The City is located within the South Coast hydrologic region of Southern California. From 2001 to 2015, the City received an average rainfall of approximately 12.72 inches. The average air temperature was approximately 62.34 degrees Fahrenheit. Table 3-1 provides yearly average evapotranspiration (ET_o), precipitation, and average air temperature of the City of Chino Hills, as provided by the California Irrigation Management Information System (CIMIS) website for data recorded from 2001 to 2015.

Table 3-1: City of Chino Hills Climate

Year	Average ET _o (in)	Total Precipitation (in)	Average Air Temperature (°F)
2001	46.57	15.8	60.9
2002	48.8	7.4	60.8
2003	46.89	14.8	62.3
2004	51.2	19.9	61.8
2005	48.83	23.4	62
2006	49.08	12.2	62.3
2007	51.41	4.6	61.7
2008	50.11	14.8	62.6
2009	48.73	10.4	62.2
2010	47.16	28.8	60.9
2011	47.16	10.5	60.8
2012	49.47	9.9	62.5
2013	51.21	4.2	63.8
2014	52.8	5.9	65.4
2015	50.28	8.2	65.1
Average	49.31	12.72	62.34

Note: Data taken from CIMIS website, Pomona Station (#78). Data was collected from 1/1/2001 through 12/30/2015.

3.4 Service Area Population

Although water demands and production needs have declined in recent years, the City's population has grown. The population increased by approximately 3.6 percent from 2010 to 2015. The City's Water System Master Plan projected build-out to occur in 2018. With the



Chapter 3 – System Description

recent economic recession and other growth factor considerations, the City currently anticipates buildout much later. For the purposes of the 2015 UWMP, buildout projection and associated population saturation, is assumed to be year 2035. Table 3-2 shows current and projected population in five year increments.

Table 3-2: City of Chino Hills Population

Table 3-1 Retail: Population - Current and Projected						
Population Served	2015	2020	2025	2030	2035	2040(opt)
	77,596	89,314	91,137	92,997	94,895	
NOTES: Projected population was calculated based on 2% decrease from the 2035 projected City population per the City's General Plan.						



Chapter 4

System Water Use

4.1 Recycled Versus Potable and Raw Water Demand

The use of recycled water is addressed in Section 6.4 of Chapter 6.

4.2 Water Uses by Sector

Since the City incorporation in 1991, water use has grown along with the City's population and developed land area. From fiscal year 2010/11 through 2014/15, the City's annual water requirements have ranged from 16,144 to 16,070 acre-feet (AF). A portion of current water needs have been supplied by increasing the amount of recycled water with the most recent fiscal year (2014/2015) where 1,810 AF of recycled water was used to replace potable water supplies. Current total water usage has decreased significantly in response to executive order B-29-15 where Governor Brown mandated a 25% reduction in water use for cities and towns across California. The City's required reduction is 28%. Due to these water conservation mandates, the 2015 UWMP considers average water requirements over multiple years as an indication of the future City water usage.

The City meters all of its end water users and classifies each within its defined water user classifications. Customer classifications allow the City to bill its customers within a tiered-rate structure, and monitor the total use within each customer class. Customer classifications for billing are: Residential, which includes single family and multi-family; and Non-Residential, which includes government, commercial, institutional, and landscape; recycled, which includes only recycled water use.



Chapter 4 – System Water Use

Table 4-1 shows water demands by customer classification and the level of water treatment. However, the table doesn't include recycled water.

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

Table 4-1 Retail: Demands for Potable and Raw Water - Actual			
Use Type (Add additional rows as needed)	2015 Actual		
<u>Use Drop down list</u> <i>May select each use multiple times These are the only Use Types that will be recognized by the WUEdata online submittal tool</i>	Additional Description (as needed)	Level of Treatment When Delivered <i>Drop down list</i>	Volume
Single Family		Drinking Water	9,312
Multi-Family		Drinking Water	718
Landscape		Drinking Water	2,079
Commercial		Drinking Water	1,282
Other	Agriculture & Equestrian	Drinking Water	53
Other	Fire Line	Drinking Water	2
Other	Temporary	Drinking Water	93
Other	Non-Revenue Water	Drinking Water	563
Institutional/Governmental		Drinking Water	158
TOTAL			14,260
NOTES:			

As a member agency with IEUA, the City's projected water demands were developed by IEUA via a land use based water demand model. The model is a GIS - based model that takes into account changes to water demands over time. The model also takes into account new water demands based on vacant land developments and the intensification of underutilized lands. Table 4-2 shows projected water demands by customer classification.



Chapter 4 – System Water Use

Table 4-2 Demands for Potable and Raw Water – Projected

Table 4-2 Retail: Demands for Potable and Raw Water - Projected						
Use Type <i>(Add additional rows as needed)</i>	Additional Description <i>(as needed)</i>	Projected Water Use <i>Report To the Extent that Records are Available</i>				
<i>Use Drop down list</i> <i>May select each use multiple times</i> <i>These are the only Use Types that will be recognized by the WUEdata online submittal tool</i>		2020	2025	2030	2035	2040-opt
Single Family		11,151	12,835	13,097	13,637	
Multi-Family		851	980	1,000	1,041	
Commercial		4,640	5,341	5,450	5,674	
Other		67	77	79	82	
Institutional/Governmental		1,400	1,611	1,644	1,712	
TOTAL		18,109	20,844	21,269	22,146	
NOTES:						

Table 4-3 shows actual and projected water demands from Tables 4-1 and 4-2. Actual and projected recycled water demands from Table 6-4 are also shown in Table 4-3.

Table 4-3: Total Water Demands

Table 4-3 Retail: Total Water Demands						
	2015	2020	2025	2030	2035	
Potable and Raw Water From Tables 4-1 and 4-2	14,260	18,109	20,844	21,269	22,146	
Recycled Water Demand From Table 6-4	1,810	2,661	2,661	2,661	2,661	
TOTAL WATER DEMAND	16,070	20,770	23,505	23,930	24,807	
NOTES:						



Chapter 4 – System Water Use

4.2.1 Residential Water Use

The majority of future development is aimed to provide a range of housing types while maintaining the City's overall low density character. Although water conservation will reduce per-capita water demand, total City water demand is expected to increase as residential development expands. Currently, no City-sponsored low-income housing exists. However, residential land use sectors yet to be developed or might develop within the City may include low-income housing for qualifying families. In 2015, the City updated its General Plan, including the housing element, which is anticipated to include high density residential land uses, and potentially provide an opportunity to participate in low-income housing programs.

4.2.2 Commercial, Industrial, and Institutional

Commercial and Institutional water usage account for 10.5 percent of the City's total water consumption. The City's General Plan also includes land use zoning for future Commercial and Institutional land usage.

4.2.3 Agricultural Water Use

The nature of agricultural use within the City is limited to supporting existing grazing lands and small commercial agricultural area in the extreme southeastern portion of the City. The agricultural use accounts for 0.39 percent of the City's total water use. The relatively high land value within the City for municipal development will likely convert the remaining agricultural land to other uses by 2035.

4.2.4 Landscape Irrigation

Since 2005, potable water demand for landscaping has declined significantly due to the City's increased use of recycled water. As a result, recycled water conversion for irrigation water users remains a high priority for the City and can play an important role in the City's effort to meet the 2020 and 2025 milestones within the Compliance Plan and the recent 28 percent conservation mandate as required by the State.

4.2.5 Other Water Use

Other metered uses within the City involve street and sewer cleaning, fire hydrant flushing, construction, and other temporary uses.



Chapter 4 – System Water Use

4.3 System Water Loss

System water losses are the physical water losses from the water distribution system and the supplier's storage facilities, up to the point of customer consumption. The City has quantified the distribution system water losses using the American Water Works Association Method, which is included in Appendix I. Table 4-4 shows the volume of water loss over a 12-month audit reporting period.

Table 4-4: 12 Month Water Loss Audit Reporting

Table 4-4 Retail: 12 Month Water Loss Audit Reporting	
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss
July 1, 2014	464*
NOTES: *This number is obtained using the required AWWA Audit Software, actual unaccounted for water is 564 AF/Year	

4.4 Estimating Future Water Savings

The water use projections took into account water saving estimates from adopted codes, standards, ordinances, transportation plans, and land use plans identified by the City, as applicable to the service area.

4.5 Water Use for Lower Income Households

According to California Health and Safety Code 50079.5, lower income households means persons and families whose income does not exceed the qualifying limits for lower income families. In the event the federal standards are discontinued, the department shall, by regulation, establish income limits for lower income households for all geographic areas of the state at 80 percent of area median income, adjusted for family size and revised annually. Since there are no lower income households in the City of Chino Hills, lower income residential demands will not be included in the City's projections.



Chapter 4 – System Water Use

Table 4-5: Inclusion in Water Use Projections

Table 4-5 Retail Only: Inclusion in Water Use Projections	
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook) <i>Drop down list (y/n)</i>	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.	Chapter 7
Are Lower Income Residential Demands Included In Projections? <i>Drop down list (y/n)</i>	No
NOTES: The City currently does not have Low Income Housing.	



Chapter 5 Baselines and Targets

By the adoption of the Water Conservation Act of 2009, also known as the SB X7-7, the State is required to set a goal of reducing urban water use by 20 percent by year 2020. The City must determine water use baselines during the baseline periods, and also determine water use targets for the years 2015 and 2020 in order to help the State achieve the 20 percent reduction. This chapter will demonstrate compliance with the water use target for year 2015 as well as showing the City is on track to achieve its 2020 target. Appendix A describes the methodology and Appendix G presents calculations.

Tables 5-1 and 5-2 present a summary of the City's GPCD and compliance with the 2015/2020 targets. Tables 5-3, 5-4, and 5-5 explain baselines, targets, and compliance calculations in details.

Table 5-1 Baselines and Targets Summary

Table 5-1 Baselines and Targets Summary Retail Agency or Regional Alliance Only					
Baseline Period	Start Year	End Year	Average Baseline GPCD*	2015 Interim Target *	Confirmed 2020 Target*
10-15 year	1995	2004	217	195	173
5 Year	2003	2007	202		
*All values are in Gallons per Capita per Day (GPCD)					
NOTES:					

Table 5-2: 2015 Compliance

Table 5-5: 2015 Compliance <i>Retail Agency or Regional Alliance Only*</i>								
Actual 2015 GPCD	2015 Interim Target GPCD	Optional Adjustments to 2015 GPCD <i>From Methodology 8</i>					2015 GPCD (Adjusted if applicable)	Did Supplier Achieve Targeted Reduction for 2015? Y/N
		Extraordinary Events	Economic Adjustment	Weather Normalization	TOTAL Adjustments	Adjusted 2015 GPCD		
164	195				0	164	164	Yes
*All values are in Gallons per Capita per Day (GPCD)								
NOTES:								



Chapter 5 – Baselines and Targets

5.1 Baseline Periods

The water use GPCD must be calculated and reported for two baseline periods, the 10- or 15- year baseline and the 5-year baseline (Target Confirmation). The City determined to use a 10 year baseline since the recycled water usage in 2008 was less than 10 percent of the water usage.

The annual gallon-per-capita-per-day (gpcd) is calculated over a 16-year period and it is used to develop the 2020 water reduction targets. The process involves two main components – the water supplied and the population served. Per the UWMP guidelines, the gpcd calculations can factor in the use of recycled water if the recycled water used exceeded 15 percent of the total water use in 2008.

The water supply volume is the sum of groundwater and surface water put into the potable water distribution system. Over the 16-year period, the City purchased most of its water from outside sources such as WFA, MVWD, Chino Basin Desalter Authority (CDA), and IEUA. The City also purchases recycled water from IEUA. However, in 2008 total recycled water usage was less than 15 percent (10%) of the total supply. Therefore, the City must use a 10-year time frame for its baseline calculations. Each supply delivery point is metered to provide the total supply delivery volumes used in the analysis.

5.2 Determination of the 10-15 Year Baseline Period

Per Table 5-1, the highest 10-year average is 216.93 gpcd for the 1995-2004 period. Therefore, the City selected 217 gpcd as the baseline demand for the analysis.

Table 5-3: 10 Year Baseline Average

10 Year Baseline GPCD Average		10 Year Baseline AF Average	
1995-2004	216.93	1995-2004	15339.70
1996-2005	212.85	1996-2005	15635.00
1997-2006	208.58	1997-2006	15859.70
1998-2007	207.47	1998-2007	16264.70
1999-2008	205.31	1999-2008	16424.90
2000-2009	204.66	2000-2009	16643.10
2001-2010	200.47	2001-2010	16499.90



5.3 Determination of the 5 - Year Baseline Period

Per the UWMP Guidelines, the 2020 goal must be no more than 95 percent of a five-year gpcd average ending no earlier than 2007. The 5-year gpcd average is calculated in Table 5-4. The 2007 five-year average of 202 gpcd is selected. Therefore, the 2020 goal must be less than 192 gpcd.

Table 5-4: 5-Year Range Base GPCD

5 Year Baseline GPCD Average		5 Year Baseline AF Average	
2003-2007	201.89	2003-2007	16836.80
2004-2008	197.84	2004-2008	16633.80
2005-2009	198.10	2005-2009	16651.60
2006-2010	198.53	2006-2010	16658.80

5.4 Service Area Population, 5.5 Gross Water Use, 5.6 Baseline Daily Per Capita Water Use

The City used population estimates from the State Department of Finance to determine its service area population. Table 5-5 shows population, gross water use, and annual GPCD from 1995 to 2015.



Table 5-5: Population Served and Water Supplied

FY Year	Population	Potable AF	Potable MG	Annual GPCD	Recycled AF	Recycled MG	Total Potable and Recycled AF
1995	50,527	13,000	4,236	230	0	0	13,000
1996	53,063	14,151	4,611	238	0	0	14,151
1997	56,083	14,649	4,773	233	0	0	14,649
1998	59,546	13,178	4,294	198	0	0	13,178
1999	63,399	15,246	4,968	215	0	0	15,246
2000	66,787	17,421	5,677	233	0	0	17,421
2001	68,124	15,911	5,185	209	569	185	16,480
2002	70,488	16,707	5,444	212	798	260	17,505
2003	71,854	15,795	5,147	196	767	250	16,562
2004	74,809	17,339	5,650	207	1,065	347	18,404
2005	75,414	15,953	5,198	189	815	266	16,768
2006	74,943	16,398	5,343	195	948	309	17,346
2007	75,168	18,699	6,093	222	1,634	533	20,333
2008	74,964	14,780	4,816	176	1,479	482	16,259
2009	74,725	17,428	5,679	208	1,285	419	18,713
2010	74,738	15,989	5,210	191	1,494	487	17,483
2011	75,087	14,533	4,736	173	1,612	525	16,145
2012	75,308	15,207	4,955	180	1,566	510	16,773
2013	75,780	15,862	5,169	187	1,890	616	17,752
2014	76,055	15,859	5,168	186	2,002	652	17,861
2015	77,596	14,260	4,647	164	1,811	590	16,071

5.7 2015 and 2020 Targets

The City is selecting 20x2020 Target Option 1 for its DWR UWMP compliance target. Option 1 is based on a 20 percent reduction from the baseline demands. The baseline demand is 216.93 gpcd, so the 2020 target will be 173 gpcd. The 2015 target is based on a 10 percent reduction from the baseline which will be 195 gpcd. The targets are summarized in Table 5-1. The City of Chino Hills is currently meeting the 2020 water use target due in large part to the Governor's Executive Order and corresponding media campaign.



Chapter 5 – Baselines and Targets

To maintain this target, the City will continue to retrofit landscape irrigation to recycled water, initiate more smart controller and landscape retrofit programs, and maintain public education and outreach programs concentrating on water use efficiency.

5.8 2015 Compliance Daily per Capita Water Use

The City of Chino Hills achieved the reduction target for 2015 and is in compliance with the 2015 Daily per Capita Water Use target. Achieved reduction and compliance targets are shown in Table 5-2.

5.9 Regional Alliance

The City of Chino Hills elected to determine and report progress toward achieving targets on an individual level basis as described in Section 2.2.

5.10 Governor Brown's Executive Order

In April 1, 2015 Executive Order, Governor Brown mandated a 25 percent water use reduction by the users of urban water supplies across California. In May of 2015, the State Water Board adopted an emergency regulation requiring an immediate 25 percent reduction in overall potable urban water use. Conservation tiers for urban water suppliers were set between 8 and 36 percent, based on residential per capita water use. The City of Chino Hills conservation tier reduction is 28 percent.

In response to the Executive Order and the emergency regulations, the Chino Hills City Council adopted a Stage III High Conservation Alert restricting water uses and limiting outdoor irrigation to two days a week and no more than 15 minutes per station (a copy of the ordinance and complete restrictions can be found in appendix E).



Chapter 6 System Supplies

6.1 Overview of Water Source

The City relies on a variety of sources of water supply to meet demands. The City works cooperatively with other agencies to achieve the water supply reliability for its customers. The City's current portfolio of water supply sources is shown in Table 6-1. The table also indicates which agencies are involved and what their roles are with regard to each listed supply source. Figure 6-1 shows the relative locations of each supply source provided to the City; as well as, the location of the Chino Basin.

Table 6-1: Chino Hills Water Supply Sources and Coordinating Agencies

Table 6-1 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list <i>May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>		Actual Volume (AF)	Water Quality <i>Drop Down List</i>	Total Right or Safe Yield <i>(optional)</i>
<i>Add additional rows as needed</i>				
Purchased or Imported Water	WFA	2,494	Drinking Water	
Purchased or Imported Water	MVWD	4,436	Drinking Water	
Groundwater	Chino Hills Wells	2,904	Drinking Water	
Purchased Desalinated Ground Water	Ground Water (CDA)	4,426	Drinking Water	
Purchased Recycled Water	IEUA	1,810	Recycled Water	
Total		16,070		0
NOTES:				

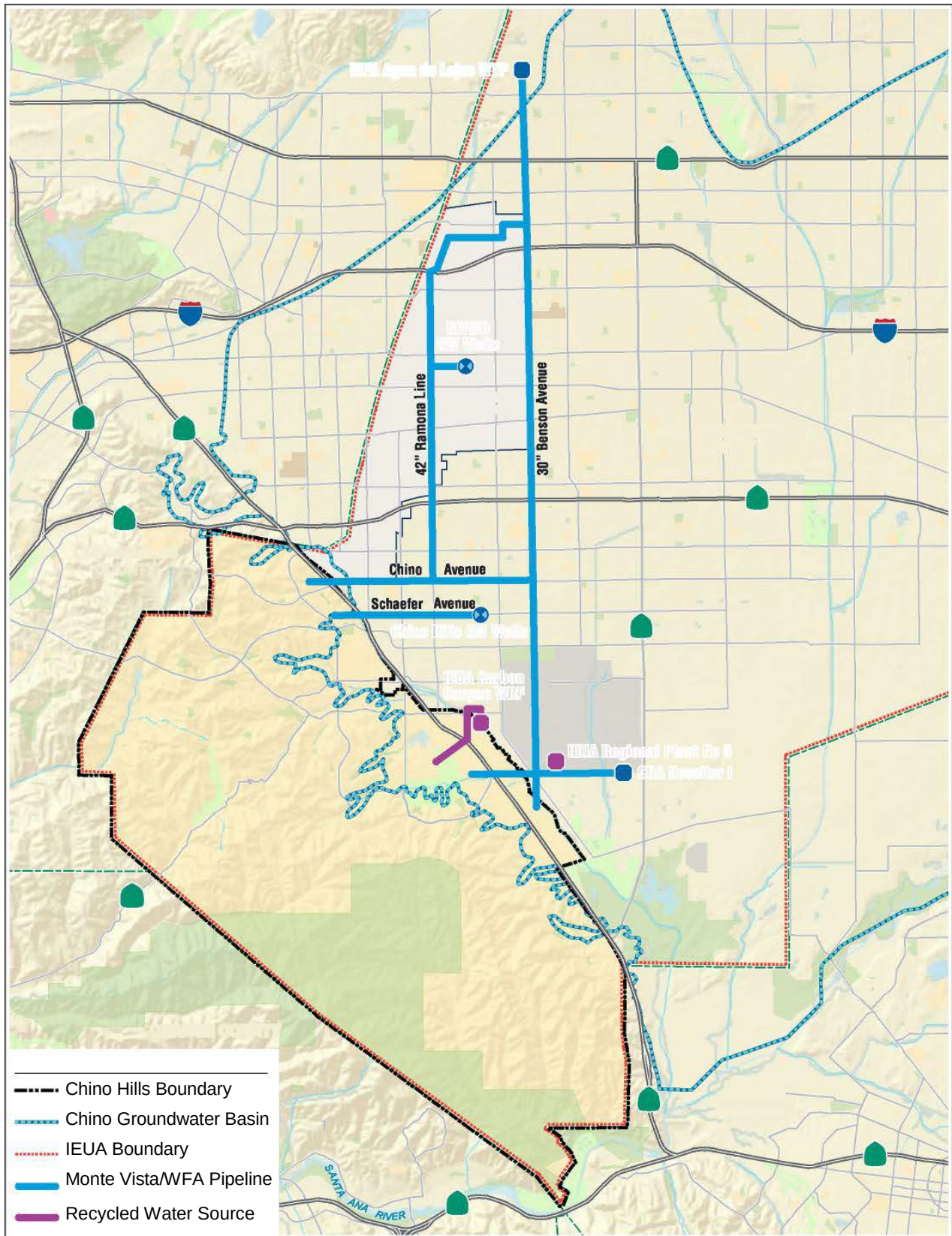


Figure 6-1: Water Supply Sources



Chapter 6 – System Supplies

The relevant agencies who contribute to the City water supply are briefly described based on the information obtained from the respective 2010 Urban Water Management Plan.

6.2 Purchased or Imported Water

6.2.1 Imported Water

The City of Chino Hills is a member agency of the IEUA. The IEUA is a member agency of MWDSC, which supplies imported water to its member agencies. IEUA also supplies recycled water to the city of Chino Hills, Chino, Fontana, Montclair, Ontario, Upland, Monte Vista Water District, Jurupa Community Services District, and Cucamonga Valley Water District. Although Chino Hills is a member agency of IEUA, the City receives its imported water supplies through contract with MVWD and the Water Facilities Authority.

The Water Facilities Authority (WFA) is a joint powers agency formed for the specific purpose of funding the construction and operation of the Agua De Lejos Regional Water Treatment Facility, more commonly known as the WFA Treatment Plant. The facility is located in the City of Upland and treats the raw State Water Project's water received through turnout IEUA #12 on MWDSC Foothill Feeder Rialto Pipeline. The WFA member agencies are the Cities of Upland, Ontario, Chino, Chino Hills, and the Monte Vista Water District. Those member agencies are the joint owners of the treatment plant. WFA's water enters Monte Vista Water District (potable water) distribution system through two turnouts and provides WFA's water to the City of Chino Hills through a turnout at Ramona Avenue south of Philadelphia Street. The City of Chino Hills owns 12.72 MGD of capacity (a 15.7 percent share) in the WFA treatment plant.

6.2.2 Purchased Water

The Monte Vista Water District (MVWD) provides retail and wholesale water supply services to a population of over 100,000 within a 30 square mile area, including the communities of Montclair, Chino Hills (by contract), portions of the City of Chino, and the unincorporated area which extends between the cities of Pomona, Chino Hills, Chino, and Ontario. The MVWD is also a member agency of IEUA and WFA.

MVWD overlies a portion of the Chino Groundwater Basin and has developed extensive well capacity to facilitate conjunctive use of the basin. The City of Chino Hills purchased capacity rights from MVWD for a total of 20.22 million gallons per day (MGD). Water delivered under the acquisition agreement is comprised of a combination of imported water through the WFA treatment plant and groundwater produced by the MVWD wells.



Chapter 6 – System Supplies

As part of this arrangement, the 42 inch transmission main in Ramona Avenue was constructed to facilitate the delivery of the increased water supply to the City of Chino Hills' system. The agreement provides a needed water supply source for the City, and allows MVWD to expand its demand base by using its groundwater capacity beyond its own service area. Appendix C includes a copy of the 1998 water supply agreement between the City and MVWD.

The CDA is a joint powers agency formed to achieve sustainable management of water quality in the lower portions of the Chino Basin through the construction of desalter facilities. SAWPA in cooperation with IEUA, MVWD, and the OCWD formed SAWPA Project Committee #14 which initiated the Chino I Desalter. The CDA was subsequently formed by agencies subscribing to capacity in the new desalters. The City of Chino Hills is a capacity shareholder in the CDA along with the cities of Ontario, Chino, Norco, IEUA, Jurupa Community Services District (JCSD), Santa Ana River Water Company, and Western Municipal Water District. The contract operator is IEUA and the administrative entity is the JCSD. With the completion of the Chino II Desalter, the City of Chino Hills is subscribed to 4.0 MGD in the Chino Desalter Facilities which could provide over 20 percent of its total water supplies.

Desalination is viewed as a way to develop a local and a reliable source of water that assists agencies in reducing their demand of imported water and make unusable groundwater available for municipal uses. As more water is recharged in the upper alluvial fans of the Basin, groundwater production in the lower portion of the Basin needs to be managed to ensure that groundwater is not lost to the Santa Ana River, and poor quality water in the lower portion of the Basin does not reach downstream basins. The key to the groundwater basin management is achieving "Hydraulic Control." The CDA facilities are an integral part of this Hydraulic Control. The current capacity of the desalter facilities is 24,600 AFY and an expansion is currently underway to increase the capacity to 35,200 AFY.

In accordance with the UWMP Act, the City coordinated its water supply projections with the agencies described above. Projected water supplies anticipated from each supplier to the City are outlined in Tables 6-2.



Table 6-2: Projected Water Supply

Table 6-2 Retail: Water Supplies — Projected											
Water Supply	Additional Detail on Water Supply	Projected Water Supply (AF) Report To the Extent Practicable									
Drop down list <i>May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>		2020		2025		2030		2035		2040 (opt)	
		Reasonably Available Volume		Reasonably Available Volume		Reasonably Available Volume		Reasonably Available Volume		Reasonably Available Volume	
Add additional rows as needed											
Purchased or Imported Water	WFA	14,069		14,069		14,069		14,069			
Purchased or Imported Water	MVWD	8,577		8,577		8,577		8,577			
Groundwater	Chino Hills Wells	3,600		3,600		3,600		3,600			
Desalinated Water	Ground Water (CDA)	4,200		4,200		4,200		4,200			
Recycled Water	IEUA	2,661		2,661		2,661		2,661			
Total		33,107		33,107		33,107		33,107			
NOTES:											



6.3 Groundwater

The Chino Groundwater Basin is an important source of water for the City of Chino Hills, and it is a major aquifer system in the Santa Ana River watershed that provides both local yield and seasonal carry over storage for water purveyors in the region.

The City extracts groundwater from the Chino Groundwater Basin using its own wells that are located within the City of Chino, and this water is conveyed to Chino Hills' lower pressure zone through a system of transmission mains. The City also relies on water purchased from the Monte Vista Water District. The water provided by MVWD consists of a mix of groundwater extracted from the Chino Groundwater Basin, MVWD wells, and imported water from WFA treatment plant.

Although Chino Ground Water Basin is considered to be a single basin, the basin has been divided into five management zones (based upon similar hydrological conditions) and into three sub-basins. Such divisions were defined in the Chino Basin Watermaster Optimum Basin Management Program (OBMP, June 2000), and the 1995 Water Quality Control Plan for the Santa Ana Watershed (Region 8).

The basin is one of the largest groundwater basins in Southern California, containing about 5,000,000 acre feet (AF) of water in storage, with an additional unused storage capacity of about 1,000,000 AF. Cities and other water supply entities extract ground water from the basin for all or part of their municipal and industrial supplies. In addition, remaining agricultural users also pump water from the Chino Basin.

The court-approved safe yield of the Basin is 140,000 AFY. This water is allocated among three "pools" of users: the Overlying Agriculture Pool (82,800 acre-feet/year), the Overlying Non-Agricultural Pool (2,366 acre-feet/year), and the Appropriative Pool for urban uses (54,834 acre-feet/year). Additional groundwater production (in excess of the safe yield) is permitted under the Judgment provided that pumped water is replaced with replenishment water. In addition, groundwater is re-allocated from the Overlying Agricultural Pool to the Appropriative Pool for urban use when it is not pumped by the agricultural users. Over time, as agricultural production declines, the re-allocation of groundwater to the Appropriative Pool is expected to increase. The management of the Chino Basin is now guided by the "Peace" and "Peace II" Agreements of the Optimum Basin Management Program (OBMP). The 2015 groundwater production from the City wells was 2,904 AFY, and it contributed to about 18 percent of the City total supply.



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The operation of the Chino Basin is governed by the 1978 court judgment and agreement among producers, whereby each is allotted a “Base Water Right” to a certain percentage of the natural or “safe” yield of the basin. Prior to 1978, the Basin was in an overdraft condition. Under the Judgment, entities can pump in excess of their allotted Base Water Right, but must pay a pump tax per acre-foot to cover the cost to replenish any overdraft. The water rights or production allocations are divided among three groups of interest or “pools” which are overlying agricultural, overlying non-agricultural, and appropriative. The provisions of the Judgment and monitoring, replenishment and other obligations are presided over by the court appointed Watermaster. A copy of the Judgment is included in Appendix D.

Based on the provisions of the Judgment, the total water right of the City of Chino Hills to Chino Basin is 4,109 AFY and it is distributed as shown in Table 6-3. The judgment also set aside a large portion of the estimated safe yield for the overlying agricultural pool. As agricultural lands are converted to urban use, a portion of the production right associated with the converted land is transferred to the appropriative pool and allocated among appropriators in proportion to their initial share.

Table 6-3: City of Chino Hills Water Rights to Chino Basin

Description	Production Year 2015 (AFY)
Base Right per Judgment	2,111
Agricultural Conversion (Pool, current) & Agricultural Conversion (transfer)	1,998
Total Operating Safe Yield	4,109

Table 6-3a: Historical Production from Chino Basin

Groundwater Type <i>Drop Down List May use each category multiple times</i>	Location or Basin Name	2011	2012	2013	2014	2015
<i>Add additional rows as needed</i>						
Alluvial Basin	Chino Basin	1990.637	3137.112	3039.149	2120.188	2904
TOTAL		1,991	3,137	3,039	2,120	2,904



6.4 Recycled Water

The City of Chino Hills uses recycled water provided by IEUA primarily from the Carbon Canyon Wastewater Reclamation Facility (CCWRF) and Regional Plant 5 (RP-5). IEUA provides wholesale recycled water to local water purveyors throughout the Chino Basin. IEUA has developed recycled water supply as part of a comprehensive plan to manage water resources in the Chino Basin. Both the Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board govern recycled water use. The recycled water from IEUA reclamation facilities meets Title 22 requirements for non-restricted recreational use (full body contact).

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Water recycling is a critical component of IEUA's water resource management strategy for the region and it is proven to be essential for meeting the service area of the growing water demand. Recycled water provides a more dependable local supply of water, and it will reduce the likelihood of water rationing during droughts.

According to IEUA's 2010 UWMP, future recycled water supplies are projected to reach 83,000 AFY in 2035. In conformance with the 1969 Santa Ana River Judgment, a minimum of approximately 17,000 AFY of water will be discharged to the Santa Ana River, leaving approximately 66,000 AFY of recycled water for beneficial reuse for IEUA members by 2035.

6.4.1 Recycled Water Facilities

IEUA operates four regional wastewater treatment plants, including Regional Plant Number 1, CCWRF, Regional Plant Number 4, and Regional Plant Number 5. All of IEUA's wastewater treatment plants produce water that meet the requirements of the State Water Resources Control Board's Title 22 standards for recycled water.

The IEUA regional distribution system is comprised of transmission pipelines for conveyance of product recycled water from IEUA's regional reclamation plants. Recognizing that separate pumping stations, independent pressure zones (800, 930, 1050, 1158, 1299, and 1670), and multiple control interfaces will ultimately lead to overly complex operations. Therefore, the concept of a single, fully integrated (regional) distribution system was developed. The existing and proposed facilities will provide the ability to deliver recycled water to major industrial and municipal users. These facilities can also deliver recycled water, storm water, and imported water to groundwater recharge basins throughout IEUA's service area.



Pursuant to the DWR Guidelines, the UWMP must discuss wastewater flow contribution to the regional agency providing treatment and recycled water services. Wastewater that flows from the City of Chino Hills is only a portion of the wastewater flow to IEUA's reclamation facilities.

The most direct recycled water sources for the City are CCWRF and Regional Reclamation Plant No. 5. CCWRF is located on Telephone Avenue in the City of Chino. CCWRF product water delivery system includes over four (4) miles of pipelines of service to the cities of Chino and Chino Hills. The CCWRF has been operational since 1992 with a current Plant capacity of 11.4 MGD for irrigation and agricultural use. Recycled water produced at the CCWRF enters the City's recycled water system from Chino Hills Parkway. Plant No. 5 is located on Kimball Avenue, which is east of El Prado Avenue in

Chapter 6 – System Supplies

the City of Chino, and has a current plant capacity to produce 16.3 MGD of recycled water. Plant No. 5 has been operational since 2004, and it provides recycled water to the City of Chino Hills.

The City's existing recycled water system lies in the southeastern portion of the City. The system layout is typical of most recycled water systems which consist of a relatively simple transmission system layout aimed for the new development and the high water use customers such as golf courses and regional parks; and a system of pump stations, pipelines and reservoirs which deliver recycled water from its source through a series of pressure zones.

6.4.2 Existing and Potential Recycled Water Demand

In 1998, the City enacted Ordinance 101 as an addition to the Water code Title 15. Shortly thereafter, the City established recycled water usage rates and adopted design and construction standards for the development of its internal transmission and distribution system. Recycled water deliveries to the City customers began in September, 1999, and approximately 42 AF were supplied that year. The demands have increased since the system inception and has reached 1,810 AFY in 2014-2015. Based on the City's water production records, the City's current recycled water supply accounts for approximately 12 percent of the total water used.

The recycled water usage is primarily for landscape irrigation such as golf courses, parks, landscaped medians, and groundwater recharge (Injection Pressure Regulator (IPR)). Major recycled water users within the City include the Big League Dreams recreational sports park, the Los Serranos Golf Course, and the Vellano Country Club golf course.



As the City's recycled water wholesaler, the IEUA recognizes that the development of local recycled water facilities of various retail agencies is key in the expansion of recycled water direct use. Direct use includes irrigation, industrial processes and cooling, and recreational use. IEUA has recently expanded its recycled water infrastructure within the City constructing a five million gallon reservoir on Galloping Hills Road. This reservoir is served by a 30" pipeline from the Carbon Canyon Wastewater Treatment Plant located at Chino Hills Parkway and Telephone Avenue in the City of Chino. This reservoir provided recycled water opportunities for the north end of the City that were previously unavailable. Since the reservoir came on-line, the Community Center,

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McCoy's Equestrian Center, Government Center, the Shoppes, Boys Republic and several churches on Peyton have either had their landscape irrigation converted, or are in the process of converting to recycled water, saving hundreds of acre feet of potable water annually.

The City could potentially expand its southerly system which would require pumping and additional transmission and storage capacity. The City's current system serves several major users, including golf courses in a multi-pressure zone system. Table 6-4 summarizes current and projected recycled water use by the City of Chino Hills for the 2015 UWMP planning horizon.



Table 6-4: Current and Projected Recycled Water Use

Table 6-4 Retail: Current and Projected Recycled Water Direct Beneficial Uses Within Service Area (AF)									
☐		Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.							
Name of Agency Producing (Treating) the Recycled Water:			Inland Empire Utilities Agency						
Name of Agency Operating the Recycled Water Distribution System:			Inland Empire Utilities Agency						
Supplemental Water Added in 2015									
Source of 2015 Supplemental Water									
Beneficial Use Type <i>These are the only Use Types that will be recognized by the DWR online submittal tool</i>		General Description of 2015 Uses	Level of Treatment <i>Drop down list</i>	2015	2020	2025	2030	2035	2040 (opt)
Agricultural irrigation									
Landscape irrigation (excludes golf courses)			Tertiary	608	1,458	1,458	1,458	1,458	
Golf course irrigation			Tertiary	1,202	1,203	1,203	1,203	1,203	
Commercial use									
Industrial use									
Geothermal and other energy production									
Seawater intrusion barrier									
Recreational impoundment									
Wetlands or wildlife habitat									
Groundwater recharge (IPR)				N/A	N/A	N/A	N/A	N/A	
Surface water augmentation (IPR)									
Direct potable reuse									
Other	Type of Use								
			Total:	1,810	2,661	2,661	2,661	2,661	0
IPR - Indirect Potable Reuse									
NOTES: Groundwater Recharge (IPR) is not included as produced or purchased water in this UWMP.									



6.4.3 Optimizing the Use of Recycled Water

In February, 1998; the City of Chino Hills enacted Ordinance No. 101, which was an addition to Chapter 15.08 Regulations for the Availability and Use of Reclaimed Water of the Chino Hills Municipal Code. On May 3, 2000; IEUA adopted Ordinance No. 69 which redefined the agency's recycled water program and established new wholesale rates.

The City's current retail recycled water rate is 70 percent of the City's potable water rate. IEUA is working closely with its local retail agencies, including the City of Chino Hills, to develop a regional recycled water distribution program to maximize water reuse.

6.5 Exchanges and Transfers Opportunities

The City has an agreement with Monte Vista Water District to receive up to 20.22 MGD. Interconnections with the City of Chino and Pomona may also be considered to improve reliability during a temporary disruption in imported water supply. The Chino Basin may also be a future resource for water transfers because of its storage capacity of up to one million AF.

6.6 Development of Desalinated Water

Desalted groundwater from Chino Groundwater Basin is produced by treatment through CDA's reverse osmosis (RO) treatment facilities. The CDA water source is described in further details in Section 6.2.2.

6.7 Potential Projects to Increase Water Supply

The City's abundant supply sources provide the City with operational redundancy and reliability under emergency supply outages and drought conditions. The City's cornerstone to this strategy has been to maximize its reliance on local groundwater production and maximize its use of recycled water. The City continually monitors its ability to meet maximum month demands, under all foreseeable conditions, primarily by local sources. The following recommendations should serve to maintain the City's supply reliability:



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- Seek opportunities to further expand recycled water system and usage
- Market surplus importation capacity
- Increase groundwater capacity and transmission system reliability
- Periodically evaluate maximum month water requirements, and the ability to meet these requirements in the event of an extended importation system outage
- Pursue regional solutions, including inter-ties with adjacent entities



Chapter 7

Water Supply Reliability Assessment

Historically, California has experienced wet years followed by years of drought. Seasonal rain and snow drench California in winter and spring leaving the State dry and parched in summer months. These seasonal fluctuations combined with cycles of drought and unusual precipitation present challenges for Southern California to have a dependable, consistent water supply. Due to these challenges, MWDSC imposed water allocations to its members. Chino Hills member agency to the MWDSC is the IEUA, who, in turn, passed on imported supply restrictions to the WFA, Chino Hills' treated imported water source.

Over the years, Chino Hills' leadership had the foresight to expand its water portfolio to manage these variables. Stored ground water, investments in the WFA and CDA, and agreements with neighboring agencies, help the City maximize its resources. The City is committed to the efficient use of this precious resource to ensure supply for future demands.

7.1 Constraints on Water Sources

Imported water from the State Water Project has been curtailed in recent years due to drought and pumping restrictions. MWDSC has worked diligently to secure additional sources and storage to ensure long-term reliability.

7.1.1 Reliability of Imported Water Supply

MWDSC primary goal is to provide reliable water supply to meet the water needs of its service area at the lowest possible cost. In the past, the delivery of water to MWDSC's member agencies has been nearly 100 percent reliable. However, as existing imported water supply from the Colorado River and State Water Project face increasing challenges, the assured reliability of deliveries from these sources has diminished.

To address these challenges, MWDSC has expanded its development of water transfers, water storage, and banking projects. Also, working with its member agencies, MWDSC has expanded the development of local and alternative water supplies and the implementation of water conservation programs. The MWDSC's measures and plans to provide reliable water supply are documented in Metropolitan's Water Supplies - A Blueprint for Water Supply Reliability (MWDSC, 2003). The report projects that in cooperation with its member agencies, MWDSC will be able to meet a 100 percent of retail water demands during average, dry, and multiple-dry-year scenarios over the next 20 years. During catastrophic shortages, MWDSC will redirect as necessary the limited imported water to member agencies which are largely dependent on imported water (i.e., those without major groundwater resources).



Chapter 7 – Water Supply Reliability Assessment

MWDSC's Integrated Water Resources Plan (IWRP) was last updated in 2015. The 2015 IWRP identifies changing conditions affecting water resource development. The IWRP outlines emerging trends related to climate change, energy use and greenhouse emissions, endangered species protection, and conveyance needs in the Sacramento-San Joaquin River Delta system.

IEUA, as the imported water supplier to the region, recognizes that supply reliability is a high priority for the region. The agencies of IEUA experienced significant growth prior to the recent economic recession. Even under conservative growth estimates, IEUA expects to meet a 100 percent of its dry year demand.

Based on IEUA's 2010 Urban Water Management Plan, IEUA anticipates that groundwater may be pumped in excess of the safe yield during dry years. Although agricultural use is expected to decline, IEUA projects that the overall production of recycled water will gradually increase as non-potable water customers increase. During multiple dry years, the overall source scenario for IEUA service area indicates that even during prolonged droughts the vast quantity of water stored in the Chino Basin will enable local agencies to reduce the imported water demands and increase groundwater production.

7.1.2 Reliability of Groundwater Supply

In 2002; IEUA, Watermaster, and MWDSC executed an agreement for the development of the Chino Basin DYY Program to help reduce demands on imported water while increasing the reliability of groundwater supply during dry years. The DYY Program is an implementation element of the OBMP Program (Elements Number 8 and Number 9), which is designed to develop and implement a groundwater storage and conjunction use program.

The DYY Program was the first step in a phased plan to develop and implement a comprehensive conjunctive use program to allow maximum usage of imported water that is available during wet years and stored groundwater in the Chino Basin during dry years. MWDSC will utilize the Chino Basin for dry year storage of up to 100,000 AF of surplus imported water. Imported water deliveries to participants would increase during wet or normal (or "put") years, and deliveries of imported water would decrease during dry (or "take") years.

Each of the local retail agencies volunteered to produce excess groundwater during a dry year in-lieu of receiving normal imported water deliveries. In exchange, these agencies received funding for new groundwater treatment and well facilities that would enable additional groundwater production during dry years, as part of a contractual agreement with MVWD.



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Since April 2011, The Dry Year Yield account has been empty and there have been no “takes” or “puts” from or into the account. However, Watermaster, IEUA, Three Valleys Municipal Water District, and MWD are negotiating potential amendments to the current contract so that it can meet future needs.

It is understood that the water supplied by CDA will be a reliable supply and available on a constant flow basis throughout the year, unaffected by climactic changes. However, it is possible that the supply wells or Reverse Osmosis Membrane Treatment Facilities could be subject to short-term outages.

The CDA allows for 96 percent run-time and 4 percent down-time for filter and maintenance issues. City booster pump stations and well pumps incorporate a backup power generator or an alternative power source to ensure water delivery to customers. In addition, almost all customers are served from open reservoirs through the various pressure zones of the City. This system is pressurized by gravity; thus, brief power outages are not a concern.

7.1.3 MVWD Imported Water and Groundwater Supply

With over half of the City's ultimate potable water requirements slated to be provided through the MVWD capacity acquisition, it is important that the City has confidence that the MVWD can deliver the contracted supply under normal and adverse circumstances. The City has a substantial investment in the MVWD capacity. The 42-inch Ramona Feeder, which provides the primary conveyance from MVWD's system to the City's system is deemed as a secure source in recent CDPH documentation and SB 610/221 Water Supply Assessments and Verifications. MVWD supply, WFA imported water, and Chino Basin groundwater are subject to the same or similar disruptions as the City's principal water sources. In particular, the imported source for these entities has the same origin and relies on common conveyance and treatment facilities.

MVWD's Capital Improvement Plan (CIP), last updated in the 2008 Water Master Plan, is a comprehensive, prioritized outline of recommended projects that involve the repair and/or the replacement of existing domestic water system facilities and improvements for future needs. The Capital Improvement Plan (CIP) addresses water system supply and storage infrastructure needs for the next 30 years. The CIP includes a variety of potable water system improvements that are necessary to provide reliable water services.



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The CIP project includes:

- A comprehensive pipeline replacement/rehabilitation program
- The construction of three new wells and retrofitting an existing well
- Maintain ground water production capacity
- Installation of two back-up power generators at key wells for additional supply reliability during emergency conditions
- A booster pump station retrofit and a capacity enhancement project
- Seismic and plant improvements to various District facilities

MVWD source capacity will be expanded upon the completion of the planned improvements. Such expansion is adequate to meet MVWD ultimate demands; as well as, the Chino Hills obligation. However, under reduced allocations of imported water, MVWD sources are expected to be reduced by a similar margin, as MVWD generally strives to maximize its local production. Regarding local groundwater production, MVWD wells are subject to similar water quality challenges as those met by Chino Hills.

7.1.4 Recycled Water Reliability

In 2007, IEUA developed the Recycled Water Three Year Business Plan. The Business Plan is intended to guide the expansion of the IEUA recycled water system. Both IEUA and the City are committed to provide safe and reliable recycled water to customers. Water recycling is a critical component of IEUA's water resource management strategy for the region because it is recognized as a very reliable water source during the times of drought or other water supply shortage conditions. Recycled water receives extensive treatment and testing based on stringent State and Federal regulations.

The City's wastewater collection system serves the high-density land uses throughout the City. This collection system represents the vast majority of the wastewater generated within the City of Chino Hills. The collection system conveys the entire City collected wastewater to the Inland Empire Utilities Agency for treatment and reuse, or disposal. Projected wastewater flows can be related to water usage. Therefore, it is assumed that the City will generate the proportion of wastewater from its water usage. Historically, wastewater production has been approximately 50 percent of the City's water usage.



Table 7-1: The City Current and Projected Wastewater Flows

Type	2015	2020	2025	2030	2035
Wastewater Generation (MGD)	4.27	4.91	5.01	5.11	5.22
Wastewater Generation (AFY)	4,780	5,502	5,614	5,729	5,846

Wastewater collected was calculated based on 55 gallons/day of wastewater generated by each person.

Water Quality Impacts on Reliability

The water quality of each water supply source must be considered in assessing the reliability of the water source. The following sections discuss the water quality impact on reliability for each type of water supply source such as imported water, groundwater, and recycled water.

7.1.5 Imported Water Quality

Imported water supplied by IEUA is conveyed by the Metropolitan Water District from the northern Sierras via the Bay-Delta (State Water Project). The State Water Project's water is relatively low in salinity, but typically contains high levels of Bromide and Total Organic Carbon. This is due to seawater intrusion and agricultural drainage from peat soil islands in the Bay Delta - the confluence of the San Francisco Bay, Sacramento River, and San Joaquin River. Bromide and Total Organic Carbon combine with chemicals used in the water treatment process and form disinfection by-products that are strictly regulated under the federal Safe Drinking Water Act. The Imported water is treated at the WFA treatment plant; therefore, water quality monitoring at the plant and plant upgrades ensure continued water quality. The City of Chino Hills does not expect that the imported water quality affects the supply reliability.

7.1.6 Groundwater Quality

The Chino Basin management efforts emphasize on the importance of water quality to ensure long term groundwater use in the region. In 1989, the Chino Basin Watermaster initiated an extensive and a regular monitoring program for the Chino Basin to maintain groundwater quality for permanent potable use.



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The quality of the groundwater in the northern and central portions of the Chino Basin is generally good and in most areas meets the State Water Resources Control Board Safe Drinking Water Standards. However, the poor quality of groundwater in the southern portion of the basin due to high TDS and Nitrate concentrations is a result of past and continuous agricultural and other activities overlying the southern half of the basin. In addition, the City wells that are in Management Zone No.1, which includes the western fringe of the Basin, have similar water quality issues.

Nitrate and Arsenic levels within specific areas exceed MCL standards. With the current Arsenic MCL at 10 ppb, several of the City wells require blending or treatment to meet the new MCL standards. Another concern is the migration of contaminants due to shifting pumping patterns and gradients, which make it difficult to predict the future water quality at a given location. Since some constituents concentrations vary with depth, the City Capital Improvement Program includes hydrogeologic and site studies to find favorable locations for new wells.

The SARWQCB and the Chino Basin Watermaster have developed water quality standards and management programs to mitigate water quality issues of the Chino Groundwater Basin. Treatment processes like the construction of desalters and the removal of agricultural and industrial waste and brine are costly, but such processes are an essential part of the overall strategy to ensure the maximum use of the groundwater supply.

7.1.7 Recycled Water Quality

Both IEUA and the City are committed to provide safe and reliable recycled water to their customers. Recycled water receives extensive treatment and testing based on stringent State and Federal regulations. However, recycled water treatment standards can vary depending on the Application. For most applications in the State of California, recycled water is treated to meet Title 22 standards. Title 22 standards allow for a human full body contact with recycled water, but not potable consumption. In general, there is a considerable interest in the areas of emerging contaminants, water quality testing, health issues, and safety and risk regarding all water supplies. However, recycled water usage is restricted to non-potable uses, such as those allowed under Title 22.

Total Dissolved Solids (TDS) are commonly used as a water quality parameter for recycled water. Based on the IEUA 2010 Urban Water Management Plan, TDS of IEUA recycled water supply to Chino Hills from Regional Plant 5 (RP-5) and CCWRF can be expected to remain at approximately 500 milligrams per liter (mg/L). However, the Chino Basin objective is 550 mg/L; therefore, it is reasonable to assume that future supplies will remain at/or below that level.



Chapter 7 – Water Supply Reliability Assessment

7.2 Reliability by Type of Year

Based on the analyses provided in the City's Water Master Plan, there is a sufficient water supply to meet projected demands through year 2035. Table 7-2 provides the current normal year supply for the City of Chino Hills. However, Table 7-3 provides the projected normal year supply for the City.

7.2.1 Average Water Year

Table 7-2 represents supplies based on a normal year. Imported water from the WFA is 100% available. Per MWDSC, MVWD has sufficient groundwater and imported water supplies. CDA groundwater and recycled water is also assumed to be 100% reliable.

Table 7-2: Current Normal Year Supply

Table 7-2 Retail: Water Supplies — Actual				
Water Supply	Additional Detail on Water Supply	2015		
Drop down list <i>May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>		Actual Volume (AF)	Water Quality <i>Drop Down List</i>	Total Right or Safe Yield (optional)
Add additional rows as needed				
Purchased or Imported Water	WFA	2,494	Drinking Water	
Purchased or Imported Water	MVWD	4,436	Drinking Water	
Groundwater	Chino Hills Wells	2,904	Drinking Water	
Desalinated Water	Ground Water (CDA)	4,426	Drinking Water	
Recycled Water	IEUA	1,810	Recycled Water	
Total		16,070		0
NOTES:				



Chapter 7 – Water Supply Reliability Assessment

7.2.2 Dry Year and Multiple Dry Years Supply and Demand

The City benefits from its diversified water supply during a dry year. A cornerstone of the diversification is the DYY program, which began in 2008. The DYY program is a conjunctive project consisting of infrastructure improvements of the water agency facilities throughout the Chino Basin. It is currently designed to enable MWDSC dry year storage account to store up to 100,000 AF of surplus imported water in the Chino Basin. The \$28.5 million dollars project includes well treatment facilities, new wells, and conveyance pipeline improvements. With the implementation of the DYY Program, MWDSC can, in a dry year, request Chino Basin water agencies to pump additional groundwater for up to three years instead of taking full service imported water. The MVWD, on behalf of the City of Chino Hills and pursuant to contractual agreement, will reduce imported water service and supplement it with groundwater in a dry year.

Tables 7-4, 7-5 and 7-6 present a supply and demand comparison for a single dry year and multiple dry years. The demand projection for a single-dry year is assumed to increase due to dry year climatological conditions and population growth. The increased demands will be met by increasing imported water and groundwater supply. The multiple dry years analysis assume that demand will increase; however, demand will also exhibit a significant reduction due to water use restrictions imposed under such conditions. The multiple dry years supply assumes a decrease in imported water supplies and an increase in groundwater supplies.

7.3 Supply and Demand Assessment

During a drought event, City leadership will adopt the appropriate stage of the drought ordinance to effectively preserve water supply sustainability. The following is an evaluation of the City's water supply reliability for the different year types for the next twenty years. Table 7-3 reflects the City's supply portfolio barring any new source additions.

7.4 Regional Supply Reliability

The City has invested significantly in partnerships with neighboring agencies, infrastructure, management practices, and water use efficiency education to maximize existing resources and minimize its dependence on imported water. The investment in supply is a direct result of the strategic planning of the community leadership to develop the City's diverse and reliable supply portfolio.



Table 7-3: Projected Normal Year Supply

Table 7-3 Retail: Water Supplies — Projected									
Water Supply	Additional Detail on Water Supply	Projected Water Supply (AF) Report To the Extent Practicable							
<i>Drop down list</i> <i>May use each category multiple times. These are the only water supply categories that will be recognized by the WUEdata online submittal tool</i>		2020		2025		2030		2035	
		Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)	Reasonably Available Volume	Total Right or Safe Yield (optional)
Add additional rows as needed									
Purchased or Imported Water	WFA	14,069		14,069		14,069		14,069	
Purchased or Imported Water	MVWD	8,577		8,577		8,577		8,577	
Groundwater	Chino Hills Wells	3,600		3,600		3,600		3,600	
Desalinated Water	Ground Water (CDA)	4,200		4,200		4,200		4,200	
Recycled Water	IEUA	2,661		2,661		2,661		2,661	
Total		33,107	0	33,107	0	33,107	0	33,107	0
NOTES:									



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Table 7-4: Single Dry Year and Multiple Dry Years Supply

Table 7-4 Retail: Basis of Water Year Data			
Year Type	Base Year	Available Supplies if Year Type Repeats	
		Agency may provide volume only, percent only, or both	
		Volume Available	% of Average Supply
Average Year	2008	33,107	100%
Single-Dry Year	2005	33,107	100%
Multiple-Dry Years 1st Year	2013	29,307	89%
Multiple-Dry Years 2nd Year	2014	26,176	79%
Multiple-Dry Years 3rd Year	2015	22,720	69%

Table 7-5: Multiple Dry Years Supply and Demand

Table 7-5 Retail: Multiple Dry Years Supply and Demand Comparison (AF)						
		2020	2025	2030	2035	2040 (Opt)
First year	Supply totals	33,107	33,107	33,107	33,107	
	Demand totals	18,109	20,844	21,269	22,146	
	Difference	14,998	12,263	11,838	10,961	0
Second year	Supply totals	29,796	29,796	29,796	29,796	
	Demand totals	16,298	18,760	19,142	19,931	
	Difference	13,498	11,037	10,654	9,865	0
Third year	Supply totals	26,817	26,817	26,817	26,817	
	Demand totals	14,668	16,884	17,228	17,938	
	Difference	12,148	9,933	9,589	8,878	0

Table 7-6: Single Dry Year Demand Comparison

Table 7-6 Retail: Single Dry Year Supply and Demand Comparison				
	2020	2025	2030	2035
Supply totals	33,107	33,107	33,107	33,107
Demand totals	18,109	20,844	21,269	22,146
Difference	14,998	12,263	11,838	10,961



Chapter 8

Water Shortage Contingency Planning

Chino Hills recognizes that it is important to publicize the water shortage alert promptly, so the necessary rationing programs and policies can be implemented and public participation can be maximized to reduce the likelihood of more severe water shortage stages in the future.

8.1 Stages of Action

Table 8-1 shows the City of Chino Hills' percent supply reduction in each stage of a water shortage.

Table 8-1: Stages of Water Shortage Contingency Plan

Table 8-1 Retail Stages of Water Shortage Contingency Plan		
Stage	Complete Both	
	Percent Supply Reduction ¹ <i>Numerical value as a percent</i>	Water Supply Condition <i>(Narrative description)</i>
<i>Add additional rows as needed</i>		
I	Limit Water Use	Voluntary
II	10%	Reduction in City Water Supply
III	10% to 25%	Reduction in City Water Supply
IV	>25%	Reduction in City Water Supply
¹ One stage in the Water Shortage Contingency Plan must address a water shortage of 50%.		
NOTES: According to The Water Use Restriction Ordinance No. 286		



8.2 Prohibitions on End Uses

I. Voluntary Water Conservation Alert:

Chino Hills water customers are requested to voluntarily limit the amount of water used from March 1st through October 31st of each year to the amount absolutely necessary for health, safety, business, and irrigation. During Stage 1, all elements of the prohibitions and restrictions for moderate, high and severe conservation alerts shall apply on a voluntary basis.

II. Moderate Water Conservation Alert - Prohibitions and restrictions include the following:

- A. Sprinkling or irrigating any shrubbery, trees, lawns, grass, groundcovers, plants, vines, gardens, vegetables, flowers, or any other landscaped or vegetated areas between the hours of 9:00 a.m. and 6:00 p.m. This provision shall not apply to equestrian and livestock businesses, dairies, nurseries, golf courses, or other water dependent industries;
- B. Applying potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures;
- C. Applying potable water to any hard surface, including but not limited to driveways, sidewalks, parking areas, asphalt, patios, porches, verandas;
- D. Permitting water to leak on any premises. Such leak shall be repaired in a timely manner after notification by the City, but in no case in excess of forty-eight (48) hours after notification;
- E. Serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased;
- F. Using potable water in a non-residential fountain or other decorative water feature, except where the water is part of a recirculating system;
- G. Using water from fire hydrants shall be limited to fire fighting and related activities necessary to maintain the public health, safety, and welfare. An exception may be made for construction use through a proper City-designated meter where recycled water is not available;
- H. Permitting noncommercial washing of privately owned livestock, vehicles, trailers, buses or boats, except from a bucket and/or a hand-held hose equipped with a shut-off nozzle used for a quick rinse; and



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- I. Using a hand held hose that dispenses potable water without a shut-off valve. Such use shall not be in conflict with any provision within this code.
- III. High Water Conservation Alert - Prohibitions and restrictions include the following:
 - A. All prohibitions and restrictions in Stage I and II shall be in effect;
 - B. All residential customers shall be limited in the outdoor use of water for sprinkling, watering, or irrigating any shrubbery, trees, lawns, grass, groundcovers, plants, vines, gardens, vegetables, flowers, or any other landscaped or vegetated areas to a two days per week schedule based on street address. Designated days of irrigation: Residential addresses ending in an even number may use water on Wednesdays and Saturdays and residential addresses ending in an odd number may use water on Thursdays and Sundays. All such irrigation may only occur between 12:01 a.m. and 9:00 a.m. or between 6:00 p.m. and 12:00 a.m. and shall not exceed fifteen (15) minutes per watering-station, except for drip or microspray irrigation systems which shall not exceed 30 minutes per station. No irrigation shall occur between the hours of 9:00 a.m. and 6:00 p.m.;
 - C. Non-residential customers, including commercial nurseries, golf courses, institutions and other water dependent industries shall be prohibited from watering lawns, landscapes, or other turf areas more than twice per week. Such irrigation may only occur on Tuesdays and Fridays between 12:01 a.m. and 9:00 a.m. or between 6:00 p.m. and 12:00 a.m. and shall not exceed fifteen (15) minutes per watering-station during assigned days, except for drip or micro-spray irrigation systems which shall not exceed 30 minutes per station. No irrigation shall occur between the hours of 9:00 a.m. and 6:00 p.m. Entities using recycled water are exempted from this prohibition for their recycled water use. However, such entities are not exempted for their potable water use. Alternatively, non-residential customers may be exempted from this prohibition by reducing their potable water usage by 28 percent from their usage in 2013;
 - D. The outside irrigation of landscapes with City-supplied potable water for new construction of homes and buildings in a manner inconsistent with regulations or other requirements established by the California Building Standards Commission;
 - E. The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall is prohibited. Measureable rainfall is defined as rainfall of one tenth of an inch (1/10") or more falling within a forty eight (48) hour period;



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- F. To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language;
 - G. Swimming pool refilling or new-construction swimming pool filling shall be limited to the same days as set forth in subsection B for outdoor use of water;
 - H. Washing of vehicles or boats is prohibited except:
 - 1. When using a hose that is equipped with a shut-off valve; or
 - 2. When washed in either an automatic or manual commercial car wash. Notwithstanding the above, temporary car washes held for fundraising purposes are prohibited;
 - I. Use of misting systems, commonly used in business establishments for cooling purposes, are prohibited;
 - J. Use of potable water for dust control is prohibited where recycled water is readily available for connection by the property owner.
- IV. Severe Water Conservation Alert - Prohibitions and restrictions include the following:
- A. All previous restrictions noted in Stage I, II, and III shall be in effect;
 - B. There shall be no outdoor use of water at any time, including the use of a hand-held hose with shut-off valve;
 - C. All decorative fountains, decorative (i.e., non-swimming) pools shall be drained and made dry. Such fountains and pools shall not be refilled until the City has returned to a Stage III water conservation stage. Fountains, ponds or pools that are filled with recycled water are not subject to this provision. Decorative ponds that contain fish as a feature shall be exempt from this restriction as long as the system is maintained in good working order with measures taken to reduce the volume of makeup water required for evaporative losses; and No commitments shall be made to provide water service as part of any new land use entitlement (general plan, specific plan or amendments requesting new water allocations) until the City has returned to a Stage III drought restriction.



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Currently approved specific plans with accompanying development agreements and projects or properties that have received water allocations in advance of full entitlements may be issued building permits so long as they comply with the remainder of this chapter.

Table 8-2: Restrictions and Prohibitions on End Uses

Table 8-2 Retail Only: Restrictions and Prohibitions on End Uses			
Stage	Restrictions and Prohibitions on End Users <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	Additional Explanation or Reference <i>(optional)</i>	Penalty, Charge, or Other Enforcement? <i>Drop Down List</i>
Add additional rows as needed			
I	Other	Limit Water Use from May 1 to September 30 Each Year	Yes
II,III,IV	Other - Require automatic shut of hoses		Yes
II,III,IV	Water Features - Restrict water use for decorative water features, such as fountains		Yes
II,III,IV	Other - Customers must repair leaks, breaks, and malfunctions in a timely manner		Yes
II,III,IV	Landscape - Limit landscape irrigation to specific times		Yes
II,III,IV	Landscape - Limit landscape irrigation to specific days		Yes
II,III,IV	CII - Restaurants may only serve water upon request		Yes
II,III,IV	Landscape - Restrict or prohibit runoff from landscape irrigation		Yes
II,III,IV	Other - Prohibit vehicle washing except at facilities using recycled or recirculating water		Yes
II,III,IV	Other - Prohibit use of potable water for construction and dust control		Yes
II,III,IV	Other water feature or swimming pool restriction		Yes
NOTES: Water Shortage Contingency Plan is Covered in more Details in Chapter 8.			



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8.3 Penalties, Charges, Other Enforcement of Prohibitions

Any person violating the water use restriction ordinance (Ordinance No. 286 provided in Appendix E) will be guilty of an infraction or misdemeanor, and each day of the violation is considered to be a new and separate offense. As such, the penalty structure is as follows:

- First Offense (Infraction) – written notification.
- Second Offense (Infraction) - \$100 fine.
- Third Offense (Infraction) - \$200 fine.
- Fourth Offense (Misdemeanor) - \$500 fine. The City will also insert a flow restrictor and may discontinue the water service.

In addition, the City may file an action for civil abatement where at the discretion of the court can be entitled to reimbursements for all necessary costs incurred by the City pertaining to the violation.

8.4 Consumption Reduction Methods

Table 8-3 lists consumption reduction methods used by the City of Chino Hills in stages of water shortage contingency planning.



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Table 8-3: Consumption Reduction Methods

Table 8-3 Retail Only: Stages of Water Shortage Contingency Plan - Consumption Reduction Methods		
Stage	Consumption Reduction Methods by Water Supplier <i>Drop down list</i> <i>These are the only categories that will be accepted by the WUEdata online submittal tool</i>	Additional Explanation or Reference (optional)
Add additional rows as needed		
All	Expand Public Information Campaign	
All	Offer Water Use Surveys	Through IEUA
All	Provide Rebates on Plumbing Fixtures and Devices	Through MWD/IEUA
All	Provide Rebates for Landscape Irrigation Efficiency	Through MWD/IEUA
All	Provide Rebates for Turf Replacement	Through MWD/IEUA
II,III,IV	Decrease Line Flushing	
All	Reduce System Water Loss	
II,III,IV	Increase Water Waste Patrols	
NOTES:		

8.5 Determining Water Shortage Reductions

The water supply to Chino Hills is metered and accounted at each supply source. During a water shortage, the City Manager will be responsible for confirming that the supply quantities being delivered to the City have been reduced in accordance with the shortage contingency plan.

Individual users or classes of users can be monitored by the City system to assess their rates of consumption in comparison with the "normal" unrestricted use rates (based on historical consumption) on a seasonal basis. In the event that the supply source records indicate that water use reduction targets are not met, the City would review the water use records for the user category to determine if the user is not in compliance.



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The next step would be reviewing the individual use records to identify specific meters and users who have not achieved the appropriate reduction. These users would be contacted and given the incentive to comply.

8.6 Revenue and Expenditure Impacts

A temporary reduction in Revenue may occur with a catastrophic interruption in water availability or a prolonged drought. A reduction in Expenditures may also occur with a prolonged drought. Depending on the extent of damages due to a catastrophic event, an increase in Expenditures may occur to repair or replace water lines and facilities. Current rates were designed to recover the full cost of water service in the meter service fee and consumption charges. Rates were planned with a decrease in water usage due to conservation. Revenue and Expenditures are monitored regularly. Should an on-going reduction in Revenue occur, the City may choose to delay non-critical Capital Improvements, delay equipment purchases, or reexamine the water rates. The City will be reviewing the current rate structure after the completion of the 2015 Urban Water Management Plan.

8.7 Resolution or Ordinance

In 2008, the City adopted Ordinance No. 214 to conserve water and regulate the use of water under shortage conditions. However, on May 5, 2015; the City established a new Chapter 13.08 Water Conservation to comply with SWRCB regulations. A copy of Ordinance 286 (Chapter 13.08) is included in Appendix E. The water use restriction program is based on water shortage stages, and includes financial penalties and the possibility of service interruptions for those customers who violate the ordinance. The water use restrictions are undertaken in the event of a water shortage and it includes irrigation and washing restrictions, elimination of runoff and leakage, and swimming pool filling restrictions.

8.8 Catastrophic Supply Interruption

The City has developed procedures to respond to various types of emergencies, including water quality problems or water shortage as part of its Water Quality Operational Plan. The City's Public Works Director and/or the designee are responsible for implementing the Emergency Notification Plan upon the request of the State Water Resources Control Board.

- a. All necessary personnel are on 24-hour emergency call. Staff has been instructed on a door-to-door notification program. As soon as the emergency is evaluated, the notification time will be immediate.



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- b. The City on-call list is updated monthly with changes of staff personnel on rotations. The person on-call will be responsible to notify the designated person about the implementation of the plan.
- c. In a magnitude earthquake of 5.0 or greater, the WFA and the City together, with all member agencies, will send an employee in a vehicle with a two-way radio to the Agua de Lejos Water Treatment Plant following the City Ramona Pipeline to the Monte Vista Water District system to make a quick damage assessment of the line. When arriving to the plant, the City employee reports findings to the Plant Manager or designated representative and establishes radio communications with the City of Chino Hills. The City employee will also assist WFA Plant staff until released by the Plant Manager or designated representative.
- d. Only upon the request of the SWRCB, the City will contact the newspaper, radio stations, and/or television stations in the affected areas. All verbal notifications will be issued in both English and Spanish.

The Water Quality Operational Plan includes guidelines for personnel implementing emergency notifications. Guidelines include examples of water quality issues that would require immediate attention by the designated staff. The Plan also includes instructions on how to respond to vandalism of a reservoir that exposes the interior.

8.8.1 Vulnerability Assessment

As a result of the Public Health Security and Bioterrorism Response Act of 2002, the City performed a vulnerability assessment to evaluate the water system ability to provide a safe and reliable source of drinking water, and incorporated the findings into the City emergency response plan. The vulnerability assessment included evaluation of contamination threats, diligence procedures to improve security, water quality monitoring, threat management, and public health response, remediation, and recovery.



Chapter 8 – Water Shortage Contingency Planning

8.9 Minimum Supply Next Three Years

The estimate of the minimum supply for the next three years is based on the driest three-year historic sequence for the agency's water supply.

Table 8-4: Minimum Supply Next Three Years

Table 8-4 Retail: Minimum Supply Next Three Years			
	2016	2017	2018
Available Water Supply	33,107	33,107	33,107
NOTES:			



Chapter 9

Demand Management Measures

9.1 Introduction

Since the City's inception, City leadership understood the necessity for the conservation of its precious resource. Chino Hills was one of the first cities in the region to bring recycled water on line for irrigation to supplement potable water demands. This chapter outlines policies and practices that are designed to promote reasonable and efficient use of water. It details past and present conservation efforts that have helped the City meet its reduction targets and future implementation tools that will insure future conservation objectives.

9.2 Demand Management Measures (DMM)

California Water Code (CWC) dictates that the following DMM's are addressed in this chapter:

- Water Waste prevention Ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to access and manage distribution system real loss
- Water conservation program coordination and staffing support
- Other demand management measures

9.2.1 Water Waste Prevention Ordinances

The City maintains Ordinance 286 for Water Conservation. The ordinance describes water use restrictions that are effective during the declaration of the City Council supply reductions. The restrictions prohibit water waste and water usage in progressively more restrictive water shortage stages. Penalties are listed and enforced for non-compliance. City Code Enforcement and Public Works staff continually monitor visible water waste within residential neighborhoods by using door hangars at residents homes where water waste is apparent. Follow up notification is performed by the City's Public Works staff to ensure the water waste issue is resolved. The City maintains a Stage 1 Voluntary Alert at all times and adjusts to a higher stage as necessary. Additionally, the City has adopted the Water Efficient Landscape Ordinance with the purpose of being at least as effective in conserving water as the Model Water Efficient Landscape Ordinance drafted by the California Department of Water Resources pursuant to Assembly Bill AB 1881.



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9.2.2 Metering

All water connections for the city are metered. In 2014, the City completed the final phase in converting all meters to automatic meter reading technology. The City began this endeavor 12 years ago. Since the first phase, battery technology has significantly improved allowing the meter's electronic reading ability to double from ten+- years to twenty. A representative sample of phase one meters were recently tested and found to be within 1% accuracy, just slightly under reading, but well-within the AWWA standards for meter accuracy for *new* meters. The meters are now on a twenty year replacement cycle. Master meters for the City are calibrated annually.

The City maintains some commercial account connections that provide indoor use and outdoor irrigation. Depending on the future gpcd trending and other conservation program results, the City may investigate efforts that would split the connection and add a dedicated landscape meter, separating irrigation and potable demands.

9.2.3 Conservation Pricing

The City maintains a rate structure consisting of a fixed connection fee and a volumetric rate. The rate structure provides a significant price signal of water use. In 2015, the volumetric-based revenue portion of water billing revenue was 65 percent. The City continues to monitor its revenue needs and compare it to the water demand need to provide a conservation-pricing signal and will also update the rate structure as necessary. In March 3, 2011, the City commissioned a Water Cost of Service and Rate Design Study which resulted in adapting the current rate structure for domestic and recycled water as defined in Ordinances 245 and 247, respectively. 2014 water rates were held through 2015 due to a reduction in Capital Improvement Projects. A new water rate study is being conducted and will be completed in early 2017. Copies of these ordinances are included in Appendix E.

9.2.4 Public Education and Outreach

The City's Water Use Efficiency program maintains an extensive public information and outreach program in coordination with IEUA's regional conservation program. The City outreach program together with the IEUA regional program provides information on water conservation programs and practices through multiple mediums such as web site, print, TV, bill stuffers, fliers, movie theater ads, and other media. Educational material fliers are included in Appendix F.



Chapter 9 – Demand Management Measures

The information is also displayed and provided at regional garden shows, fairs, and other community events. Customers are encouraged to utilize the available rebates and information to help implement water use efficiency measures.

The City is also a member of the Water Education Awareness Committee, a coalition of 13 agencies whose mission is promoting the efficient use of water and increase public awareness of the importance of water in Southern California. Tables 9-1 to 9-5 present activities, number of schools, and funding involved in water education and community outreach program from 2010 to 2015.

Table 9-1: Water Education/Community Outreach Program 2010-2011

Program	# of Schools	# of Students	# of Teachers	Funding (\$)
National Theater for Children	8	3,625	161	7,861.00
Garden In Every School	N/A	N/A	N/A	N/A

Table 9-2: Water Education/Community Outreach Program 2011-2012

Program	# of Schools	# of Students	# of Teachers	Funding (\$)
National Theater for Children	8	3,415	121	7,861.52
Garden In Every School	N/A	N/A	N/A	N/A

Table 9-3: Water Education/Community Outreach Program 2012-2013

Program	# of Schools	# of Students	# of Teachers	Funding (\$)
National Theater for Children	5	2,340	81	4,730.00
Garden In Every School	N/A	N/A	N/A	N/A

Table 9-4: Water Education/Community Outreach Program 2013-2014

Program	# of Schools	# of Students	# of Teachers	Funding (\$)
National Theater for Children	8	3,610	133	8,120.00
Garden In Every School	2	200	4	1,998.68



Table 9-5: Water Education/Community Outreach Program 2014-2015

Program	# of Schools	# of Students	# of Teachers	Funding (\$)
National Theater for Children	8	3,706	151	8,120.00
Garden In Every School	1	350	9	4,500.00
Shows That Teach	3	950	35	2,175.00

9.2.5 Distribution System Water Loss Control

Water loss control efforts have always been a main component of the water system operations. Pipeline leaks and breaks are repaired as soon as possible to minimize water loss. The City also maintains a water loss component tracking tool developed by the American Water Works Association. The tool, which is also required for CUWCC compliance, identifies all quantifiable water usage and potential unquantifiable water uses. Recommendations are provided for further investigation to determine actual water loss, costs, and benefits to eliminate water loss. Working together with operations and maintenance will provide the largest water loss reduction with the most cost effective approach.

9.2.6 Water Use Efficiency Coordination and Staffing Support

The City maintains a Water Use Efficiency Coordinator position that oversees many of the regional programs. The coordinator is responsible for the participation and the development of the regional conservation efforts with IEUA and others. Other responsibilities of Public Works staff include program budgeting, program data collection and analysis, annual reporting requirement of the regional efforts, UWMP, grant and loan efforts, and others.

9.2.7 Other Demand Management Measures

The City Water Use Efficiency program maintains a school education information and outreach program in coordination with IEUA regional conservation program. The program supports the National Theater for Children which presents water and water use efficiency programs to school children. Numerous age-appropriate water education games and links are provided on the IEUA website. The Garden in Every School program provides grants and information to schools to construct and maintain water efficient gardens.



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The conservation staff is available to give presentations and age-appropriate brochures and workbooks that provide information on water and water use efficiency to schools. The City also sponsors a water conservation Design-A-Sign contest for grades K through 12. Winning posters are made into street signs and displayed at the winners' school and throughout the City.

9.3 Implementation Over The Past Five Years

9.3.1 Free High Efficiency Sprinkler Nozzles

The program offers vouchers for free high efficiency sprinkler nozzles for landscape irrigation to both residential and commercial customers through the IEUA regional program. Tables 9-6 and 9-7 show the free sprinkler nozzles rebates and water saved for both residential and commercial customers.

Table 9-6: CBWCD - Residential Free Sprinkler Nozzles Program

Year	District Devices Rebates	AF Saved/Year
10/11	65	0
11/12	1,995	8
12/13	3,572	14
13/14	490	2
14/15	737	3

Table 9-7: CBWCD - Commercial Free Sprinkler Nozzles Program

Year	District Devices Rebates	AF Saved/Year
10/11	0	0
11/12	0	0
12/13	1,760	7
13/14	2,635	11
14/15	0	0

9.3.2 SoCal Water\$mart Program

Customers are eligible to participate in the MWDSC SoCal Water\$mart Program. The program offers rebates to residential customers for high efficiency clothes washers, rotary nozzles with pressure regulating heads, and weather-based irrigation controllers. MWDSC funds the program on an annual basis and rebates are available until the fiscal year's budget is expended.



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Table 9-8 presents the amount of turf removed and water saved in 2014/2015. However, Table 9-9 presents the district devices rebates and water saved for the rotating nozzles program.

Table 9-8: Turf Removal Program

Year	District Devices Rebates	AF Saved/Year
10/11	0	0
11/12	0	0
12/13	0	0
13/14	0	0
14/15	23	68

Table 9-9: Rotating Nozzles Program

Year	District Devices Rebates	AF Saved/Year
10/11	0	0
11/12	0	0
12/13	1,718	6.87
13/14	1,805	7
14/15	372	1

9.3.3 Smart Controller Direct Installation Program

The Program offers and installs weather-based irrigation controllers and efficiency nozzles to large landscape water users. The program targets both residential and commercial large lots with irrigation areas over one acre. The program is administered by IEUA. Tables 9-10 and 9-11 present the weather based irrigation controllers rebates provided to residential and commercial customers from 2010 to 2015.

Table 9-10: CBWCD - Residential Weather Based Irrigation Controllers (WBIC)

Year	District Devices Rebates	AF Saved/Year
10/11	1	0.33
11/12	7	2.28
12/13	5	1.63
13/14	4	1
14/15	8	3



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Table 9-11: CBWCD - Commercial Weather Based Irrigation Controllers (WBIC)

Year	District Devices Rebates	AF Saved/Year
10/11	0	0
11/12	0	0
12/13	9	2.93
13/14	52	17
14/15	9	3

9.3.4 Landscape Evaluation Program

The program offers landscape review and irrigation evaluation. The customer is provided a list of recommendations to improve the overall water use efficiency through planting, landscape design, irrigation design, irrigation scheduling, and water use patterns. The program is implemented by IEUA through the Chino Basin Water Conservation District. Table 9-12 shows the landscape audit program performance through site audits, irrigated acreage audited, and total water savings.

Table 9-12: CBWCD - Landscape Audit Program

Year	Total Sites Audits	Total Irrigated Acreage Audited	Total Potential Water Savings (AF/YR)
10/11	11	6.47	27.16
11/12	3	1.53	1.65
12/13	2	0.81	0.00
13/14	12	2.98	7.75
14/15	59	32.46	43.22

9.3.5 Pressure Regulator Installation Program

The water pressure regulator program offers installation of pressure regulators for customers to reduce the water pressure from the public water main to a pressure that is usable by the customer and compatible with normal plumbing and fixtures. It also helps prevent pressure surges from entering the plumbing from the public main. High water pressure can result in dripping faucets and water pipes, and it can damage appliances. Installing a water regulator will save water energy, maintenance costs, life of appliances, and longevity of pipes. This program is to begin in summer of 2016.



9.3.6 Residential Landscape Retrofit Program

The Residential Landscape Retrofit program provides outdoor irrigation evaluations and retrofits of landscape devices for residential customers who have been identified within the top 10% percent of the participating retail water providers' customer base. Devices include high-efficiency sprinkler nozzles (Section 9.3.1) and weather-based irrigation controllers (Section 9.3.3). Table 9-13 shows the residential landscape retrofit rebates and water saved from 2012 to 2015.

Table 9-13: Residential Landscape Retrofit Program

Year	District Devices Rebates	AF Saved/Year
10/11	0	0
11/12	0	0
12/13	21	17
13/14	30	19
14/15	43	26

9.4 Planned Implementation to Achieve Water Use Targets

The DWR 2015 UWMP Guidelines require a description of the efforts and plans to meet the 20x2020 target requirements. In addition to its own operational conservation programs, the City is also a participating member in the IEUA Regional Water Efficiency Business Plan. The City intends to meet the gpcd target requirements through the combination of its own internal conservation programs and the regional conservation program efforts. The City will also convert some of the existing potable water irrigation customers to recycled water to reduce its gpcd. The City will track monthly production, gpcd, and customer demands to evaluate the program effectiveness and change or modify the program as necessary to maintain compliance.

The City also supports IEUA efforts to continually track and evaluate the regional conservation program for effectiveness and cost efficiency. The IEUA Water Use Efficiency Business Plan evaluates a large group of potential programs to assess water savings potential and impact on the regional alliance gpcd targets. The Business Plan selects programs that can provide the most cost efficient mix of water savings. The IEUA regional conservation program is evaluated annually for implementation results. Specific programs are also evaluated periodically to confirm or modify water savings estimates. The program verification includes a review of water demands before and after the device installation or program implementation to compare saving assumptions to actual results.



Chapter 9 – Demand Management Measures

Annual implementation and verification results are used to revise and improve the conservation program on a continuous basis. Currently, the City of Chino Hills has achieved both the 2015 interim target and the 2020 water use target (Chapter 5).



Chapter 10 Plan Adoption, Submittal, and Implementation

This chapter addresses the California Water Code requirements for a public hearing, the UWMP adoption process, submitting an adopted UWMP, plan implementation, and the process of amending an adopted UWMP.

10.1 Inclusion of all 2015 Data

The UWMP must include all data for 2015. The data provided herein reflects fiscal years beginning July 1. Data submitted for the UWMP is complete through June 30, 2015.

10.2 Notice of Public Hearing

Table 10-1: Notifications to Cities and Counties

Table 10-1 Retail: Notification to Cities and Counties		
City Name	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
Inland Empire Utilities Agency	☒	☒
Water Facilities Agency	☒	☒
City of Chino	☒	☒
City of Ontario	☒	☒
City of Upland	☒	☒
City of Pomona	☒	☒
Cucamonga Valley Water District	☒	☒
Monte Vista Water District	☒	☒
Chino Basin Desalter Authority	☒	☒
Fontana Water Company	☒	☒
County Name <i>Drop Down List</i>	60 Day Notice	Notice of Public Hearing
<i>Add additional rows as needed</i>		
San Bernardino County	☒	☒
	☐	☐
NOTES: Though water is only served to the City of Chino, the surrounding agencies were contacted as a courtesy.		



Chapter 10 – Plan Adoption, Submittal, and Implementation

The preparation of the 2015 UWMP was announced in local newspapers, and notifications were sent to Inland Empire Utilities Agency (IEUA), Water Facilities Authority (WFA), City of Chino, Monte Vista Water District (MVWD), and Chino Basin Desalter Authority (CDA) 60 days prior to the planned adoption date. The final draft was made available at the Public Works counter at City Hall. Table 10-1 lists the agencies notified.

10.3 Public Hearing and Adoption

The City held a public hearing at a regularly scheduled City Council meeting on July 12, 2016 at 7:00 pm. The adoption was held at the same meeting after the public hearing. Abiding by the Water Conservation Act of 2009, the City (during the public hearing) provided information on baseline values, water use targets, and plan implementation. The 2015 UWMP was made available to the public prior to the public hearing and adoption. Notification of the public hearing was advertised in the local newspaper, which is included in Appendix H.

10.4 Plan Submittal and 10.5 Public Availability

The adopted 2015 UWMP was provided electronically to DWR within 30 days of adoption. The plan was also submitted to the State library, the agencies listed in Table 10-1, and made available on the City's website.

10.6 Amending an Adopted UWMP

Any amendments to, or changes in the UWMP will follow the same process of notification, public hearing, adoption, and submittal.