California Senate Bill 610

Water Supply Assessment

for

Altitude Business Centre

Prepared for
The City of Chino
Public Works Department, Water Utility

By:

PROACTIVE
ENGINEERING CONSULTANTS
a different kind of company

Final
July 2017

Table of Contents

List of Tables

List of Exhibits

Acronyms and Abbreviations

AB	Assembly Bill
ACT	Urban Water Management Planning Act of 1983
AF	Acre Feet
AFY	Acre Feet per Year
AWPF	Advanced Water Purification Facilities
BMP	Best Management Practices
CA	California
CALFED	California and Federal Bay-Delta Program
CALSIM	California Water Allocation and Reservoir Operations Model
CBW	Chino Basin Watermaster
CBWCD	Chino Basin Water Conservation District
CCF	Hundred Cubic Feet
CCWRF	Carbon Canyon Water Reclamation Facility
CDA	Chino Basin Desalter Authority
CEQA	California Environmental Quality Act
CII	Commercial, Industrial and Institutional
CIM	California Institution for Men, Chino
CIMIS	California Irrigation Management Information System
CIP	Capital Improvement Program
CPTP	Coastal Pumping Transfer Program
CRA	Colorado River Aqueduct
CUWCC	California Urban Water Conservation Council
CDPH	California Department of Public Health
CVP	Central Valley Project
CY	Calendar Year
DBP	Disinfection Byproducts
DMM	Demand Management Measure
DWR	Department of Water Resources
DYY	Dry Year Yield
EIR	Environmental Impact Report
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
ETo	Evapotranspiration
gpd	Gallons Per Day
gpf	Gallons Per Flush
gpm	Gallons Per Minute
IAWP	Interim Agricultural Water Program
IEUA	Inland Empire Utilities Agency
IRP	Integrated Resources Plan
IRWM	Integrated Regional Water Management

JCSD	Jurupa Community Services District
JPA	Joint Powers Agreement
LRP	Local Resources Program
MAF	Million Acre Feet
Max	Maximum
MCL	Maximum Contaminant Level
MDR	Medium Density Residential
MGD	Million Gallons per Day
mg/L	Milligrams Per Liter
Min	Minimum
MOU	Memorandum of Understanding
MWD	Metropolitan Water District of Southern California
MZ	Management Zone
OBMP	Optimum Basin Management Program
OCWD	Orange County Water District
QSA	Quantification Settlement Agreement
RP	Regional Plant
RWIP	Recycled Water Implementation Plan
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana Regional Interceptor
SAWPA	Santa Ana Watershed Project Authority
SB	Senate Bill
SBCFCD	San Bernardino County Flood Control District
SCADA	Supervisory Control Data Acquisition System
SCIWP	Southern California Integrated Watershed Program
SWP	State Water Project
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TIN	Total Inorganic Nitrogen
TMDL	Total Maximum Daily Load
TVMWD	Three Valleys Municipal Water District
USBR	U.S. Bureau of Reclamation
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compounds
WMWD	Western Municipal Water District
WFA	Water Facilities Authority
WMP	Water Master Plan
WSA	Water Supply Assessment
WSDM	Water Surplus and Drought Management
WSMP	Water System Master Plan
WTP	Water Treatment Plant

Executive Summary

A California Environmental Quality Act (CEQA) report is being prepared on behalf of the City of Chino (City) in support of the Altitude Business Centre Project. The EIR includes an assessment of utilities, including water supply. Recent legislation, Senate Bill 610, requires that a water supply assessment (WSA), based on specific criteria, be prepared to document the sufficiency of available water supply for the City and the Project. The WSA identifies water supply and reliability to the City and the Project both now and in the future. **The WSA does not, nor is it intended to, identify infrastructure needs related to the provision of water for the proposed Altitude Business Centre Project.**

The WSA is considered at a point in time when known future projects are considered. It is also understood that new and innovative programs and projects in concept are yet to be designed. Therefore, WSAs are a part of the ongoing planning efforts of the City to optimize its water resource program.

The WSA includes a discussion of the relevant legislation requiring the WSA, an overview of the proposed Project, analysis of water demands for the City's existing service area and the Project over a 20+ year planning period, and an analysis of reliability of the City's water supplies. This WSA includes discussion of the potential impacts each agency that supplies water to the region has on the City, and concludes with a sufficiency analysis of water supply during normal, single-dry, and multiple dry years over a 20-year planning period.

Altitude Business Centre

Altitude Business Centre is located south of the Chino Airport and bound approximately by Kimball Avenue to the north, Tract 17697 to the east, Bickmore Avenue to the south and Euclid Avenue to the west. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes airport related industrial buildings of approximately 1,313,000 square feet and open space.

Water Supply

As described in the City's 2015 Urban Water Management Plan (UWMP) update, the City relies on four sources for its long-term water supply -- City-produced local groundwater, imported water, desalted water, and recycled water.

- Groundwater is produced from the Chino Groundwater Basin (Basin). The Basin was adjudicated in 1978, which allocated water production rights to water producers. The City's current groundwater production right as a share of the Safe Yield of the Basin is 4,034 acre-feet per year (AFY). However, the City has the ability to obtain annual adjustments to its allocated production capability. Management of the Basin is accomplished by the CBW through implementation of its operating documents, including 1) the 1978 Chino Basin Judgment; 2) the Peace Agreements; and 3) the Optimum Basin Management Program (OBMP).

- Imported State Water Project (SWP) water is received from the Metropolitan Water District of Southern California (MWD) through the Inland Empire Utilities Agency (IEUA) and the Water Facilities Authority (WFA). The City's imported water deliveries are treated by the WFA at its Agua de Lejos Treatment Plant located in Upland, California. The City is entitled to 5.9 percent of the treatment plant capacity which calculates to a current Chino entitlement of 5,353 AFY.

- Desalted water is received from the Chino Basin Desalter Authority's (CDA) Chino I Desalter. The City's allocation is 5,000 AFY.

- Recycled water is supplied to the City by IEUA through the Regional Recycled Water Distribution System. In CY 2015, the city provided approximately 7,993 AF of recycled water to industrial, landscape irrigation, and agricultural customers. However, recycled water demands are expected to decrease in the future upon conversion of agricultural lands to urban use.

Chino Groundwater Basin Safe Yield Re-determination

The Chino Groundwater Basin has been adjudicated and is subject to the terms and conditions of the January 27, 1978 Judgment which was restated in 2012 by that certain Restated Judgment (Judgment). Per the Judgment, the Safe Yield of the Chino Basin is 140,000 acre feet per year. The Judgment requires that the Watermaster conduct a redetermination of the Safe Yield of 140,000 acre feet after the first ten years of operation of the physical solution. Under the Judgment, that redetermination was to have been completed in 2011, and is pending.

At this time, the final outcome of any court-ordered Safe Yield redetermination is unknown. However, based on available information, it is possible the Safe Yield may be reduced from the 140,000 acre-feet quantity that has been in-place since the time the Judgment was implemented in 1978. It is generally understood by the stakeholders that such a reduction would impact the annual shares of Operating Safe Yield allocated to the Appropriators, that overlying rights allocated to the Agricultural Pool and individual members of Non-Agricultural Pool would not be reduced, and that the respective amounts of reduction to the Appropriators would be restored, partially or fully, from any under-utilized overlying Agricultural Pool groundwater production rights, which currently are re-allocated to Appropriators on an annual basis. These under-utilized Agricultural Pool rights are the same rights that also satisfy requests for (but for the last several years, only partially satisfied all requests) agricultural land use conversions. Because the underutilized Agricultural Pool rights would be first used to restore Appropriators' respective shares of Operating Safe Yield diminished by the potential reduction in the Safe Yield, the amount of underutilized Agricultural Pool rights available to satisfy land use conversions would be reduced to a level that would not totally satisfy land use conversions. Because all agricultural land in the City is undergoing urbanization, the City's reliance on land use conversions to satisfy the water needs of such urbanization would be adversely impacted by a reduction in the Safe Yield.

Water Demand

The City's total water demand in CY 2015 is approximately 21,400 AFY. The Project potable water demand was accounted for in the future demand estimate of the 2015 UWMP, and is estimated at 198,387 gallons per day, of which up to 99,924 gpd is for irrigation and could be

served by non-domestic sources such as recycled water. Combined with the build-out of future developments that were also included in the UWMP projections, total City water demand is anticipated to increase to 27,196 AFY by 2040.

Demand and Supply Projections

Development of the proposed Altitude Business Centre Project is expected to be completed in phases during the next several years. The City will meet its future water demands, including the demands for the Project, from existing supply sources as well as sources that are currently being planned, developed and implemented. Future sources include an expanded service area for recycled water and water conservation. Supplies of imported water and CDA water are expected to remain relatively stable throughout the forecast period. Enhanced water conservation and increased local well production are anticipated to provide for the balance of needed supplies.

The City has the opportunity to increase supply to meet demand through the following measures: (1) production of groundwater based on Safe Yield limitations and replenishment; (2) increasing imported water purchases, if available and if there is available WFA capacity; (3) purchasing additional desalted water if more is produced than needed to satisfy requirements of other purchasers, and (4) purchasing additional recycled water, if available. Collectively, these additional options may be used by the City in an effort to provide sufficient water supplies to satisfy demands now and into the future.

Reliability

Reliability of future water supplies to the region is based on implementation of the OBMP, implementation of local agency programs, and combined efforts and programs among agencies, including all water retailers, the CBW, IEUA, MWD, WFA, CDA, Santa Ana Regional Water Quality Control Board (RWQCB), Santa Ana Watershed Project Authority (SAWPA), and the Chino Basin Water Conservation District.

Prevailing drought conditions throughout California and the Colorado River Basin, coupled with environmental issues affecting deliveries of SWP water through the Sacramento – San Joaquin Delta, have resulted in diminished imported surface water supplies to Southern California. MWD, the major importer of surface water to Southern California, has developed plans and programs to address drought conditions and its continuing ability to meet the water demands of its service area. MWD continually re-evaluates these plans and programs for effectiveness in consideration of changing conditions. The plans describe a progressive series of actions, including tapping into stored water reserves and, if necessary, reductions in deliveries. This WSA demonstrates that possible reductions in imported water deliveries due to drought conditions do not prevent the City from satisfying anticipated demands.

SWP Reliability Update

DWR has issued a State Water Project Final Delivery Reliability Report 2015. This report utilizes 82 years of historic rainfall and snow history, along with projected consideration factors for climate change. The updated report projects deliveries of SWP water to be plus or minus one (1) percent of previous projections utilizing both existing conditions and future conditions.

Conclusion

The information included in this WSA describes a program of potential options that may be utilized in an effort to secure sufficient water supply to satisfy the city's anticipated future water demands, including the subject project.

Reliance on Previous Reports

In an effort to expedite the review and approval process, this report has maintained the format and data presentation in a manner similar to recently approved WSA reports for the City, most notably the Falloncrest at The Preserve Project WSA (April 2014), which presented updated water supply information to the City's 2010 Urban Water Management Plan. The updated non-project specific data and historic reference presented herein relies on the Falloncrest at The Preserve report, the Rancho Miramonte WSA report, as well as various correspondences from the City and 2015 UWMP.

SECTION 1. **Introduction**

A California Environmental Quality Act (CEQA) report is being prepared for the Altitude Business Centre Project. The EIR includes an assessment of utilities, including water supply. Legislation implemented in 2002 (Senate Bill 610), requires that a water supply assessment (WSA), based on specific criteria, be prepared to document the sufficiency of available water supply for the City and the Project. The WSA identifies water supply and reliability to the City, now and into the future, and makes a determination regarding water supply sufficiency for the Project. **The WSA does not, nor is it intended to, identify infrastructure needs for service distribution to the proposed Project.** The regional location of the Project is shown in Exhibit A.

Altitude Business Centre is located south of the Chino Airport and bound approximately by Kimball Avenue to the north, tract 17697 to the east, Bickmore Avenue to the south and Euclid Avenue to the west. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes airport related industrial buildings of approximately 1,313,000 square feet as shown in Exhibit B.

The WSA is part of the ongoing planning efforts of the City to optimize its water resource program. The WSA includes a discussion of the Senate Bill 610 legislation, an overview of the proposed Project, and analysis of water demands for the City's existing service area and the Project and other City development projects over a 20-year planning period. The WSA also includes an analysis of reliability of the City's water supplies and water quality, and concludes with an analysis describing water supply during normal, single-dry, and multiple dry years over a 20-year planning period.

Exhibit A – Regional Vicinity

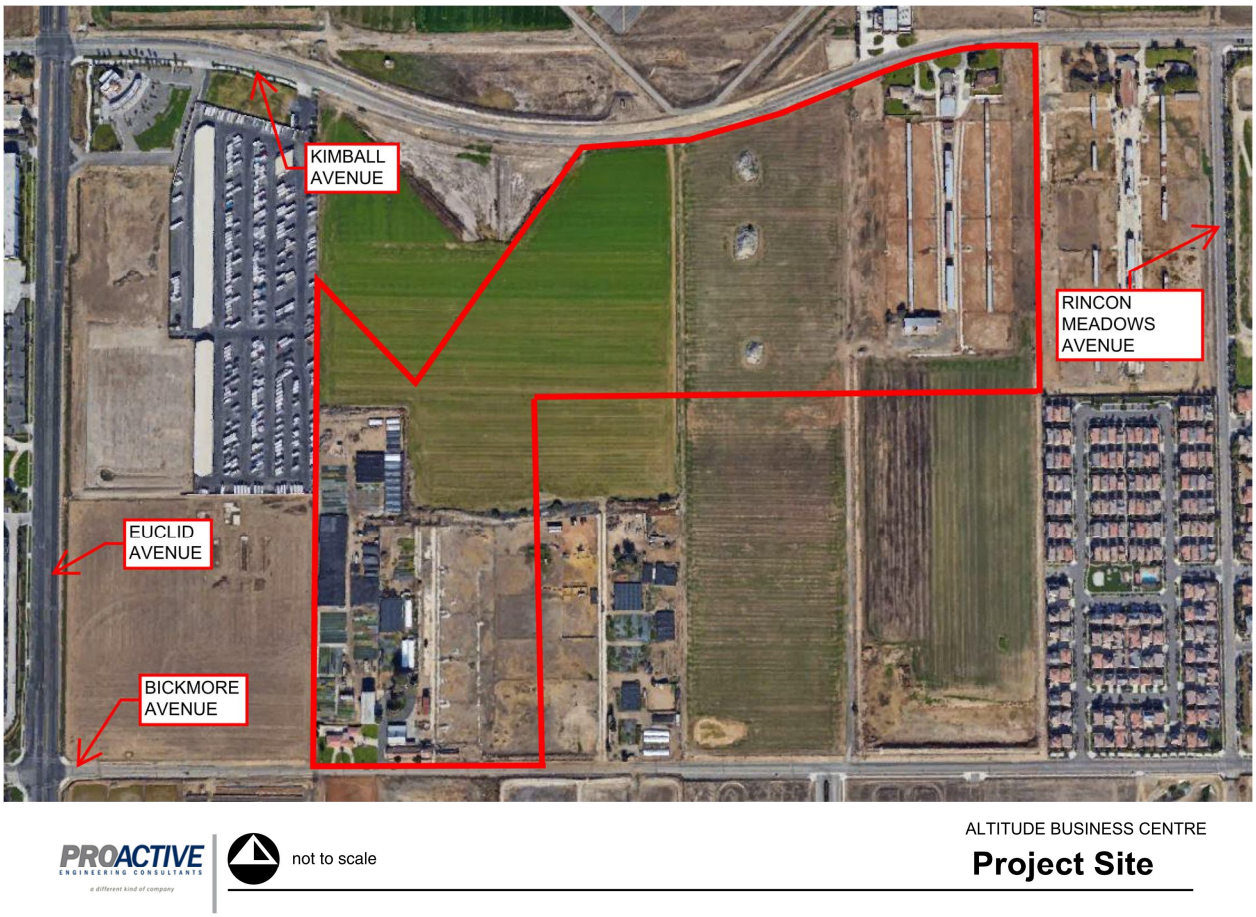


Exhibit B – Project Site

SECTION 2. **Legislation**

Due to the Project's potential impact on current and future water supplies, the State of California, through SB 610, requires that a WSA be completed for the proposed development. The Project is proposed to include approximately 1,313,000 square feet of airport related industrial building space. As the Project occupies more than 40 acres of space and 650,000 square feet of floor area, preparation of a WSA is required to determine the sufficiency of water supply to the Project and the City's water customers, now and for a 20-year planning period. The following information outlines the requirements of SB 610.

2.01 SB 610 – Costa – Water Supply Planning

Senate Bill (SB) 610 was implemented January 2002. SB 610 requires a development that qualifies as a "Project" under Water Code 10912 to be supported in CEQA documentation with a WSA report drafted to specifically identify the public water system that shall supply water to the project and analyze the availability and reliability of water supply to the development. The WSA is to include the following if applicable to the supply conditions:

1. Discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses.
2. Identification of existing water supply entitlements, water rights, or water service contracts secured by the purveying agency and water received in prior years pursuant to those entitlements, rights, and contracts.
3. Description of the quantities of water received in prior years by the public water system under the existing water supply entitlements, water rights or water service contracts.
4. Water supply entitlements, water rights or water service contracts shall be demonstrated by supporting documentation such as the following:
    a. Written contracts or other proof of entitlement to an identified water supply.
    b. Copies of capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.
    c. Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.
    d. Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.
5. Identification of other public water systems or water service contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system.
6. If groundwater is included for the supply for a proposed project, the following additional information is required:
    a. Description of groundwater basin(s) from which the proposed project will be supplied. Adjudicated basins must have a copy of the court order or decree adopted and a description of the amount of groundwater the public water system has the legal right to pump. For non-adjudicated basins, information on whether the DWR has identified the basin as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most

current bulletin of DWR that characterizes the condition of the basin, and a detailed description of the efforts being undertaken in the basin to eliminate the long-term overdraft condition.

b. Description and analysis of the amount and location of groundwater pumped by the public water system for the past five (5) years from any groundwater basin from which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.
c. Description and analysis of the amount and location of groundwater projected to be pumped by the public water system from any groundwater basin from which the proposed project will be supplied. Analysis should be based on information that is reasonably available, including, but not limited to, historic use records.
d. Analysis of sufficiency of the groundwater from the basin(s) from which the proposed project will be supplied.

7. The WSA shall be included in any environmental document prepared for the project.
8. The assessment may include an evaluation of any information included in that environmental document. A determination shall be made whether the projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.

2.02 SBx7-7 and EO B-29-15

The Water Conservation Act of 2009 (SBx7-7) requires all California urban water agencies to set and meet a 2015 Interim Water Use Target and a 2020 Water Use Target in order to collectively reduce state urban water use by 20 percent by 2020. The City has elected to utilize Target Method 1 to calculate baseline and target per capita water demands. The utilization of Target Method 1 resulted in a 2015 Interim Water Use Target of 213 gallons per capita day. (gpcd). The City's actual 2015 water use was 157 gpcd, which is in compliance with SBx7-7. In addition, the City is on track to meet the confirmed 2020 Water Use Target of 189 gpcd through continued water conservation efforts. SBx7-7 describes the overall process by which the City is to comply with the requirements. It specifically identifies methods for establishing urban water use targets. These requirements and the City's specific Compliance Plan are outlined in the 2015 UWMP.

The Governor issued a State of Emergency and Continued State of Emergency in 2014 in response to the persistent state-wide drought. Most recently, Executive Order B-29-15 was issued by the Governor in April 2015 which essentially increases the water use reduction goal to 25 percent as compared to 2013 usage throughout the State. The EO outlines specific water use reduction orders designed to heighten the urgency to reduce water consumption and facilitate the ability of local agencies to implement and enforce water conservation requirements. It addresses facilitating funding for projects designed to increase local water supplies and improve water supply reliability. It also orders more frequent reporting and modifications to the State's Model Water Efficient Landscape Ordinance; mandates Agricultural water suppliers to prepare their Agricultural Water Management Plans by specific dates; and orders the State to coordinate their water conservation related goals with other State departments like Fish and Wildlife, Forestry and Fire Protection, and the Energy Commission.

Additionally, the State Water Resources Control Board on May 9, 2016, adopted regulations implementing Executive Order B-37-16. Under this SWRCB regulation the City is required to reduce its total potable water production by 21 percent for each month as compared to the amount used in the same month in 2015.

SECTION 3. **Altitude Business Centre**

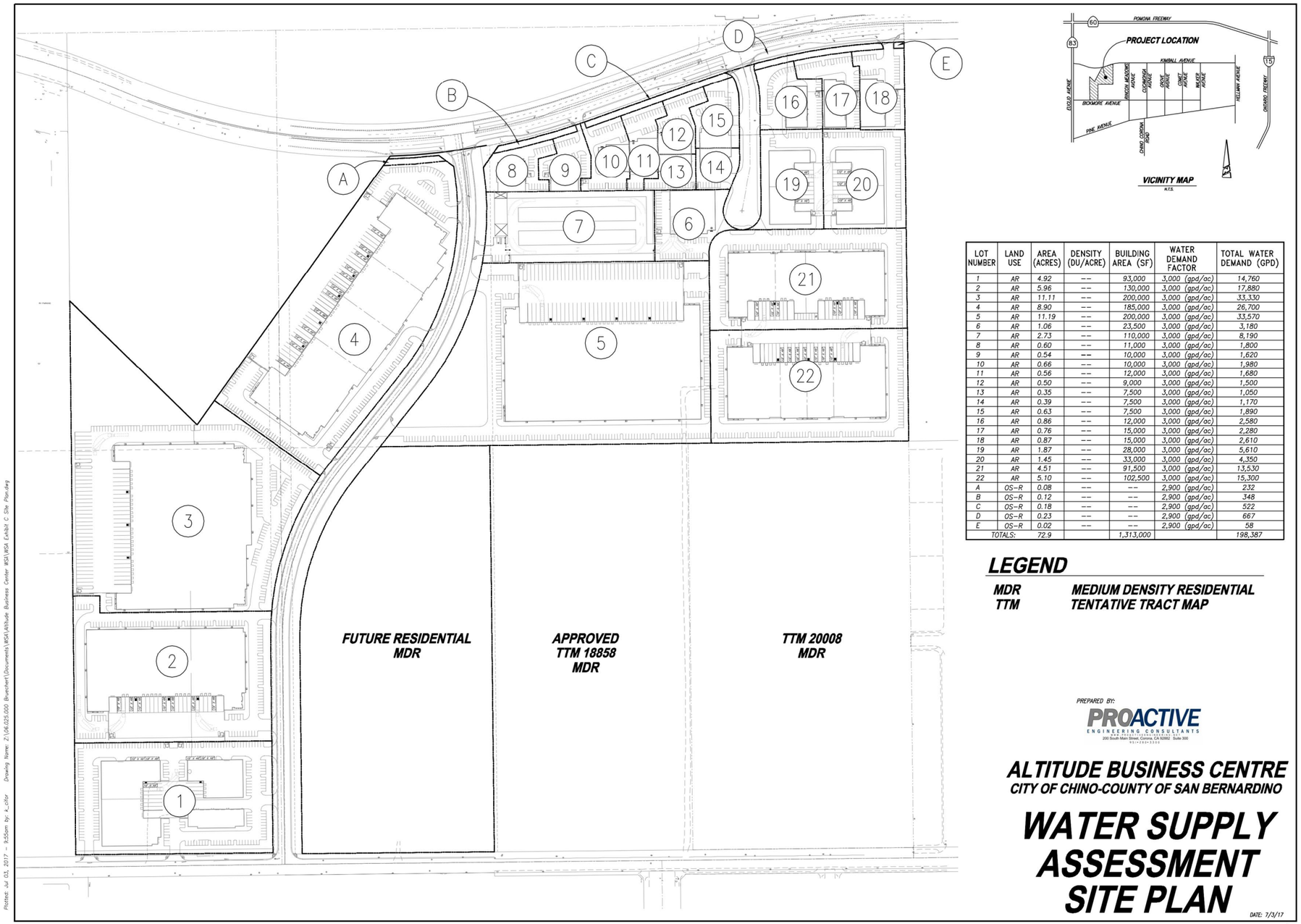
3.01 Project Description

Altitude Business Centre is located South of the Chino Airport and runs southerly of Kimball Avenue, easterly of Euclid Avenue, and northerly of Bickmore Avenue. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes airport related industrial building of approximately 1,313,000 square feet and open space. The Project land uses are summarized in Table 3-1, and the general site plan is shown in Exhibit C.

Table 3-1 – Project Land Use Summary

Lot #	Land Use	Area (acres)	Density (DU/Acre)	**Commerical/Office Building/Area (SF)***
1	AIRPORT COMM.	4.92	--	93,000
2	AIRPORT COMM.	5.96	--	130,000
3	AIRPORT COMM.	11.11	--	200,000
4	AIRPORT COMM.	8.90	--	185,000
5	AIRPORT COMM.	11.19	--	200,000
6	AIRPORT COMM.	1.06	--	23,500
7	AIRPORT COMM.	2.73	--	110,000
8	AIRPORT COMM.	0.60	--	11,000
9	AIRPORT COMM.	0.54	--	10,000
10	AIRPORT COMM.	0.66	--	10,000
11	AIRPORT COMM.	0.56	--	12,000
12	AIRPORT COMM.	0.50	--	9,000
13	AIRPORT COMM.	0.35	--	7,500
14	AIRPORT COMM.	0.39	--	7,500
15	AIRPORT COMM.	0.63	--	7,500
16	AIRPORT COMM.	0.86	--	12,000
17	AIRPORT COMM.	0.76	--	15,000
18	AIRPORT COMM.	0.87	--	15,000
19	AIRPORT COMM.	1.87	--	28,000
20	AIRPORT COMM.	1.45	--	33,000
21	AIRPORT COMM.	4.51	--	91,500
22	AIRPORT COMM.	5.10	--	102,500
A	OPEN SPACE-R	0.08	--	--
B	OPEN SPACE-R	0.12	--	--
C	OPEN SPACE-R	0.18	--	--
D	OPEN SPACE-R	0.23	--	--
E	OPEN SPACE-R	0.02	--	--
TOTALS:		72.9		1,313,000

Exhibit C – General Site Plan



LOT NUMBER	LAND USE	AREA (ACRES)	DENSITY (DU/ACRE)	BUILDING AREA (SF)	WATER DEMAND FACTOR	TOTAL WATER DEMAND (GPD)
1	AR	4.92	--	93,000	3,000 (gpd/ac)	14,760
2	AR	5.96	--	130,000	3,000 (gpd/ac)	17,880
3	AR	11.11	--	200,000	3,000 (gpd/ac)	33,330
4	AR	8.90	--	185,000	3,000 (gpd/ac)	26,700
5	AR	11.19	--	200,000	3,000 (gpd/ac)	33,570
6	AR	1.06	--	23,500	3,000 (gpd/ac)	3,180
7	AR	2.73	--	110,000	3,000 (gpd/ac)	8,190
8	AR	0.60	--	11,000	3,000 (gpd/ac)	1,800
9	AR	0.54	--	10,000	3,000 (gpd/ac)	1,620
10	AR	0.66	--	10,000	3,000 (gpd/ac)	1,980
11	AR	0.56	--	12,000	3,000 (gpd/ac)	1,680
12	AR	0.50	--	9,000	3,000 (gpd/ac)	1,500
13	AR	0.35	--	7,500	3,000 (gpd/ac)	1,050
14	AR	0.39	--	7,500	3,000 (gpd/ac)	1,170
15	AR	0.63	--	7,500	3,000 (gpd/ac)	1,890
16	AR	0.86	--	12,000	3,000 (gpd/ac)	2,580
17	AR	0.76	--	15,000	3,000 (gpd/ac)	2,280
18	AR	0.87	--	15,000	3,000 (gpd/ac)	2,610
19	AR	1.87	--	28,000	3,000 (gpd/ac)	5,610
20	AR	1.45	--	33,000	3,000 (gpd/ac)	4,350
21	AR	4.51	--	91,500	3,000 (gpd/ac)	13,530
22	AR	5.10	--	102,500	3,000 (gpd/ac)	15,300
A	OS-R	0.08	--	--	2,900 (gpd/ac)	232
B	OS-R	0.12	--	--	2,900 (gpd/ac)	348
C	OS-R	0.18	--	--	2,900 (gpd/ac)	522
D	OS-R	0.23	--	--	2,900 (gpd/ac)	667
E	OS-R	0.02	--	--	2,900 (gpd/ac)	58
TOTALS:		72.9		1,313,000		198,387

LEGEND

MDR	MEDIUM DENSITY RESIDENTIAL
TTM	TENTATIVE TRACT MAP

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ALTITUDE BUSINESS CENTRE
CITY OF CHINO-COUNTY OF SAN BERNARDINO

WATER SUPPLY ASSESSMENT SITE PLAN

DATE: 7/3/17

Plotted: Jul 03, 2017 – 9:55am By: K_ofor Drawing Name: Z:\06.025.000 Bruetcher\Documents\WSA\Altitude Business Center WSA\WSA Exhibit C Site Plan.dwg

3.02 Altitude Business Centre Projects Water Demands

Table 3-2 calculates the total water demand of the project.

Table 3-2 – Total Project Water Demand

Lot #	Land Use	Area (acres)	[1] Water Demand Factor (gpd/du)	[2] Water Demand Factor (gpd/Ac)	Density (du/ac)	Percent Indoor Water	Percent Outdoor Water	ADD Indoor (gpd)	ADD Outdoor [3] (gpd)	*ADD Recycled* [4] *(gpd)*	ADD Total (gpd)
1	AR	4.92	--	3000	--	50%	50%	7,380	0	7,380	14,760
2	AR	5.96	--	3000	--	50%	50%	8,940	0	8,940	17,880
3	AR	11.11	--	3000	--	50%	50%	16,665	0	16,665	33,330
4	AR	8.90	--	3000	--	50%	50%	13,350	0	13,350	26,700
5	AR	11.19	--	3000	--	50%	50%	16,785	0	16,785	33,330
6	AR	1.06	--	3000	--	50%	50%	1,590	0	1,590	3,180
7	AR	2.73	--	3000	--	50%	50%	4,095	0	4,095	8,190
8	AR	0.60	--	3000	--	50%	50%	900	0	900	1,800
9	AR	0.54	--	3000	--	50%	50%	810	0	810	1,620
10	AR	0.66	--	3000	--	50%	50%	990	0	990	1,980
11	AR	0.56	--	3000	--	50%	50%	840	0	840	1,680
12	AR	0.50	--	3000	--	50%	50%	750	0	750	1,500
13	AR	0.35	--	3000	--	50%	50%	525	0	525	1,050
14	AR	0.39	--	3000	--	50%	50%	585	0	585	1,170
15	AR	0.63	--	3000	--	50%	50%	945	0	945	1,890
16	AR	0.86	--	3000	--	50%	50%	1,290	0	1,290	2,580
17	AR	0.76	--	3000	--	50%	50%	1,140	0	1,140	2,280
18	AR	0.87	--	3000	--	50%	50%	1,305	0	1,305	2,610
19	AR	1.87	--	3000	--	50%	50%	2,805	0	2,805	5,610
20	AR	1.45	--	3000	--	50%	50%	2,175	0	2,175	4,350
21	AR	4.51	--	3000	--	50%	50%	6,765	0	6,765	13,530
22	AR	5.10	--	3000	--	50%	50%	7,650	0	7,650	15,300
	Subtotal							98,280	0	98,280	196,560

A	OS-R	0.08	2900	--	--	10%	90%	23	0	209	232
B	OS-R	0.12	2900	--	--	10%	90%	35	0	313	348
C	OS-R	0.18	2900	--	--	10%	90%	52	0	470	522
D	OS-R	0.23	2900	--	--	10%	90%	67	0	600	667
E	OS-R	0.02	2900	--	--	10%	90%	6	0	52	58
									Subtotal	*1,644*	1,827
TOTALS								98,463	0	*99,924*	198,387

[1] Demand factors based on College Park Phase 2 Update.

[2] Demand factors based on City 2004 Water System Master Plan Update.

[3] Represents recycled water demand if all outdoor usage is served by recycled water - residential and non-residential.

[4] Based on only non-residential outdoor usage served by recycled water.

The project's total average water demand is approximately 198,387 gallons per day (gpd), 138 gpm, or 222 AFY. Project construction is planned to begin within the next few years. For adherence to Senate Bill 610 requirements and consistency with the method of calculating demand for other developments (SRG Chino South Industrial and College Park), the water demands were estimated for both potable water and recycled water. It is assumed that all indoor water use will be met by potable water, and all public and non-residential irrigation for the project will be served recycled water. However, residential front yards and backyards may also be served with recycled water. Considering this potential, non-domestic water use for the project is approximately 99,924 gpd, 69 gpm, or 112 AFY. The total potable water demand is 198,387gpd, 138 gpm, or 222 AFY.

SECTION 4. City Water Demand and Supplies

The City Water Utility serves water to an area of approximately 29.5 square miles. Portions of the City extend beyond the westerly and northwesterly boundary of the City's water service area which are served by other water purveyors, including the Monte Vista Water District. The City's water service area, including the new development areas (i.e., Subareas 1 and 2) is shown in Exhibit D.

4.01 Overview of Supply and Demand

In CY 2015 the City purchased and produced 13,433 AF of domestic water from City wells (44%), CDA (38%), and WFA (18%). The City also provided 7,993 AF of recycled water (purchased from IEUA) to industrial, landscape irrigation, and agricultural customers. Recycled water supplies have increased to a higher use in recent years than was projected in the 2010 UWMP. Although agricultural irrigation within the City's service area has increased in recent years, it is expected to decrease as agricultural conversion takes place for Richland Properties and other development projects, i.e. Chino South Industrial, College Park, Mill Creek (formerly Edgewater Communities), and other projects within The Preserve. Planned improvements will increase the efficient and reliable use of each water source. Each of the sources of water for the City is more fully discussed in Section 4.02.

The City currently obtains water from the following primary water sources: (1) groundwater from the Chino Groundwater Basin managed by the CBW; (2) imported State Water Project (SWP) water from the MWD through the Inland Empire Utilities Agency (IEUA); (3) desalted groundwater from the Chino Basin Desalter Authority (CDA); and (4) recycled water supplied by IEUA. The City owns seven reservoirs with a combined storage capacity of 23 million gallons, 16 groundwater wells with future plans for rehabilitation of existing wells and several new wells for enhanced production, one imported water connection to the Water Facilities Authority (WFA) Agua de Lejos Water Treatment Plant, two ion-exchange treatment plants, four booster pump stations, two CDA water connections, emergency connections with adjacent water purveyors, potable water pipelines, and recycled water pipelines. A description of the City's wells is included in Table 4-5 in Section 4.02.

Growth Rate

The City's adopted 2015 UWMP includes an analysis of the City's anticipated growth rate. The 2015 service area population was approximately 73,683. The population is expected to increase to over 97,863 by 2040. Table 4-1 shows the projected service area population for the City. The increase population projected by the 2015 UWMP was based on normal growth rates as projected by regional planning agencies, including Southern California Association of Governments (SCAG) and the schedule development of the remainder of The Preserve, College Park, and Rancho Miramonte development (formerly Edgewater Communities).

Table 4-1 – City Service Area Population

Year	2015	2020	2025	2030	2035	2040
City Water Service Area Population	73,683	78,463	84,596	90,730	96,863	97,863

Source: City 2015 UWMP

Exhibit D – City Water Service Area

Water Demand

The City's total water demand in CY 2015 is approximately 21,427 AFY. The Project's potable water demand was accounted for in the future demand estimate of the 2015 UWMP. The water demand and land use for this project was accounted for in the City's General Plan as well as the Preserve Specific Plan and therefore is consistent with the City's growth projections. The City of Chino assigned Project Number TPM 19756 (16-0456) and MSA (16-0457) to this project. The estimated water demand is 198,387 gallons per day, of which up to 99,924 gpd is for irrigation and could be served by non-domestic sources such as recycled water. Combined with the build-out of future developments that were also included in the UWMP projections, total City water demand including recycled water demand is anticipated to increase to 27,196 AFY by 2040.

Demand and Supply Comparison

Table 4-2 shows the projected water demand and supply for the City, including additional demand the Project will require through 2040. This represents a 24-year planning period, which is consistent with the City's 2015 UWMP and satisfies the minimum 20-year period for the WSA.

Demand and supply projections consider land use, in addition to water development programs and projects. A supply surplus is indicated demonstrating a sufficient water supply for the City and the Project through the 20-year planning period and beyond based on the CBW's current Basin Safe Yield of 140,000 AFY.

Table 4-2 – Projected Water Demand and Supply for City

	Actual	Projected (AFY)				
	2015	2020	2025	2030	2035	2040
DEMAND [1]						
Potable	13,433	17,262	18,696	20,058	21,132	23,355
Recycled	7,993	5,791	4,127	3,810	3,826	3,841
TOTAL WATER DEMAND	**21,427**	**23,053**	**22,822**	**23,868**	**24,771**	**27,196**
SUPPLY [2]						
Local - Groundwater Production Rights (AFY)	13,394	15,421	15,421	15,421	15,421	15,421
Local - Desalter Water	5,000	5,000	5,000	5,000	5,000	5,000
Import WFA/ IEUA	5,353	5,353	5,353	5,353	5,353	5,353
Total Potable Supply	23,747	25,774	25,774	25,774	25,774	25,774
Total Recycled Supply	7,993	5,971	4,127	3,810	3,826	3,841
TOTAL WATER SUPPLY	**31,740**	**31,745**	**29,901**	**29,584**	**29,600**	**29,615**
POTABLE SUPPLY SURPLUS	10,314	8,512	7,078	5,716	4,642	2,419

[1] Based on Table 4-3 of the City 2015 UWMP.

[2] Source: Tables 4-1 and Table 4-2 of the City 2015 UWMP. It should be noted that the Supply figures are based on available Local - Groundwater Production Rights of 140,000 AFY Safe Yield through Year 2040.

The analysis shows that as groundwater supplies increase, desalted and imported water supplies will remain stable. The 2015 UWMP reports a significant increase in recycled water use in the last ten years with the development of IEUA's Regional Recycled Water Distribution System and expanded recycled water infrastructure within the City. However, the conversion of irrigated agricultural lands to urban uses is expected to decrease recycled water needs in the City for the planning horizon.

The City has the opportunity to increase supply as needed to meet demand through additional production of groundwater based on Safe Yield limitations. Also, the City may purchase additional desalted water if more is produced than needed to satisfy requirements of other purchasers.

Reliability of future water supplies to the region is enhanced through continued implementation of the Optimum Basin Management Program (discussed in Section 4.2 below), implementation

of local agency programs, and combined efforts and programs among member and cooperative agencies, including all water retailers, the CBW, IEUA, MWD, Santa Ana Regional Water Quality Control Board, Santa Ana Watershed Project Authority, and the Chino Basin Water Conservation District. The Water Utility manages agreements and contracts with these agencies and continually monitors activities, projects and programs to optimize the City's water supply. The following sections discuss each of the water sources for the City. Reliability of each of these sources is discussed in Section 5.

4.02 Groundwater

Chino Groundwater Basin

The City produces groundwater from the Chino Groundwater Basin, one of the largest basins in southern California, which is managed by CBW. The CBW is guided by the provisions of the Chino Basin adjudication and subsequent agreements between the parties to the Judgment. These agreements provide for groundwater production rights that are not fully utilized by the Basin's agricultural interests to be transferred to municipal water purveyors via two methods; agricultural land use conversion and early transfer.

The CBW prepares an Assessment Package each year to determine the assessments for each groundwater producer based on production from the prior fiscal year. Table 4-3 and Table 4-4 describe the City's annual groundwater production right corresponding to FY 13/14 and FY 14/15 when the Safe Yield is 140,000 AFY.

Table 4-3 – City Total Annual Groundwater Production Right [1]

	Production Year 2013/14	Production Year 2014/15
Early Transfer	2,413	2,413
Land Use Conversion	7,623	7,860
Difference of Potential for Reallocation vs. Net	(1,668)	(912)
Sub-Total	**8,368**	**9,361**
Assigned Water Rights	4,034	4,034
Carry Over from previous year	4,034	4,034
Previous Years Reconciliation	0	0
Sub-Total	**8,068**	**8,068**
Total Production Right	**16,436**	**17,429**

Source: CBW, Final 2015/16 Assessment Package

[1] All amounts are subject to change annually; based on Chino Groundwater Basin Safe Yield = 140,000 AFY

Groundwater Management

The CBW was established in 1978 by a judgment entered by the Superior Court of California. The Judgment required that the Watermaster develop a management plan for the Chino Groundwater Basin that meets water quality and water quantity objectives for the region.

The Watermaster is guided by the provisions of the Chino Basin adjudication and subsequent agreements between the parties to the Judgment. These agreements provide for groundwater production rights that are not fully utilized by the Basin's agricultural interests to be transferred to appropriators via two methods; agricultural land use conversion and early transfer. Four primary documents govern the adjudication and management of the Chino Basin: (1) the 1978 Chino Basin Judgment, (2) the Peace Agreement, (3) the OBMP, and (4) the Peace II Agreement. The following discusses each of these documents as they pertain to basin management and the City water supply from groundwater.

The City's current assigned water production right, based on a share of Safe Yield, is 4,034 AFY from the Chino Groundwater Basin. Additional production allocations are received from annual entitlements of Early Transfers and Land Use Conversions, although they are subject to availability. Additional groundwater may also be available via the Dry Year Yield (DYY) program for the Chino Basin in partnership with the CBW, IEUA, and MWD. The DYY program is anticipated to reduce summertime peaking, deliver SWP supplies, control MWD surface water deliveries during future droughts/emergencies, and allow MWD to export stored water for other member agencies.

Adjudication – 1978 Judgment

In 1978, the Superior Court of the State of California entered a judgment that adjudicated the water rights of the Chino Basin, and imposed a physical solution, which is the heart of the Judgment.

According to the Judgment, there are significant imported water supplies available to supplement the native Safe Yield of the Basin. Therefore, the purpose of the physical solution was to establish a legal and practical means for making the maximum reasonable beneficial use of the waters of the Chino Basin by providing the optimum economic, long-term, conjunctive utilization of surface waters, ground waters and supplemental water, to meet the requirements of water users having rights in or dependence on the Chino Basin. A fundamental premise of the physical solution was that all water users dependent on the Chino Basin would be allowed to pump sufficient waters to meet their needs. To the extent that a water producer's pumping exceeds its share of the Safe Yield, the water producer has the obligation to provide for replenishment of the Basin for the amount of production exceeding its rights.

The Watermaster, as an extension of the court, manages the Basin in accordance with the provisions of the Judgment. An Assessment Package is produced by the Watermaster on an annual basis, which describes the rights and abilities to which appropriators are entitled according to the provisions of the Judgment.

Water Rights – 1978 Judgment

Three operating pools were established by the 1978 Judgment for Watermaster administration: the Overlying Agricultural Pool, the Overlying Non-Agricultural Pool, and the Appropriative Pool. Rights to the Safe Yield of the Chino Basin were allocated to each operating pool. According to the Judgment, the Safe Yield of the Chino Basin is 140,000 AFY. However, the court ordered Watermaster to re-evaluate the Safe Yield, and that re-evaluation is in progress. Preliminary results indicate it is possible the Safe Yield may be reduced. Safe Yield is defined as the long-term average annual quantity of groundwater (excluding replenishment water or stored water

but including return flow to the Basin from the use of replenishment or storage water), which can be produced from the Basin under cultural conditions of a particular year without causing an undesirable result.

Overlying right is defined as the appurtenant right of an owner of lands overlying the Chino Basin to produce water from the Basin for overlying beneficial use on such lands. Appropriative right is defined as the annual production right of a producer from the Chino Basin other than pursuant to an overlying right.

Aggregate preserved overlying rights in the Safe Yield for agricultural pool use, including the rights of the State of California, total 82,800 AFY, or 414,000 AF in any five consecutive years. Overlying rights for non-agricultural pool use total 7,366 AFY. In accordance with the provisions of the CBW process, when land converts from agricultural use to non-agricultural use, the purveyor that will supply water to the converted land may apply for additional groundwater production credit; i.e., Agricultural Land Use Conversion.

Appropriative rights allocated by the Judgment include rights by prescription and are entitled under the physical solution to share in the remaining Safe Yield, after satisfaction of overlying rights. Appropriative rights total 54,834 AFY. Operating Safe Yield is the amount of groundwater that the Watermaster shall determine can be produced from the Chino Basin by the Appropriative Pool parties free of replenishment obligation under the physical solution. Any subsequent change in the Safe Yield would debit or credit the Appropriative Pool. In accordance with the Judgment, Appropriative rights will be reduced by 5,000 AFY in 2018 due to the expiration of an approved overdraft. The City's current share of the Operating Safe Yield is 7.357 percent or 4,034 AFY. The City's projected share as of 2018 will be 3,666 AFY.

Reallocation of Water Rights

According to the Judgment, in any five years that any portion of the share of Safe Yield allocated to the Overlying Agricultural Pool is not produced, that water is available for reallocation to the Appropriative Pool. Priority of that water is first to supplement water available from Operating Safe Yield to compensate for any reduction in the Safe Yield after the tenth year of operation (1988), conversion claims, and then for supplement to the Operating Safe Yield without regard to reductions in Safe Yield.

Appropriative rights and corresponding shares of Operating Safe Yield may be assigned or may be leased or licensed to another appropriator, as approved by the Watermaster.

Overdraft - 1978 Judgment

In adopting the Operating Safe Yield for any year, the Watermaster is limited to 200,000 acre-feet of accumulated overdraft, and in no event shall the Operating Safe Yield for all pools in any year be less than the Appropriative Pool's share of Safe Yield or exceed the Appropriative Pool's share of Safe Yield by more than 10,000 AF. Note: all footnotes are listed in at the end of this document in Section 7.1.

Groundwater Replenishment – 1978 Judgment

Overdraft is defined as a condition wherein the total annual production from the Basin exceeds the Safe Yield. The 1978 Judgment stated that the Chino Basin, since at least 1953, was in a

condition of overdraft. The Watermaster reports in its State of the Basin Report, July 2005 that the Safe Yield of the Basin could be reduced unless certain actions are taken. These actions are to occur through the implementation of the Optimum Basin Management Program (OBMP). The State of the Basin Report also states that the Judgment allows a 5,000 AFY overdraft of Chino Basin through 2017.

The Watermaster levies an annual Replenishment Assessment in an amount sufficient to purchase replenishment water to replace production during the preceding year, which exceeds the Safe Yield.

In any year that the City may elect to produce groundwater in-excess of its available production rights (due to declining yield of the Basin or any other reason) to satisfy its needs, the City would incur a replenishment obligation. That obligation, along with all other similar replenishment obligations, would be tracked by the Watermaster as part of its responsibility to obtain water to meet all replenishment obligations, and issue corresponding annual assessments, accordingly.

The Judgment provides that "Watermaster shall levy and collect assessments in each year, pursuant to the respective pooling plans, in amounts sufficient to purchase replenishment water to replace production by any pool during the preceding year which exceeds the pool's allocated share of Safe Yield in the case of the overlying pools, or Operating Safe Yield in the case of the Appropriative Pool. It is anticipated that supplemental water for replenishment of Chino Basin may be available at different rates to the various pools to meet their replenishment obligations. If such is the case, each pool will be assessed only that amount necessary for the cost of replenishment water to that pool, at the rate available to the pool, to meet its replenishment obligation."

Supplemental water may be used to recharge the Basin either directly by spreading and percolating or injecting the water into the Basin, or indirectly by delivering the water for use in lieu of production and use of Safe Yield or Operating Safe Yield. Supplemental water may be obtained from any available source including recycled water, State water, local import, and Colorado River supplies.

The Judgment also provides that "Watermaster shall seek to obtain the best available quality of supplemental water at the most reasonable cost for recharge in the Basin."

Much of the available natural surface water runoff in the Santa Ana River Watershed is captured and recharged to the groundwater aquifers. A system of flood control channels and percolation basins have been developed to increase the recharge capacity of the Basin. The groundwater recharge program is planned to be expanded in the future.

Groundwater Replenishment – Recycled Water

IEUA has primary responsibility for treatment and delivery of recycled water to Chino Basin facilities for recharge. Direct use of recycled water has priority over recharge deliveries.

The Chino Basin Recycled Water Groundwater Project, developed by the Chino Basin Water Conservation District (CBWCD), IEUA, San Bernardino County Flood Control District (SBCFCD), and the CBW, includes redevelopment and modification of the existing Chino Basin groundwater recharge facilities. Historically, these basins have been used primarily for flood control, and as part of the OBMP, the recharge basins will help "drought-proof" the Chino Basin as they will be enhanced to capture storm water and provide for the greater ability to store imported water in the

Chino Basin.

The Recycled Water Groundwater Recharge Program is being implemented in two phases to reduce dependence on imported water that may not be available in the future. Phase 1 will recharge up to 44,000 AFY of storm water, recycled water and imported water within the upper portion of the Chino Basin. This will include recharging up to 20 percent recycled water, or about 8,000 AFY. Phase 2 is an expansion of Phase 1.

Carryover – 1978 Judgment

Any Appropriator who produces less than its assigned share of Operating Safe Yield may carry such unexercised right forward for use in subsequent years. The first water used in any such subsequent year is to be an exercise of that carryover right. If the aggregate carryover of any appropriator exceeds its share of Operating Safe Yield, it is eligible for storage.

Groundwater Storage Capacity – 1978 Judgment

The Judgment states that a substantial amount of available groundwater storage capacity exists in Chino Basin, which is not utilized for storage or regulation of Basin waters. The Basin stores approximately 5 MAF of groundwater and has the capability of storing an additional 1 MAF. Available Chino Basin capacity can appropriately be utilized for storage and conjunctive use of supplemental water with Basin waters. Any person or public entity may make reasonable beneficial use of the available groundwater storage capacity for storage of supplemental water, with allocation preference of storage capacity to the needs and requirements of the lands overlying the Basin and the owners of rights in the Basin.

Peace Agreement

Adopted in July 2000 and amended in 2004, the “Peace Agreement” amended the 1978 Chino Basin Judgment for a term of 30 years. The Peace Agreement facilitates the implementation of the Optimum Basin Management Plan (OBMP). The Peace Agreement amended the judgment in three areas:

- Members of the Overlying Non-Agricultural Pool have the right to transfer or lease their quantified production rights within the same pool or to the Watermaster in conformance with specified procedures.
- Any appropriator who provides water service to overlying rights to the extent necessary to provide water service to overlying lands.
- For the term of the Peace Agreement, in any year in which sufficient unallocated Safe Yield from Overlying Agricultural Pool is available for conversion claims, the Watermaster can allocate each appropriator with a conversion claim, 2.0 AF of unallocated Safe Yield water for each converted acre approved.

Overdraft – Peace Agreement

Individual producers do not currently have a limit on how much they can over-produce; however, they are assessed an amount to replenish the Basin for all overproduction. Producers generally develop annual demand projections that assist in making arrangements with other appropriators for pre-purchase of replenishment water through transfers and other

agreements. This allows the Watermaster to optimize planning within the OBMP.

The Watermaster is responsible to conduct recharge and replenishment of the Basin. As part of its ongoing efforts to manage the basin so that ground water producers may pump groundwater in sufficient quantities to meet their needs, the Watermaster committed per the Peace Agreement to conduct physical recharge of supplemental water of 6,500 AFY in one or more of the areas known as Montclair, Brooks, and Upland spreading facilities (Management Zone 1 – MZ1). If the cumulative total of 32,500 AF of recharge has not been accomplished at the end of the five years, then recharge will continue at the same annual rate until 32,500 AF has been reached. The prescribed recharge of 32,500 AF was accomplished.

In-Lieu of Groundwater Production

Recharging the Basin may be accomplished either directly by spreading and percolating or injecting the water into the Basin, or indirectly by delivering the water for use in lieu of groundwater production and use of Safe Yield or operating Safe Yield.

In lieu areas are designated by the Watermaster. The Watermaster has designated the entire Chino Basin as an in-lieu area. Any member of the Appropriative Pool, who is willing to abstain for any reason from producing any portion of its share of Operating Safe Yield in any year, may offer the unproduced water to the Watermaster. The Watermaster then may purchase the unproduced groundwater, in place of spreading replenishment water.

Storage and Recovery – Peace Agreement Local Storage

Local storage is protected and each party has the right to store its un-produced carry-over water in the Basin. Water held in storage is transferable, but storage capacity is not. Parties may continue to produce the actual quantity of water held in its storage account, subject only to the loss provisions. Rate of loss from local storage was zero percent until 2005. At that time, the Watermaster recalculated the rate of loss based on the best available scientific information. The current two percent Storage Loss is deducted annually from local storage accounts. For production year 2014/15, the city's total stored water reserves (including excess carryover) were approximately 80,220 AF.

Storage and Recovery Program

The initial target for the cumulative quantity of water held in storage in the Basin is 500,000 AF, as established by the OBMP. As part of regional Storage and Recovery activities, a conjunctive use program (called Dry Year Yield) for the Chino Basin was developed. The program provides for MWD to store water in the Chino Basin. During periods of drought, when imported water is not in sufficient supply to meet all demands, MWD directs that Chino Basin retail agencies decrease their imported water use and make-up the supply by producing groundwater from MWD's groundwater storage account. As of April 30, 2008, there was about 86,000 AF of storage (designed for 100,000 AF) based on agreements with MWD's DYY account. On May 1, 2008, MWD called for the parties to begin withdrawing water from the DYY account in the amount of 33,000 AF per 12-month period, which was the first call since the program has been under development since 2002. At the end of the 2008 calendar year, the account balance was 34,493 AF. The DYY Program has now completed a full cycle, with

Chino Basin benefitting from those facilities, and MWD having filled the account and now drawing it down over three years. In April 2010, MWD made the final call on that water and the DYY Program stored water balance was zeroed out. This program is just one example of storage programs that are necessary to optimize Basin storage and supplies, and reduce demand on imported water supplies.

Transfers – Peace Agreement

Transfers must have the approval of the Watermaster. Transfers include the assignment, lease, or sale of a right to produce water to another producer within the Chino Basin or to another person or entity for use outside the Basin whether the transfer is temporary or permanent. Lease of water rights are also permissible to allow producers to make up for the lessee's over-production.

Overlying Non-Agricultural Pool members have the right to transfer or lease within the pool, and the right to transfer to the Watermaster for the purpose of replenishment for a desalter or for a storage and recovery program.

Early Transfer

An "early transfer" means the reallocation of Safe Yield not produced by the Overlying Agricultural Pool to the Appropriative Pool on an annual basis rather than according to the five-year increment described in the Judgment. The Early Transfer of not less than 32,800 AFY was the expected approximate amount of water not produced by the Agricultural Pool. Early transfer is to be the greater of 32,800 AF or 32,800 AF plus the actual quantity of water not produced in a given year after all the land use conversions are satisfied. Early transfer water is allocated among members of the Appropriative Pool in accordance with their pro-rata share of the initial Safe Yield. The City's share of the initial Safe Yield is 7.357 percent, yielding an Early Transfer of 2,413 AFY.

Land Use Conversion of Water Rights

With the effective date of the Peace Agreement (June 2000), the amount of water rights converted from agricultural land to urban use was changed from 2.6 AF per acre (1.3 AF to the Appropriator serving the converted land and 1.3 AF to the Appropriative Pool) to 2.0 AF per acre, all of which is allocated upon conversion of the land to the Appropriative Pool member serving the converted land.

Major developments in the City that represent significant land use conversions include The Preserve, College Park, Mill Creek (formerly Edgewater Communities), SRG Chino South Industrial Park, Watson and Majestic. The Preserve Specific Plan includes 2,652 acres of development. Consequently, the Preserve represents an estimated total of 5,304 AFY of potential water rights at build out, which includes the water rights associated with Watson Industrial Park. College Park, which has 719 acres of development, represents up to 1,438 AFY of water rights at build out. The Mill Creek development project has 222.35 acres of development eligible for conversion to urban use, representing potential for an additional 444.7 AFY, and the SRG Chino South Industrial Park consists of 127.7 acres of development, with 81 acres eligible

for conversion to urban use for a total of 162 AFY. Two other development projects include Watson Land Company's 180-acre site east of the Chino Airport and the Majestic at Southeast project, which is a 155-acre site. These are potentially eligible for conversion to urban use for a total of 670 AFY.

The total water rights that the City anticipates it may potentially be eligible to receive through the land use conversion process applied to these developments, when combined with the City's current share of water rights at 3,666 AFY under the Chino Basin Operating Safe Yield and an Early Transfer share of 2,413 AFY, are 15,421 AFY.

An Agricultural Pool member has the right to a voluntary agreement with an appropriator, which has a service area contiguous to or inclusive of the agricultural land, to provide water to the overlying land on behalf of the Agricultural Pool member. The appropriator is then entitled to a credit to off-set production to the extent it is serving the overlying land up to the amount of the historical maximum annual quantity of water previously used on that property. The credit is debited to the Agricultural Pool's collective production right.

Total potential reallocations of unproduced Agricultural Pool water in the form of Early Transfers and Land Use Conversions are subject to availability. As shown in Table 4-3, in FY 2013/14, the City was eligible for an Early Transfer share of 2,413 AF and a Land Use Conversion amount of 7,623 AF; however, these amounts are subject to reconciliation between the amount of acre feet required and the amount of acre-feet eligible based on Agricultural Pool under (over) production. The City was assigned a debit for FY 2013/14 of 1,668 AF reconciliation. Consequently, the total available to the City for Ag Pool Reallocation in 2013/14 was 8,368 AF. At the conclusion of production year 2014/15, the City's net Agricultural Pool Reallocation (considering an assigned debit of 912 AF) was 9,361 AF.

Optimum Basin Management Program for the Chino Basin

In 1998, the CBW developed an integrated set of water management goals and actions for the Basin. Known as the Optimum Basin Management Program (OBMP), this document describes nine program elements to meet the water quality and local production objectives in the Basin. The OBMP encourages the increased use of local supplies to help "drought proof" the Basin.

The OBMP is intended to formulate and implement a groundwater management program that will preserve and enhance the Safe Yield and the water quality of the Chino Basin. The Watermaster's goal is to make it possible for all groundwater users to produce water from the basin for beneficial uses at an affordable cost. The OBMP is intended to allow continued reliance on groundwater for beneficial use within the basin while minimizing demand for imported water, and to encourage beneficial use of the large available storage space in the aquifer system. OBMP actions are intended to benefit both local and regional water supply programs.

The effort to complete the OBMP for the Chino Basin was divided into two phases. The first phase culminated in the September 1999 submittal of the draft Phase 1 Report to the Court with continuing jurisdiction over the Basin groundwater resources. The second phase, including a programmatic EIR, was completed and adopted in July 2000, as the

Implementation Plan.

Phase 1 of the OBMP defined the state of the Chino Groundwater Basin, established the goals and objectives concerning major issues identified by stakeholders, and affirmed a management plan for the achievement of the stated goals and objectives. Phase 2 of the OBMP is the Implementation Plan for the installation and operation of OBMP facilities. The major OBMP facilities include pipelines, groundwater treatment plants, recharge basins, pump stations, production wells, and monitoring devices.

The four primary OBMP management goals are to enhance basin water supplies, to protect and enhance water quality, to enhance management of the basin, and to equitably finance the OBMP.

The OBMP includes nine program elements that were developed during the Phase 1 OBMP Report that collectively will meet the goals of the OBMP. The scope of implementation of some of the programs have been combined since they overlap and have synergies between them. The program elements include developing and implementing each of the following:

Element 1 – Comprehensive Monitoring Program
Element 2 – Comprehensive Recharge Program
Element 3 – Water Supply Plan for the Impaired Areas of the Basin
Element 4 – Comprehensive Groundwater Management Plan for Management Zone 1
Element 5 – Regional Supplemental Water Program
Element 6 – Cooperative Programs With the Regional Water Quality Control Board, Santa Ana Region, and Other Agencies to Improve Basin Management
Element 7 – Salt Management Program
Element 8 – Groundwater Storage Management Program
Element 9 – Storage and Recovery Programs

Peace II Agreement

The “Peace II Agreement” is a set of measures proposed by CBW and approved by many parties to the Chino Basin Judgment to supplement the OBMP Implementation Plan. The measures are designed to achieve hydraulic control (reduction of groundwater discharge from the Chino North Management Zone to the Santa Ana River) of the Chino Basin. To achieve hydraulic control, re-operation (controlled overdraft) of the groundwater basin is required. Groundwater is withdrawn from Desalter groundwater supply wells strategically located to benefit the long-term reliability of the Basin. A corresponding replenishment obligation will be assigned to the various desalters consistent with the obligation for replenishment (already directed by the Judgment and Peace Agreement) but 400,000 AF of that replenishment obligation would be satisfied by authorized overdraft.

Achieving hydraulic control of the Chino Basin reduces loss of stored water from the basin. Hydraulic control through re-operation also helps drought proof the basin by allowing for recharge of reclaimed water to supplement Chino Basin storage. Hydraulic control was achieved in approximately February 2016.

The recommendations set forth in the Peace II Agreement included:

- Expansion of the desalter program to 40,000 acre-feet by 2012 with new well pumping located to provide hydraulic control.
- Strategic reduction in groundwater storage with a controlled authorized overdraft of up to 400,000 AF.
- The added benefit of recharge using reclaimed water.
- The establishment of a new Recharge Master Plan to re-investigate and establish long term operational objectives.

In fiscal year 2009-10, the Watermaster provided updates to the Groundwater Recharge Master Plan in response to changes in demand, recharge capacity, Safe Yield, and other factors.

Consistent with the Peace II Agreement, the Watermaster completed an update of the Master Plan for the Chino Basin in July 2010, and the Watermaster recently (within the last two years) prepared a further update to the Groundwater Recharge Master Plan. The proposed Groundwater Recharge Master Plan identifies opportunities for enhanced storm water, recycled water, and imported water recharge (including low impact development, new recharge projects and integrated storm water facilities).

Chino Groundwater Basin Safe Yield Re-determination

The Chino Groundwater Basin has been adjudicated and is subject to the terms and conditions of the January 27, 1978 Judgment which was restated in 2012 by that certain Restated Judgment (Judgment). Per the Judgment, the Safe Yield of the Chino Basin is 140,000 acre feet per year. The Judgment requires that the Watermaster conduct a redetermination of the Safe Yield of 140,000 acre feet after the first ten years of operation of the physical solution. Under the Judgment, that redetermination was to have been completed in 2011, and is pending.

At this time, the final outcome of any court-ordered Safe Yield redetermination is unknown. However, based on available information, it is possible the Safe Yield may be reduced from the 140,000 acre-feet quantity that has been in-place since the time the Judgment was implemented in 1978. It is generally understood by the stakeholders that such a reduction would impact the annual shares of Operating Safe Yield allocated to the Appropriators, that overlying rights allocated to the Agricultural Pool and individual members of Non-Agricultural Pool would not be reduced, and that the respective amounts of reduction to the Appropriators would be restored, partially or fully, from any under-utilized overlying Agricultural Pool groundwater production rights, which currently are re-allocated to Appropriators on an annual basis. These under-utilized Agricultural Pool rights are the same rights that also satisfy requests for (but for the last several years, only partially satisfied all requests) agricultural land use conversions. Because the underutilized Agricultural Pool rights would be first used to restore Appropriators' respective shares of Operating Safe Yield diminished by the potential reduction in the Safe Yield, the amount of underutilized Agricultural Pool rights available to satisfy land use conversions would be reduced to a level that would not totally satisfy land use conversions. Because all agricultural land in the City is undergoing urbanization, the City's reliance on land use conversions to satisfy the water needs of such urbanization would be adversely impacted by a reduction in the Safe Yield.

City Wells

Table 4-4 presents the City's current wells and associated capacities (2016).

Table 4-4 – City Anticipated Groundwater Wells Status -2016 (gpm)

Number	Max Well Capacity	Anticipated Capacity	Operational Status
3	0	0	Inactive; last observed capacity (1970's) was 600 gpm
4	900	0	In-Active due to high level of nitrate
5	1,300	0	Out of Service
6	935	0	Inactive due to high level of perchlorate
7	0	0	Inactive; hydrogeological conditions contribute to the need to reconstruct well
9	2,300	0	Out of Service
10	1,200	1,175	Active
11	1,900	1,900	Active
12	2,200	600	Active after re-equipping and blending with imported water
13	1,500	1,500	Active
14	2,297	0	Inactive due to high level of perchlorate
15	1,200	0	Well has not been fully developed or equipped
16	1,025	600	Active; capacity is limited by the high level of nitrate
17	1,200	0	Constructed/Unequipped
18	1,200	1,200	Active
33	2,000	0	Active; pending an amended permit
Total	21,157	6,975	

Source: Pursuant to City staff correspondence (November 2016)

The City's Water System Master Plan includes recommendations for well improvements for system reliability and continued groundwater pumping.

Tables 4-5 provides the amount and location of groundwater pumped for the last several years.

Table 4-5 – Historic Groundwater Production from Chino Basin (AF)

Well Number	2007	2008	2009	2010	2011	2012	2013	2014	2015
4	807	739	780	478	709	85	0	0	0
5	326	282	620	1,260	36	781	573	908	1,071
6	897	1,110	837	992	892	1,201	0	0	0
7	0	0	0	0	0	0	0	0	0
9	2,701	2,913	2,535	610	2,154	1,663	2,772	1,723	0
10	0	0	160	1,076	340	573	79	554	1,750
11	1.823	1,771	2,228	1,768	1,922	2,134	2,092	2,019	1,728
12	0	0	0	0	0	0	63	693	487
13	1,251	1,501	1,480	1,253	1,209	1,164	1,010	825	755
14	677	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	44	48	82
Total	8,482	8,316	8,640	7,437	7,262	7,601	6,633	6,770	5,873

Source: Pursuant to City staff correspondence (November 2016)

4.03 Imported Water (Surface Water) – Water Facilities Authority

The City receives its imported water through the Water Facilities Authority (WFA). The WFA Agua de Lejos Treatment Plant is located in Upland, and receives surface water from the SWP. The water is purchased from MWD through IEUA.

MWD's Rialto Branch of the Foothill Feeder delivers SWP water to the WFA Agua de Lejos Water Treatment Plant for treatment. The Agua de Lejos Water Treatment Plant is permitted to treat 81 MGD of SWP water. The actual quantity of treated water has ranged from 12 MGD in the winter months to as high as 70 MGD during the summer. WFA water enters the City's potable water distribution system at Benson Avenue and State Street. The regional water management strategy within WFA's service area is to maximize the use of local water supplies and minimize the need for additional imported water, especially during dry years and other emergencies when imported water is less reliable. With the continuing investment in the development of regional facilities that will maximize the availability of local supplies, including groundwater recharge, desalting, recycled water and water use efficiency programs, local water supplies are expected to meet nearly 85 percent of the water needs within the WFA service area. The overall need for full service imported water is expected to remain at approximately the same level of demand compared to recent years.

The City is entitled to 5.9 percent of the WFA Agua de Lejos Plant capacity (5,353 AFY or

4.78 MGD). However, the City has historically taken up to 7.3 percent of the capacity (6,607 AFY or 5.9 MGD). Table 4-6 shows historical imported water production from 2006 through 2015.

Table 4-6 – Historic Annual Imported Water Production (AF)

WFA	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Imported Water	4,837	4,457	3,622	2,612	2,602	2,637	3,245	4,394	3,534	2,397

Source: City Falloncrest WSA

The City may take delivery of more than its entitlement when other WFA members are not taking delivery of their full entitlements. Historically, there has always been unused capacity and the City has always had an opportunity to meet water quality standards and demands through additional WFA imported water. Many of the WFA members desire less dependence on imported water and greater reliability and control on local supplies. As a result, development of local water supply programs has increased and continued opportunity for purchase of unused capacity is anticipated.

Discussions on the opportunity to maintain and increase the capacity of the WFA treatment plant have occurred; however, analysis would need to be done to determine feasibility and economic benefits considering the climate of imported water reliability. The plant could be increased to 88 MGD through re-rating of the existing plant, and further capacity increases would be accomplished by plant expansion. However, the overall water demand trend in the WFA service area has essentially flattened. In 2007, the water demand peaked, and since that time, water demand has decreased. The continuing downward trend in overall water use is an excellent indicator of how well the water suppliers in the region have responded to the current water supply challenges. Based on expected land uses in the WFA service area, the amount of land used for agricultural purposes is expected to decline 96 percent from 2,026 acres in 2015 to 68 acres in 2040.

With the investment in local water supplies and the overall need for full service imported water to remain at approximately the same level through the 20-year planning, it is unlikely that a modification of the WFA treatment plant would be required.

4.04 Recycled Water

Water recycling involves the treatment of wastewater to create a high quality, safe source of water for outdoor irrigation, industrial and groundwater recharge uses. Water recycling is a critical component of the water resources management strategy for the region. The City relies on the Regional Recycled Water Distribution System operated by IEUA for its recycled water supply. Development and expansion of the regional system is critical to meeting the City's anticipated demands for recycled water. Development of the local recycled water distribution lines within the City is a partnership between the City, IEUA, and developers.

Reuse of highly treated tertiary water is available to meet the growing water demands of the IEUA service area. Recycled water will provide a dependable local supply of water as well as reduce the likelihood of water rationing during droughts. In addition, the use of recycled water for groundwater recharge is an integral part of the OBMP. Region-wide implementation of

recycled water projects are vital to the protection and enhancement of the Safe Yield and water quality of the Chino Groundwater Basin.

IEUA Regional Wastewater Treatment Plants

IEUA operates four regional wastewater treatment plants: Regional Plant No.1 (RP-1), RP-4, RP-5, and the Carbon Canyon Water Reclamation Facility (CCWRF). Each treatment plant produces tertiary treated recycled water in compliance with California's Title 22 regulations and exceeds the stringent public health standards. IEUA's goal is to use as much recycled water for local beneficial direct use as is economically practical and for replenishment of the Chino Basin. Recycled water availability from IEUA's four regional facilities, as shown in IEUA's 2015 Regional UWMP, is 60,200 AF for FY 14/15 with 56 percent usage. IEUA completed the 2005 IEUA Regional Recycled Water Implementation Plan, the 2007 Recycled Water Business Plan, and the 2010/11 Recycled Water Business Plan Update, which all describe 50,000 AFY of potential use by 2012- 2013 (31,120 AFY for direct use and 18,880 AFY for recharge). IEUA completed the 2015 Recycled Water Program Strategy, which will further implement the Recycled Water Business Plan. The 2015 Water Use Efficiency Business Plan is under development, which will be completed by winter 2015. Completion of the Regional Recycled Water System, which merges all the recycled water plants together, will provide for sufficient system flexibility to satisfy anticipated future demands.

IEUA facilities serve seven contracting agencies, including: the cities of Chino, Chino Hills, Fontana, Montclair, Ontario, and Upland, and the Cucamonga Valley Water District. Additional sources of recycled water used within IEUA's service area include the Upland Hills Water Reclamation Plant (operated by the City of Upland) and the CIM Water Reclamation Plant (operated by the California Institution for Men at Chino).

Currently, IEUA produces about 59,000 AF of tertiary treated recycled water annually. In FY 15/16, recycled water use totaled about 18,300 AF, of which approximately 13,200 AF was used for groundwater recharge. The remaining supply of recycled water, about 27,500 AF, was discharged to the Santa Ana River (1969 Santa Ana River Judgment – minimum of 17,000 AFY of water will be discharged to the Santa Ana River which can be adjusted based on water quality).

IEUA's goal is to fully utilize the recycled water supply for local beneficial uses. IEUA initiated a recycled water marketing program in 1999, which has been successful in securing additional recycled water sales, and the recent market assessment to identify potential recycled water customers has greatly enhanced this effort.

Recycled Water for Regional Direct Use and Groundwater Recharge

Recycled water used for groundwater recharge will be blended with MWD's imported SWP supplies and local storm water, consistent with the water quality requirements of the CBW's OBMP, Santa Ana Regional Water Quality Control Board's Basin Plan and the State Water Resources Control Board Division of Drinking Water (DDW).

Depending on basin specific measurements and up-gradient groundwater migration data, the blending ratio will be calculated to achieve up to 50 percent with all other sources of water as

determined by DDW over a 10-year period. Additional facilities, including development/modifications of new groundwater recharge basins, and installation of additional pumping capacity, will be needed to achieve the long-term water recycling goals for the region. As more and more direct use customers are connected, groundwater recharge will be operated to ensure availability for direct reuse.

Development of local recycled water facilities will be key to expanding the direct use of recycled water. Direct uses include irrigation for landscaping, industrial process and cooling, and recreational uses, including decorative fountains. All direct use demands will be given priority over recharge demands for recycled water. Recharge will be credited based upon the annual flow contributions for all contracting agencies on a pro-rata basis.

Recycled Water Use in the City

The City recognizes the potential uses of recycled water in its community, such as landscape irrigation, parks, industrial and other uses, and works with IEUA to develop the needed recycled water infrastructure to support use of recycled water.

In CY 2015, the city provided 7,993 AF of recycled water from the IEUA Regional Recycled Water System to landscape irrigation, agricultural irrigation, industrial customers, and construction customers. Projected ultimate use of recycled water in the City is estimated to decrease with the conversion of irrigated agricultural lands to urban uses. Recycled water use for 2020 is projected at 5,791 AF, decreasing to 3,841 AF by 2040 as shown in Table 4-7.

Table 4-7 – Project Recycled Water Use within the City (AF)

	2015	2020	2025	2030	2035	2040
Total Recycled Water Use	7,993	5,791	4,127	3,810	3,826	3,841

Source: Based on City 2015 UWMP

By the year 2040, over 83,000 AFY of recycled water is expected to be available within the IEUA service area from the Regional Plants. IEUA estimates total recycled water usage of 67,969 AFY by 2040 which includes Chino's estimated usage of 3,841 AFY. This demonstrates that available recycled water supply is projected to meet, and in fact exceed, demand in all hydrologic conditions.

4.05 Desalted Water

The Chino Groundwater Basin is the water source for the Chino Basin Desalter Authority (CDA). Since August 2000, the Chino I Desalter produced approximately 8.4 MGD of potable water until its expansion in 2006 increasing capacity to 12.7 MGD. Facilities consist of approximately 14 groundwater wells located within the southern portion of the Chino Groundwater Basin, a central water treatment plant (WTP), and pipelines to deliver water from the wells to the WTP and from the WTP to the water retailers (cities of Chino, Chino Hills, Ontario, and the Jurupa Community Services District/City of Norco). In 2006, the CDA constructed a new Chino II Desalter in Mira Loma, CA. The Chino II Desalter has a treatment capacity of approximately 11,200 AFY and is supplied by 8 additional wells.

The Western Municipal Water District (WMWD) joined the CDA in November 2008, triggering

expansion of the Chino II Desalter (known as the Phase 3 Desalter Project) by 10.5 MGD (11,800 AFY). The water supply for the new expansion of the Chino II Desalter is planned to be produced from a new set of wells known as the Chino Creek Well Field (CCWF) plus other wells as needed in order to produce the requisite amount of raw groundwater supply for treatment. The CCWF consists of five (5) recently drilled production wells located in the southwest area of the Chino Basin. The location of these new wells is critical to the attainment of hydraulic control of the Chino Basin.

Since the desalters are supplied from groundwater wells, the amount of water produced by the desalters is subject to replenishment by the Watermaster to prevent overdrafting. The Watermaster has identified a hierarchy of water sources/supplies for replenishment purposes. Replenishment water is provided from the following: (1) the Watermaster Desalter Replenishment account; (2) new yield of the Basin; (3) Safe Yield of the Basin; and (4) additional replenishment water purchased by the Watermaster.

The Chino I and II Desalters managed by the CDA is operated in accordance with the following: (1) “take-or-pay” agreements with the purchasers of the water; (2) an agreement with MWD to reduce the cost of the water produced by the Desalters and an agreement with the Watermaster regarding replenishment obligations for operating the Desalters. Since the desalters are supplied from the Chino Groundwater Basin, the amount of groundwater produced is subject to replenishment by the Watermaster to prevent overdrafting. The Watermaster has identified a hierarchy of water sources/supplies for replenishment purposes. Replenishment water is provided from the following: (1) the Watermaster Desalter Replenishment account; (2) new yield of the Basin; (3) Safe Yield of the Basin; and (4) additional replenishment water purchased by the Watermaster.

The City entered into a contract in 1996 committing to purchase a minimum of 3,000 AFY on a “take or pay” contractual basis. Expansion of the Desalter increased the City’s flow allocation and commitment to 5,000 AFY.

The contract allows the City to obtain additional product water if the Chino Basin Desalter Authority is capable of producing more Product Water than is necessary to satisfy the requirements of the purchasers. The City is entitled to purchase a minimum proportionate share of additional Product Water. Under this contract, the City is also entitled to unused Product Water if it remains available after offered to all purchasers up to their respective percentages. The City also has the opportunity to negotiate the purchase of contracted desalted water with purchasers that are constrained by the “take-or-pay” obligation, but have optimized other sources of local water and do not need to take their full entitlement.

SECTION 5. Water Supply Reliability

The City's water supply portfolio includes groundwater from the Chino Basin, desalted water delivered through the CDA, imported water delivered through the WFA, and recycled water delivered through IEUA. The City has met historical water demands with these supplies, including demands during average, single-dry, and multiple-dry year scenarios.

The following sections describe the City's water supply constraints, reliability and an assessment of City water supply and demand.

5.01 Constraints on Water Sources

Although the City has met historical water demands with available supplies, the proportional mix of supplies utilized have shifted in response to water source constraints. These constraints include water quality and the availability of each supply.

(a) WFA Supply Constraints

The City purchases imported water from the WFA. The WFA source water is supplied through the SWP, which has varying annual allocations depending on hydrologic conditions in Northern California. The IEUA/WFA 2015 Plan, which is included by reference, states that the projected imported water supply reliability for the WFA is 100 percent during normal year, single-dry year, and multiple-dry year scenarios. However, MWD periodically performs maintenance on its distribution system, which potentially impacts the availability of imported water to the WFA. In the event of a reduction of WFA supply to the City, the City may shift to groundwater supplies to satisfy potable demands.

(b) Chino Groundwater Supply Constraints

Groundwater Quality

The City conducts routine monitoring of required constituents to meet SWRCB-DDW standards and provides an annual water quality report to its customers, known as the Consumer Confidence Report. The identified water quality issues potentially impacting the City's untreated groundwater sources include total dissolved solids (TDS), nitrate, volatile organic compounds (VOCs), and perchlorate.

The City currently utilizes SWRCB-DDW approved treatment and blending plans to meet drinking water standards. The City plans to complete construction of an additional treatment plant, the Eastside Water Treatment Facility (EWTF), in 2016. The EWTF is a 3,500 gallons per minute (gpm) ion exchange water treatment plant which will treat water produced from wells 13 and 18 (currently impacted with elevated nitrate concentrations). In addition, the City has begun the construction of a new well in 2016. The water produced from the planned new well will also be treated at the EWTF. The EWTF and planned well, along with other future water facility improvements, will enhance system reliability and redundancy. The City's approach to system management provides for redundant infrastructure, resulting in more available capacity than demand, and multiple sources of available supply.

Land Subsidence

A potential additional groundwater supply constraint is land subsidence, which is a current groundwater issue in the Chino Basin. Land subsidence can occur in areas where underlying fine-grained sediment layers (silt and/or clay) are dewatered over a period of time allowing these layers to compress. According to the Phase I OBMP Report, subsidence and ground fissuring has been documented in portions of the City. An area underlying a portion of the City experienced ground fissuring as early as 1973, and an accelerated occurrence of subsidence ensued after 1991. A common cause of ground fissuring within alluvial basins is the removal of subsurface fluids resulting in compaction of poorly consolidated aquifer materials and land subsidence.

Remote sensing studies of subsidence were conducted in 1999 to further analyze the location and relative magnitude of subsidence in MZ1. It was concluded that the cause of this subsidence was declining groundwater levels below a critical elevation, resulting from groundwater production from deep wells in the area. (The City does not operate any deep zone wells in the affected area.)

Watermaster has developed a ground-level monitoring program that includes multiple tools to evaluate subsidence. The Watermaster's ground-level monitoring program includes the monitoring of piezometric levels, aquifer-system deformation, vertical ground-surface deformation, and horizontal ground-surface deformation. It appears that the abatement of land subsidence in MZ1 is related to the recovery of piezometric levels that has resulted from decreased deep zone pumping. The Watermaster-recommended groundwater elevations and pumping constraints designed to prevent further subsidence have not caused any reduction of City groundwater supplies.

5.02 Reliability by Type of Year

The reliability of the City's water supplies has been analyzed based on historical annual precipitation within the region. Precipitation data, collected at the Chino Airport, located within the southeast portion of the City's service area, averaged 12.0 inches from 1981 through 2015. Base years were selected based on annual precipitation for average year, single-dry year and multiple-dry year supply scenarios, as shown in Table 5-2. Precipitation for 2003 was about 11.7 inches and is used to represent a normal year. Precipitation for 2013 was about 3.3 inches and is used to represent a single dry year. Precipitation from 2012 through 2014 averaged about 6.3 inches and is used to represent three consecutive dry years.

The City has been able to meet all demands with its existing water supply portfolio, even through periods of single and multiple-dry years. As previously discussed, the City's primary water supply source is groundwater pumped from the Chino Basin by City and CDA wells. The Chino Basin is managed by the Watermaster and is considered to be a reliable supply source, even during periods of drought. The IEUA/WFA 2015 Plan projects that both the WFA imported water supply and the IEUA recycled water supply will be 100% reliable even through periods of drought. Consequently, the percent of average supply available during single and multiple-dry

years is projected to be 100%, as shown in Table 5-1. Demands, and/or desalter replenishment obligations, may also be met by withdrawals from groundwater storage. As of June 30, 2015, the City's total stored water reserves were in excess of 80,000 AF.

Table 5-1 – Basis of Water Year Data

Year Type	Year	% of Average Supply
Average Year	2003	100%
Single-Dry Year	2013	100%
Multiple-Dry Years 1st Year	2012	100%
Multiple-Dry Years 2nd Year	2013	100%
Multiple-Dry Years 3rd Year	2014	100%

Source: Based on City 2015 UWMP

5.03 Supply and Demand Assessment

The available supplies and water demands for the City's water service area were analyzed to assess the City's ability to satisfy demands. The water demand and land use for this project was accounted for in the City's General Plan as well as the Preserve Specific Plan and therefore is consistent with the City's growth projections. The City of Chino assigned Project Number TPM 19756 (16-0456) and MSA (16-0457) to this project. The 2015 UWMP accounts for this projects water demand during three hydrologic scenarios: a normal water year, single dry water year, and multiple-dry years. The tables in this section present the supply demand balance for each of the hydrologic scenarios for the 20-year planning period (2020 to 2040). It is expected that the City will be able to meet 100% of its dry year demand under every scenario.

A projected supply and demand comparison during normal year scenarios is shown in Table 5-2 for the years 2020 through 2040. The projected supply exceeds demand for all projected years. Table 5-2 shows the combined potable and recycled water demand compared to the combined potable and recycled water supply.

Table 5-2 – Normal Year Supply and Demand

	2020	2025	2030	2035	2040
Supply Totals	31,565	29,901	29,584	29,600	29,615
Demand Totals	23,053	22,823	23,868	24,771	27,196
Difference	8,512	7,078	5,716	4,829	2,419

Source: Based on City 2015 UWMP

During the current dry year period (2012 through 2015), the City's demands were dramatically reduced due to the effectiveness of city-wide water conservation measures and programs. Therefore, for the purposes of this Plan, it was conservatively assumed that demands during normal years are equal to demands during dry years, discounting the demonstrated effectiveness of city-wide water conservation programs. A projected supply and demand comparison during single-dry year scenarios is shown in Table 5-3 for the years 2020 through 2040. The projected supplies exceed demands for all years.

Table 5-3 – Single Dry Year Supply and Demand

	2020	2025	2030	2035	2040
Supply Totals	31,565	29,901	29,584	29,600	29,615
Demand Totals	23,053	22,823	23,868	24,771	27,196
Difference	8,512	7,078	5,716	4,829	2,419

Source: Based on City 2015 UWMP

A projected supply and demand comparison during multiple-dry year scenarios is shown in Table 5-4 for the years 2020 through 2040. The projected supplies exceed demands for all years through 2040.

5.04 Regional Supply Reliability

The City's primary source of water supply is groundwater produced from the Chino Basin. As discussed in Section 4.02, the Chino Basin is adjudicated and managed by the Watermaster to maintain groundwater levels. The City has been able to produce groundwater from the Chino Basin, even through periods of drought. With continued management of the Chino Basin to maintain groundwater elevations, the Chino Basin is considered to be a reliable future source of supply and may be used to offset any potential future reductions of WFA supply.

Table 5-4 – Multiple Dry Year Supply and Demand

		2020	2025	2030	2035	2040
First Year	Supply Totals	31,565	29,901	29,584	29,600	29,615
	Demand Totals	23,053	22,823	23,868	24,771	27,196
	Difference	8,512	7,078	5,716	4,829	2,419
Second Year	Supply Totals	31,232	29,838	29,587	29,603	29,615
	Demand Totals	23,007	23,032	24,049	25,256	27,196
	Difference	8,225	6,806	5,539	4,4347	2,419
Third Year	Supply Totals	30,889	29,774	29,590	29,606	29,615
	Demand Totals	22,961	23,241	24,229	25,741	27,196
	Difference	7,938	6,533	5,361	3,865	2,419

Source: Based on City 2015 UWMP

5.05 Water Shortage Plans

(a) City Water Shortage Contingency Plan

In 2009, the City amended its Water Conservation Ordinance, included in Chapter 13.05 of the Chino Municipal Code, to respond to the then current water shortage caused by drought conditions prevailing in the state. The Water Conservation Ordinance implements Water Conservation measures to reduce the quantity of water used by persons in the City. The Water Conservation Ordinance further defines permanent measures to prevent the waste of water resources and also defines three stages of water shortage contingency where additional measures of potable water use are limited or curtailed.

(b) Resolution of Ordinance

In 2009, the City amended its Water Conservation Ordinance to respond to the then current water shortage caused by drought conditions prevailing in the state The Water Conservation Ordinance implements Water Conservation measures to reduce the quantity of water used by persons within the City. The Water Conservation Ordinance further defines permanent measures to prevent the waste of water resources and also defines three stages of water shortage contingency where additional measures of potable water use are limited or curtailed.

The City adopted an Urgency Ordinance in June 2015 as a result of Governor Brown's Executive Order declaring a significant water shortage. Urgency Ordinance No. 2015-004 included additional water conservation measures to be implemented during times of declared water shortage emergencies, in addition to permanent and declared water shortage measures already adopted and identified in Chapter 13.05 of the Chino Municipal Code.

5.06 Catastrophic Supply Interruption

(a) Water Shortage Emergency Response

A water shortage emergency could be the result of a catastrophic event such as the failure of water distribution facilities, a regional power outage, earthquake, flood, supply contamination from a chemical spill, or other adverse conditions. The City council shall be responsible for authorizing and directing implementation of the water conservation stages described in the Water Shortage Contingency Plan, as appropriate, to address emergencies.

In the event of a water shortage emergency, the City will employ its Emergency Response Plan to minimize the impact of supply interruption. The major objectives to be accomplished include the following:

- Provide essential water services
- Manage repair crews
- Meet city, county, and state established priorities
- Coordinate service from outside water departments
- Provide and maintain an inventory of potable water resources
- Develop priorities

These objectives will be met through careful implementation of response activities, which include the following:

- Preserve water in storage.
- Isolate areas for which restoration of service will require the longest period of time to
- accomplish and arrange for emergency water distribution.
- Identify areas that can be served with minimal repairs.
- Set priorities for repair work.
-

Throughout this process, the City's Water Utility will coordinate with the City's Emergency Operation Center (EOC).

(b) MWD and IEUA Catastrophic Loss Planning Measures

To safeguard the region from a catastrophic loss of imported water supply, MWD and its member agencies have made, and are continuing to make, substantial investments in emergency storage and interconnections with adjacent water purveyors. MWD's emergency plan assumes that demands are reduced 25 percent from normal-year demand levels, while the local supplies are largely undisrupted. With few exceptions, MWD asserts it can deliver emergency supply from regional reservoirs throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted by a major earthquake. MWD's Water Surplus and Drought Management (WSDM) Plan will guide management of available supplies and resources during an emergency. IEUA has adopted a federal emergency response procedure called NIMS (National Incident Management System) which can be implemented by IEUA personnel in response to a localized event or on a broader based regional event such as an earthquake or flood. The system provides a consistent nationwide

template to enable federal, state, and local governments, as well as local private sector and non-governmental organizations, to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of the cause, size or complexity, including acts of terrorism. Complementary to NIMS, IEUA has completed Mutual Aid Agreements between itself and its local retail agencies, including the City.

5.07 Demand Management Measures

The City recognizes water use efficiency as an integral component of the current and future water supply strategy for its service area. Demand Management Measures (DMM) refer to policies, programs, rules, regulation and ordinances, and the use of devices, equipment and facilities that, over the long term, have been generally justified and accepted by the industry as providing a "reliable" reduction in water demand. DMMs are described in the Urban Water Management Planning Act (California Water Code Section 10631) and correlate to the Best Management Practices (BMP) as established by the California Urban Water Conservation Council (CUWCC). The BMPs are generally technically and economically reasonable and environmentally and socially acceptable, and are not otherwise unreasonable for most water suppliers to implement.

The City has made implementation of BMPs the cornerstone of its conservation program and became Signatory to the Memorandum of Understanding (MOU) Regarding Best Management Practices for Urban Water Conservation with the CUWCC in December 2006. IEUA is also a signatory to the MOU and implements many of the urban water conservation BMPs on behalf of its member agencies, including the City.

(a) Demand Management for Retail Agencies

As a signatory to the MOU, the City has committed to use good-faith efforts to implement BMPs, also known as DMMs. "Implementation" means achieving and maintaining the staffing, funding, and in general, the priority levels necessary to achieve the level of activity called for in each BMP's definition, and to satisfy the commitment by the signatories to use good faith efforts to optimize water savings from implementing BMPs as described in the MOU. The City shall evaluate the costs and benefits of implementing BMPs so that investment decisions are effective at meeting program goals. The City will also evaluate the effectiveness of implementing BMPs as a combined effort and individually based on feedback from the community.

The City's implementation of each of the BMPs are discussed in the next section.

(b) Water Waste Prevention Ordinances

Water customers in the City's service area are prohibited from wasting water in accordance with the Water Conservation Ordinance found in Municipal Code Chapter 13.05 (Ordinance No. 2009-04, 2009) (Appendix I). The Water Conservation Ordinance includes permanent measures to prevent the waste of water resources and prohibits the following activities at all times:

- Allowing irrigation water to run off into a gutter, ditch, drain, driveway, sidewalk, street or onto pavement or other hard surface.
- Outdoor irrigation of landscape for more than fifteen minutes of watering per day per station. This restriction does not apply to landscapes that utilize drip irrigation systems.
- Automated irrigation of landscape during the hours of six a.m. to eight p.m.
- Customers are encouraged to avoid the use of sprinklers on windy days. Irrigation by hand held hoses with automatic shutoff nozzles, drip irrigation, or hand held buckets is permitted anytime.
- Outdoor irrigation of landscape on rainy days.
- Washing down hard or paved surfaces, including but not limited to sidewalks, walkways, driveways, parking areas, patios, and alleys, except when necessary to alleviate safety or sanitary hazards.
- Excess use, loss or escape of water through breaks, leaks, or other malfunctions in the plumbing system or distribution system for any period of time after such escape of water should have reasonably been discovered and corrected.
- Washing of automobiles, trucks, trailers, boats, airplanes, and other types of mobile equipment, unless done with a hand held bucket or hand held hose equipped with a positive shutoff nozzle for quick rinses.
- Restaurants serving water to their customers, except when specifically requested by their customers.
- Operating a decorative water fountain or feature, built or installed after the adoption of this ordinance, that does not include re-circulated water.
- Operating a commercial car wash or laundry, built or installed after the adoption of this ordinance, that does not use re-circulated water.
- Operating a single-pass cooling system built or installed after the adoption of this ordinance.
-

Implementation Schedule: The City was in compliance with this DMM from 2011 through 2015 and will continue to implement this DMM.

Program Effectiveness Evaluation: Over the past five years, all code violations have been tracked in the City's database. New development was inspected for compliance with applicable plumbing and landscape ordinances to ensure compliance prior to the issuance of building permits.

SECTION 6. **Conclusion**

The City optimizes its water resource supply through an integrated resource approach, utilizing available water programs and projects. The City receives its water supplies from groundwater, desalted water, imported water, and recycled water. Complexities and continuing refinement in groundwater management and rights, evolving development of the regional recycled water system and supplies, desalter expansion and optimization projects, and challenges of imported water reliability make analysis of water demand and supply complicated.

A CEQA report is being prepared for the Altitude Business Centre Project, which includes an assessment of utility services and includes this WSA pursuant to Senate Bill 610. The WSA will also be used by the City as part of its ongoing planning efforts to optimize its water resource program.

The WSA includes a discussion of the Senate Bill 610 legislation, an overview of the proposed Project, and analysis of water demands for the City's existing service area and the Project and other City development projects over the UWMP planning horizon. The WSA also includes an analysis of reliability of the City's water supplies and water quality, and concludes with a sufficiency analysis of water supply during normal, single-dry, and multiple dry years for the next 20 years.

The WSA does not evaluate the adequacy of the City's infrastructure to handle the available water supplies nor does it make any recommendations with respect to capital improvements that may be necessary in order to provide an adequate level of service to the Richland Properties Projects.

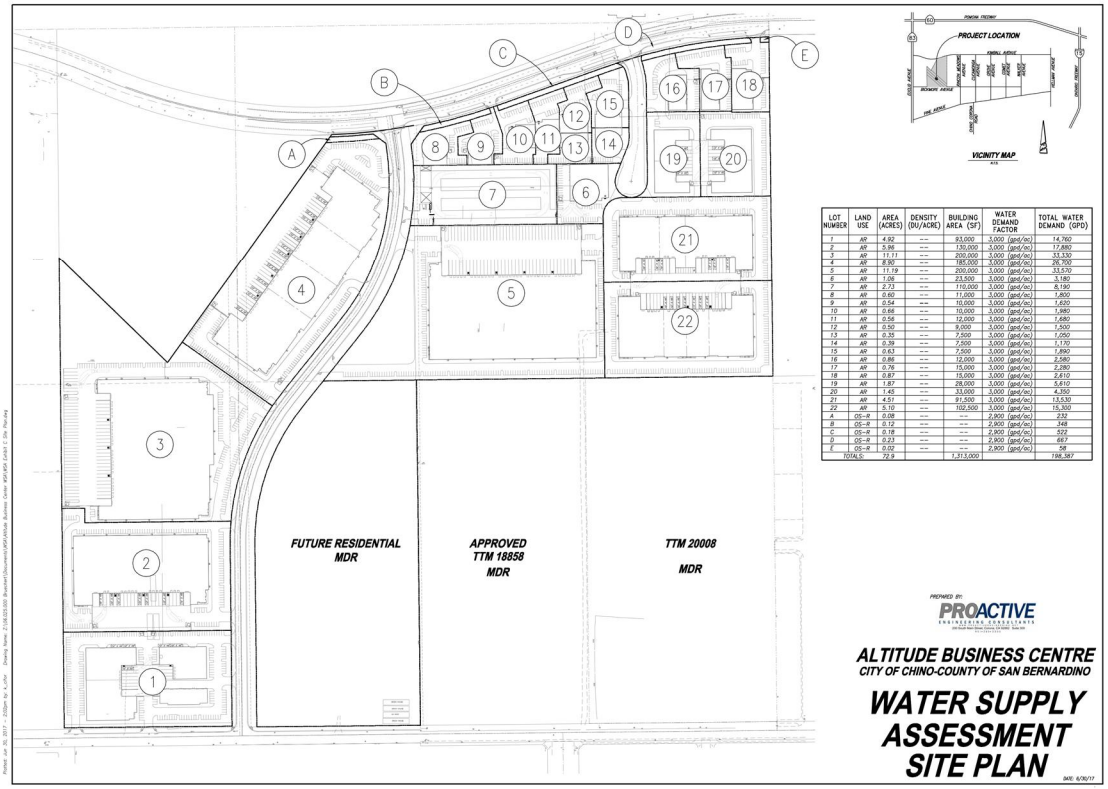
Altitude Business Centre is located south of the Chino Airport and bound approximately by Kimball Avenue to the north, tract 17697 to the east, Bickmore Avenue to the south and Euclid Avenue to the west. The 72.9-acre site is within the City's designated Subarea 2 and The Preserve Specific Plan. The site currently consists primarily of agricultural operations with a few single-family residences. The proposed project includes airport related industrial buildings of approximately 1,313,000 square feet and open space.

Source of Water

In CY 2015 the City purchased and produced 13,433 AF of domestic water from City wells (44%), CDA (38%), and WFA (18%). The City also provided 7,993 AF of recycled water (purchased from IEUA) to industrial, landscape irrigation, and agricultural customers.

Water Demand and Supply Projections

The build-out of the Project will increase the City's water demand by approximately 198,387



LOT NUMBER	LAND USE	AREA (ACRES)	DENSITY (DU/ACRE)	BUILDING AREA (SF)	WATER DEMAND FACTOR	TOTAL WATER DEMAND (GPD)
1	AR	4.92	--	93,000	3,000 (gpd/ac)	14,760
2	AR	5.96	--	130,000	3,000 (gpd/ac)	17,880
3	AR	11.11	--	200,000	3,000 (gpd/ac)	33,330
4	AR	8.90	--	185,000	3,000 (gpd/ac)	26,700
5	AR	11.19	--	200,000	3,000 (gpd/ac)	33,570
6	AR	1.06	--	23,500	3,000 (gpd/ac)	3,180
7	AR	2.73	--	110,000	3,000 (gpd/ac)	8,190
8	AR	0.60	--	11,000	3,000 (gpd/ac)	1,800
9	AR	0.54	--	10,000	3,000 (gpd/ac)	1,620
10	AR	0.66	--	10,000	3,000 (gpd/ac)	1,980
11	AR	0.56	--	12,000	3,000 (gpd/ac)	1,680
12	AR	0.50	--	9,000	3,000 (gpd/ac)	1,500
13	AR	0.35	--	7,500	3,000 (gpd/ac)	1,050
14	AR	0.39	--	7,500	3,000 (gpd/ac)	1,170
15	AR	0.63	--	7,500	3,000 (gpd/ac)	1,890
16	AR	0.86	--	12,000	3,000 (gpd/ac)	2,580
17	AR	0.76	--	15,000	3,000 (gpd/ac)	2,280
18	AR	0.87	--	15,000	3,000 (gpd/ac)	2,610
19	AR	1.87	--	28,000	3,000 (gpd/ac)	5,610
20	AR	1.45	--	33,000	3,000 (gpd/ac)	4,350
21	AR	4.51	--	91,500	3,000 (gpd/ac)	13,530
22	AR	5.10	--	102,500	3,000 (gpd/ac)	15,300
A	OS-R	0.08	--	--	2,900 (gpd/ac)	232
B	OS-R	0.12	--	--	2,900 (gpd/ac)	348
C	OS-R	0.18	--	--	2,900 (gpd/ac)	522
D	OS-R	0.23	--	--	2,900 (gpd/ac)	667
E	OS-R	0.02	--	--	2,900 (gpd/ac)	58
TOTALS:		72.9		1,313,000		198,387

gallons per day (gpd), 138 gpm, or 222 AFY, of which up to 99,924 gpd, 69 gpm, or 112 AFY is irrigation and could be served by non-domestic water sources.

The City will meet its future water demands, including the demands for the Project, from existing supply sources as well as sources that are currently being planned, developed and implemented. Future sources include an expanded service area for recycled water and water conservation. Supplies of imported water and CDA water are expected to remain relatively stable throughout the forecast period. Enhanced water conservation and increased local well production are anticipated to provide for the balance of needed supplies.

The Project is estimated to increase demand on the City's potable water system by 422 AFY. Groundwater rights of up to 2.0 AFY per acre of land converted to urban use will be made available by the City for the Project. Although the City is eligible for a maximum of 2.0 AFY per acre of land converted, the Watermaster will determine the amount of rights that is made available to the City.

Nonetheless, analysis of water demand and supply projections for the City, including the Project, demonstrates that estimates of projected supplies are sufficient to satisfy City demand through Year 2040 under the current Chino Groundwater Basin Safe Yield of 140,000 AFY. The capacity of the Chino Groundwater Basin, managed in accordance with the Watermaster-guided optimization programs, may be used to buffer episodes of drought and help address impacts that may result from a reduction of the Basin Safe Yield. The projections assume recycled water availability equals demand and is the greater of current recorded recycled water use (FY 2014/15) and recycled water available during dry years, as outlined in the 2015 UWMP. The analysis relies on imported water and groundwater supplies to increase to match the projected needs during multiple dry years. Recycled water is proposed to be used to supply new development and certain existing uses, such as landscape irrigation and industrial uses currently supplied with potable water.

The City has the opportunity to increase supply to meet its water demand through the following measures: 1) production of groundwater based on Safe Yield limitations and replenishment; 2) increasing imported water purchases, if available and if there is available WFA capacity; 3) purchasing additional desalted water if more is produced than needed to satisfy requirements of other purchasers; and 4) purchasing additional recycled water, if available. Collectively, these additional options will enable water supply to satisfy water demand for the City now and into the future, subject to the impact of any Basin Safe Yield re-determination.

If the City elects to produce groundwater in excess of its available rights, in an effort to ensure adequate supply of water for the City, due to declining yield of the Basin or any other reason, the City would incur a replenishment obligation. That obligation would be tracked by the Watermaster as part of its responsibility to obtain water to meet all replenishment obligations and issue corresponding annual assessments, accordingly.

The information included in this WSA describes a program of potential options that may be utilized in an effort to secure sufficient water supply to satisfy the City's anticipated future water demands, including the Richland Properties development project.

SECTION 7. References

1. City of Chino, City of Chino 2015 Urban Water Management Plan (Final Draft), November 2016.
2. Inland Empire Utilities Agency, *Urban Water Management Plan 2010*, adopted June 1, 2011.
3. City of Chino, City of Chino Water System Master Plan Update, March 2004.
4. Department of Water Resources (DWR), *State Water Project Delivery Reliability Report*, 2013.
5. City of Chino, Majestic Chino Gateway Water Supply Assessment, February 2013
6. City of Chino, City of Chino Groundwater Wells Status – 2014
7. City of Chino WSA for Kimball Business Park, February 2016
8. IEUA, Annual Water Use Report for IEUA Service Area FY 2014-2015, October 2015