Appendix L: Water Supply Assessment

L.1 - Water Supply Assessment Technical Study

CITY OF
ONTARIO

Water Supply Assessment and Written Verification of Sufficient Water Supply for the New Model Colony

Prepared by: ALBERT A. WEBB ASSOCIATES
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October 27, 2004

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W.O.: 04-0356
File: 4865.0007

October 27, 2004

Mr. J. Scott Burton, P.E.
Utilities Engineer
City of Ontario
Ontario Municipal Services Center
1425 S. Bon View Avenue
Ontario, CA 91761

RE: Water Supply Assessment for the
New Model Colony

Dear Mr. Burton:

Pursuant to our letter agreement of July 1, 2004, transmitted herewith is our Water Supply Assessment of the subject project pursuant to SB610 and a Written Verification of Sufficient Water Supply, pursuant to SB221.

Sincerely,

ALBERT A. WEBB ASSOCIATES

Sam I. Gershon, RCE
Senior Vice President

Enclosure

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CITY OF ONTARIO
WATER SUPPLY ASSESSMENT
AND
WRITTEN VERIFICATION OF SUFFICIENT WATER SUPPLY
FOR THE
NEW MODEL COLONY

Introduction

This report addresses the significant changes in California's land use planning law. Senate Bill (SB) 221 and SB 610 passed by the California legislature and signed into law in October of 2001, and became effective January 1, 2002. These State laws require cities to work with local water suppliers during the land use planning process to assess the availability of adequate water supplies for certain large development projects.

Pursuant to the above Senate Bills, the City of Ontario commissioned this study to address the "Water Supply Assessment" per Senate Bill 610 and to prepare a "Written Verification of Sufficient Water Supply" per Senate Bill 221 for the New Model Colony.

SB 610 WATER SUPPLY ASSESSMENT
FOR THE
NEW MODEL COLONY

Purpose of Report

Law

> [SB 610 requires] a city or county that determines a project is subject to the California Environmental Quality Act to identify any public water system that may supply water for the project and to request those public water systems to prepare a specified water supply assessment, except as otherwise specified. The bill would require the assessment to include, among other information, an identification of existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project and water received in prior years pursuant to those entitlements, rights, and contracts. The bill would require the city or county, if it is not able to identify any public water system that may supply water for the project, to prepare the water supply assessment after a prescribed consultation. The bill would revise the definition of "project", for the purposes of these provisions, and make related changes.
>
> The bill would prescribe a timeframe within which a public water system is required to submit the assessment to the city or county and would authorize the city or county to seek a writ of mandamus to compel the public water system to comply with requirements relating to the submission of the assessment.
>
> The bill would require the public water system, or the city or county, as applicable, if that entity concludes that water supplies are, or will be, insufficient, to submit the plans for acquiring additional water supplies.
>
> The bill would require the city or county to include the water supply assessment and certain other information in any environmental document prepared for the project pursuant to the act. By establishing duties for counties and cities, the bill would impose a state-mandated local program.

SB 610

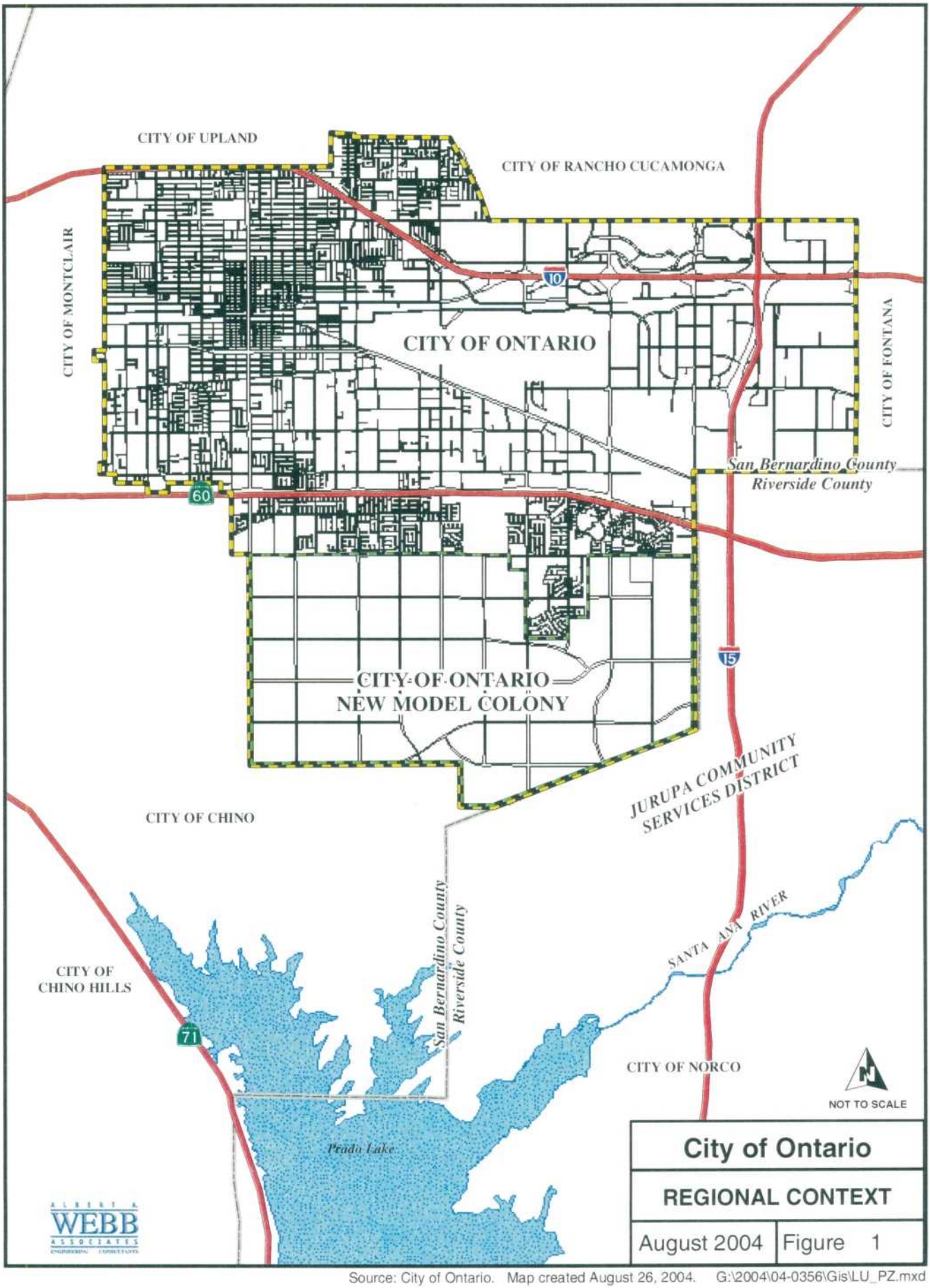
SB 610 serves to amend existing legal requirements for confirmation of water supply sufficiency as a condition of approval for development projects. The confirmation of water supply sufficiency is achieved through an analysis of the water purveyor's existing and future water sources and existing and projected water demand in relation to a "project" as defined by SB 610, resulting in the production of a project-specific Water Supply Assessment (WSA). The WSA also required additional analysis if any portion of the purveyor's water supplies include groundwater. The requirements of SB 610 are triggered for projects going through the California Environmental Quality Act (CEQA) process.

The City of Ontario produced this Water Supply Assessment Report to meet the requirements of Senate Bill 610 for the New Model Colony.

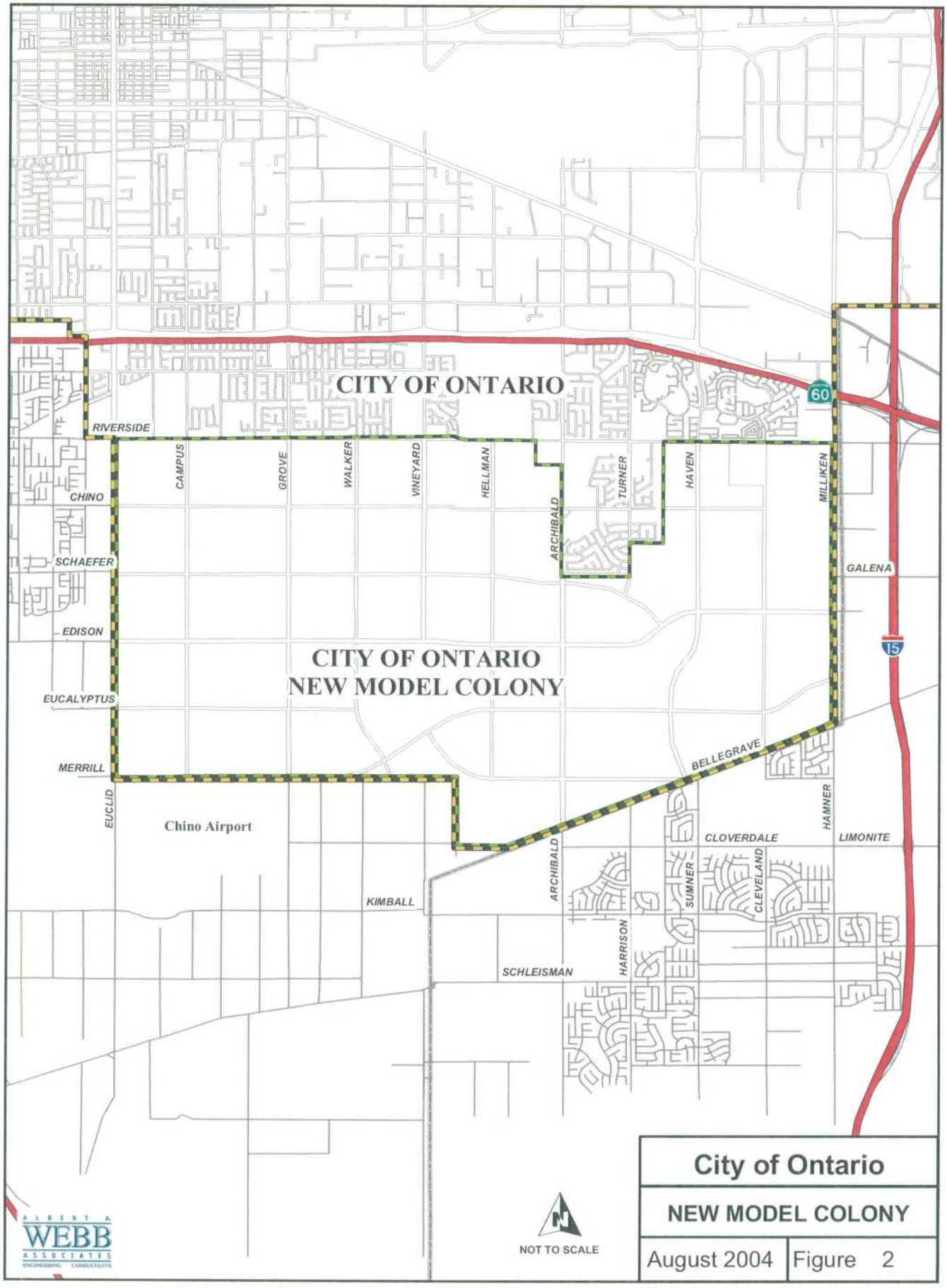
Project Description and Water Demand

The New Model Colony (NMC) is an 8200 acre area formally annexed to the City of Ontario on November 30, 1999. Figures 1 and 2 show the location of the New Model Colony in relation to its regional location and to the City of Ontario. The NMC is bounded by Riverside Drive to the North, Milliken Avenue and Hamner Avenue to the East, the Riverside County Line and Merrill Avenue to the South, and Euclid Avenue (State Route) to the West, as shown on Figure 2. The New Model Colony is situated on relatively flat terrain, which slopes gently south toward the Santa Ana River. The elevation ranges from about 635 to 800 feet. The projected water demand[1] for the NMC is estimated to be about 31,200 acre-feet per year under ultimate development.

[1] Boyle Engineering Corporation, City of Ontario "Master Water Plan", August 2000. (Page 23).



Source: City of Ontario. Map created August 26, 2004. G:\2004\04-0356\Gis\LU_PZ.mxd



Source: City of Ontario. Map created August 26, 2004. G:\2004\04-0356\Gis\new_model_colony.mxd

Project Applicability

Law

> 10910. (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.
>
> 10912. For the purpose of this part, the following terms have the following meanings:
> (a) "Project means any of the following:
> (1) A proposed residential development of more than 500 dwelling units.
> (2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.
> (3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
> (4) A proposed hotel or motel, or both, having more than 500 rooms.
> (5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
> (6) A mixed-use project that includes one or more of the projects specified in this subdivision.
> (7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.

Since the NMC projected water demand is substantially greater than what a 500 dwelling unit project will generate, it exceeds the criteria set in Section 10912.(7); hence, qualifies as a "project". Therefore, the requirements of SB 610 apply.

Use of a Prepared Water Supply Assessment

If a project meets all three of the following criteria, Water Code Section 10910(h) allows the City to rely on a previously prepared WSA; no new WSA need be prepared for the project. Conversely, if the project does not meet any one of the following three (3) criteria, Water Code Section 10910(h) requires preparation of a new WSA.

1. *The project is part of a larger project for which an assessment was prepared.*
2. *The data used to create the assessment still is accurate.*
3. *The assessment found sufficient water for the project.*

It is the intent of the City of Ontario to use this Water Supply Assessment as its base document, in order to comply with SB 610, for all developments that will occur within the New Model Colony area, as long as it meets the above criteria.

Identification of Public Water System

Law

> 10910. (b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

The City of Ontario operates the public water system that will supply the proposed project.

Schedule

Law

> 10910. (g) (1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.
>
> (2) Prior to the expiration of the 90-day period, if the public water system intends to request an extension of time to prepare and adopt the assessment, the public water system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.
>
> (3) If the public water system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public water system to

comply with the requirements of this part relating to the submission of the water supply assessment.

The City of Ontario's Planning Department requested that the City of Ontario's Water Department provide a report that meets the requirements of SB 610. This report is a result of that request.

Urban Water Management Plan (UWMP) Review

Law

> 10910. (c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).
>
> (2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).
>
> (3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a 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, including agricultural and manufacturing uses.
>
> (4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project 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 existing and planned future uses, including agricultural and manufacturing uses.

The City of Ontario's City Council adopted the "Urban Water Management Plan Year 2000 Update" (Attachment A) prepared by the Inland Empire Utilities Agency by Resolution 2001-105 on November 20, 2001 (Attachment B). The Urban Water Management Plan is consistent with the City of Ontario's Water Master Plan (August 2000).

The projected water demand associated with the proposed project, 31,200 acre-feet per year out of the City of Ontario's total projected water demand of 82,100 acre-feet per year, was accounted for in the above referenced Urban Water Management Plan which is incorporated into this Water Supply Assessment.

WATER DEMAND

1. Location

The City of Ontario is a rapidly growing community located in the foothills of the San Gabriel Mountains in the western portion of San Bernardino County. The City is bounded by the City of Montclair on the northwest (Figure 1), the cities of Rancho Cucamonga and Upland on the north, the City of Fontana on the northeast, Jurupa Community Services District on the south and southeast, and the City of Chino on the south and southwest. In 1999, Ontario's southern boundaries were extended by the annexed 8,200 acres of unincorporated Agricultural Preserve. The City boundaries, prior to this annexation, are referred to as Old Model Colony (OMC) and encompass about 23,200 acres. The annexed area, which is referred to as the New Model Colony (NMC), consists of dairies and agricultural land uses. Including the NMC, the City boundaries now represent approximately 31,300 acres or about 48.9 square miles. Three (3) major freeways (Interstate 10, Interstate 15 and State Route 60) traversing the City of Ontario serve as major transportation hubs for freeway commuters as well as industrial businesses. A major railway corridor also crosses the City's northerly sector. The City of Ontario is also home to the Ontario International Airport.

2. Population and Projected Growth

The current (2003) Ontario's population is 165,675, representing an average of 1.7% annual increase from the 1990 population of 133,179 as shown on Figure 3.

Figure 3 Recorded Population

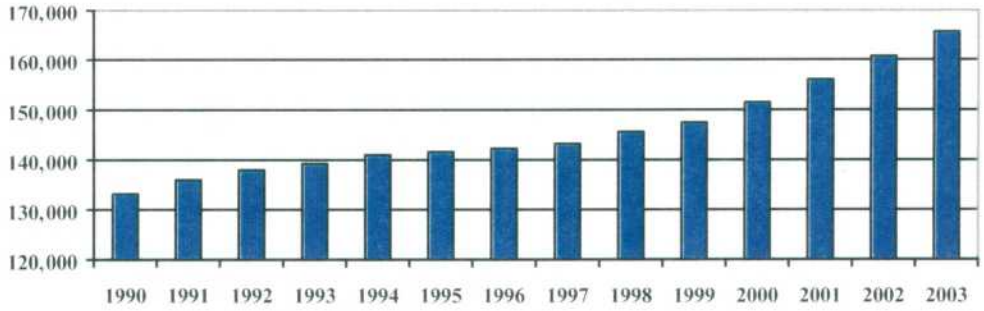


Table 1 depicts that the population at ultimate build-out (2030) is expected to reach a total of 275,000 people for the combined NMC and OMC.

Table 1 Ultimate Population

	2003	*Ultimate*
OMC	165,675	174,000
NMC	0	101,000
TOTAL	165,675	275,000

New Model Colony growth will include residential, commercial and industrial land uses. Residential development in the NMC is expected to begin in 2005 and achieve a population of 101,000 at build-out. Over 1,000 acres of commercial and industrial development is projected to take place in certain designated areas of the NMC. Irrigated open space will account for about 1,250 acres of the total inventory of land.

The NMC still has major agricultural activities but continues to give way to urban development pressures. It is not surprising that the City of Ontario is characterized by several major development hubs and has one of the most dynamic revitalization programs in California.

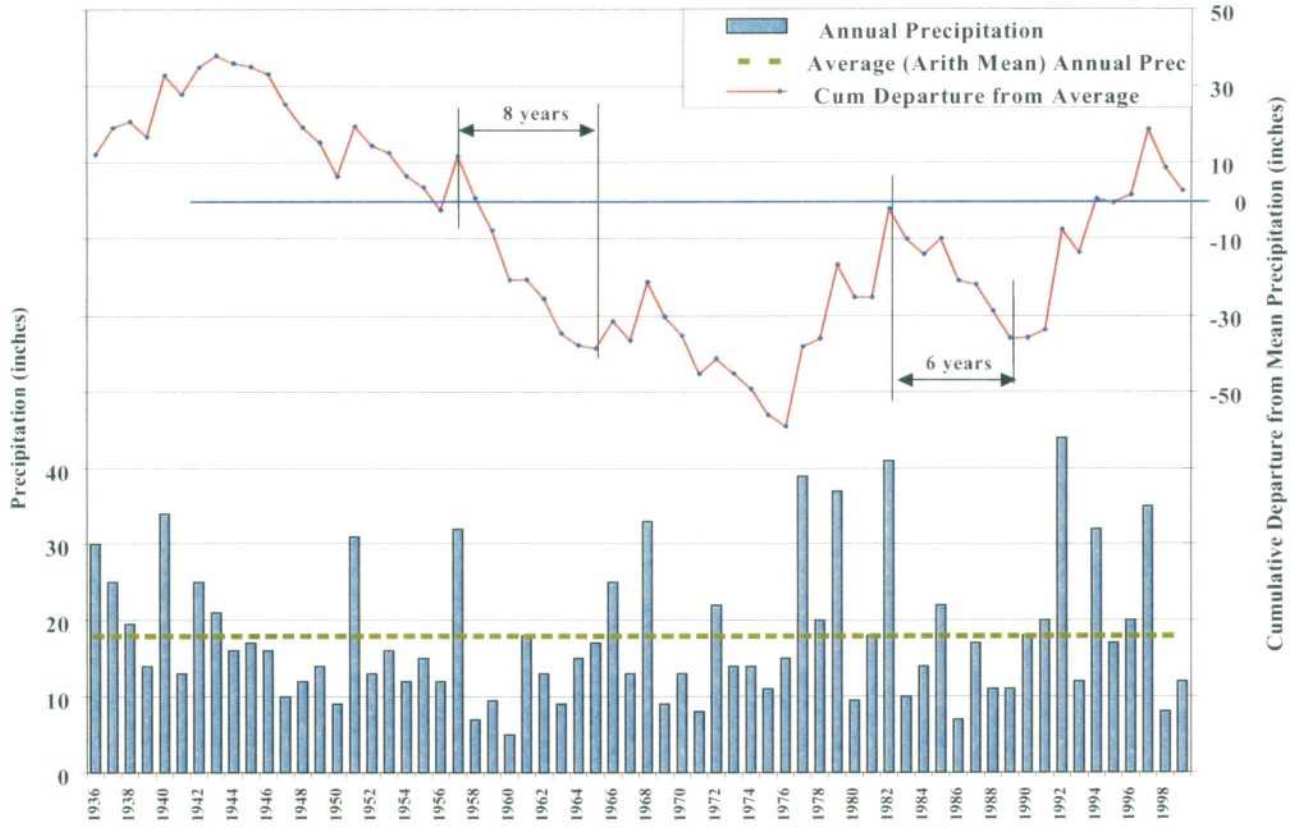
As part of its comprehensive management strategy, the City authorized the preparation of a detailed *Water Master Plan* (WMP) in 1998 to provide a multi-year (ultimate development) guide for management, maintenance, and expansion of its water system infrastructure. The Master Water Plan was finalized in August 2000. A companion multi-year financial plan for funding both capital and ongoing operations was prepared subsequent to adoption of the WMP.

3. Climate

The climate is often described as "Mediterranean" which means that the temperature of the air ranges from warm to very hot during very dry summers and cool to somewhat cold during rainy winters. When rainfall occurs, it comes in heavy concentrations causing most of the storm water to runoff to tributary streams of the Santa Ana River. Annual rainfall typically ranges from 12 to 18 inches per year[2] but with extreme variations from year to year. According to recorded rainfall records maintained by the County of San Bernardino, the amount of rainfall has varied widely from 5 inches to almost 44 inches annually. The annual average arithmetic mean from 64-years of rainfall history is 17.9 inches[3]. Annual precipitation and departure from the arithmetic mean (Figure 4) show a prolonged period of below average rainfall from 1943 to 1976. Figure 4 also shows several shorter periods of dry years. Based on water production data, a dry year can result in a 5-10% increase in demand, and a wet year can result in a similar reduction in water demand.

[2] *Evaluation of Groundwater Potential*, GEOSCIENCE March 2002
[3] San Bernardino Flood Control District

Figure 4 Recorded Precipitation



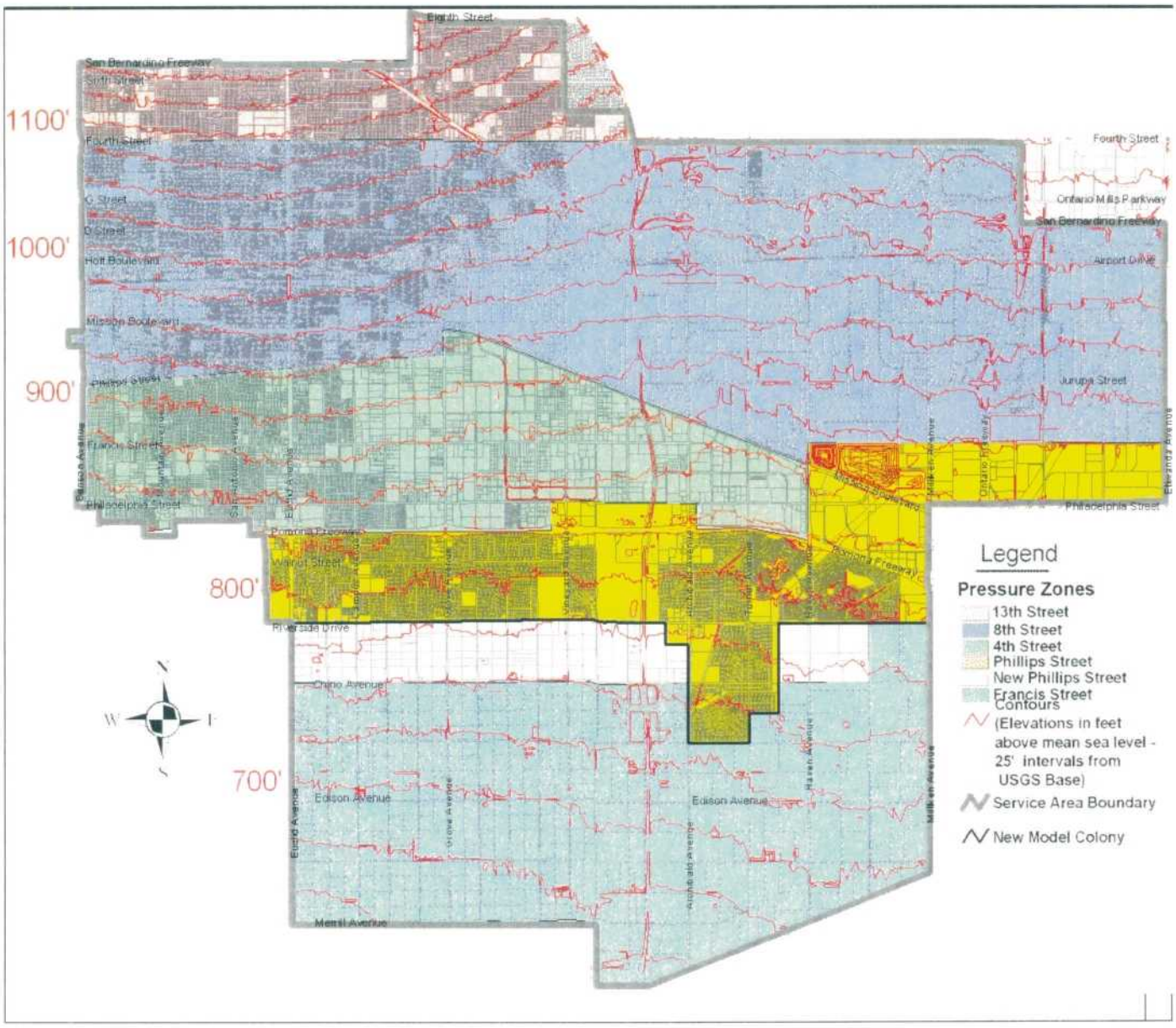
4. Pressure Zones

The City is situated in the foothills of the San Gabriel Mountains but on relatively flat terrain with elevations ranging from about 635 feet above mean sea level (msl) at its southerly boundary to about 1180 feet above msl at its northeasterly corner. Currently, the City's domestic water system is divided into four pressure zones as follows: 13th Street Zone, 8th Street Zone, 4th Street Zone, and Phillips Street Zone. The recent annexation of the NMC will require the expansion of the Phillips Street Zone and the creation of a new pressure zone (called the Francis Street Zone). These zone changes will allow the City to serve new developments in the NMC. The general boundaries and the service elevation ranges for the pressure zones are indicated in Table 2 and Figure 5. Each zone has its own storage that provides not only control of maximum pressures but also satisfies minimum required pressures. Table 2 also provides a breakdown of acreage by pressure zone.

Table 2 Pressure Zone Descriptions and Acreage

Pressure Zone	Boundaries	Service Elevation Range (ft –ft)	High Water Line (ft)	Acreage
13th Street	Benson Ave. to the west, Hellman Ave. to the east, 8th St. to the north and 4th St. to the south.	1020 - 1180	1348	2,049
8th Street	Benson Ave. to the west, Etiwanda Ave. to the east, 4th St. to the north, and Francis St. to the south.	865 - 1095	1212	12,013
4th Street	Benson St. to the west, Haven Ave. to the east, Phillips St. and Mission Blvd. to the north, and Pomona FWY to the south.	825 - 930	1074	4,558
Phillips Street (including the Phillips Street Zone Extension)	Fern Ave. to the west, Etiwanda Ave. and Milliken Ave. to the east, Francis St. and Pomona FWY to the north, and Chino Ave. and Schaefer Ave. to the south.	735 - 880	1010	4,455 1,290 *(extension)*
Francis Street	Euclid Ave. to the west, Milliken Ave. to the east, Chino Ave. to the north, and Merrill Ave. and Bellgrave Ave to the south.	635 - 800	925	6,925
			Total Acreage	31,290

Figure 5 City of Ontario Pressure Zone Boundaries



5. Land Use

All property within the City of Ontario is classified with a land use designator. Table 3 lists 38 ultimate uses for the combined NMC and OMC. Figure 6* shows the ultimate land use within the City of Ontario, including the New Model Colony area.

Table 3 Summary of Ultimate Land Use OMC and NMC

Land Use		Acreage								
		Old Model Colony (OMC)					New Model Colony (NMC)			Total
Description	Abbrev.	13th	8th	4th	PHLPS	Subtotal	NPHLPS	Francis	Subtotal	
Rural Residential	RR		107	283		390			0	**390**
Low Density Residential	LDR	976	1,305	883	1,137	4,301	901	3,363	4,264	**8,565**
Low Medium Density Residential	LMDR	21	95	11		127			0	**127**
Medium Density Residential	MDR	68	275	136	110	589	17	244	261	**850**
High Density Residential	HDR	52	98	3	3	156	38	288	326	**482**
Planned Residential	PR		77	6	312	395			0	**395**
Mobile Home	MH	49	8	81	55	193			0	**193**
General Commercial	GC	64	150	46	40	300			0	**300**
Neighborhood Commercial	NC	59	55	50	145	309	56	176	232	**541**
Neighborhood Convenience Com	NCC		2			2			0	**2**
Administrative Professional	AP	2	11			13		29	29	**42**
Airport Service Commercial	ARS		227			227			0	**227**
Planned Commercial	PC		1,246	42	76	1,364		191	191	**1,555**
Historic Planned Commercial	HPC		154			154			0	**154**
General Industrial	GI		375			375		160	160	**535**
Industrial Park	IP	23	63	1,322	14	1,422		37	37	**1,459**
Vintage Industrial Park	VI		870		480	1,350			0	**1,350**
Planned Industrial	PI		1,837	473	275	2,585		433	433	**3,018**
Ontario International Airport	ARPT		1,395			1,395			0	**1,395**
Airport Industrial	AI		96			96			0	**96**
Planned Industrial Landfill	PIL		145		189	334			0	**334**
Existing Public Facility	EPF	9	36	18	60	123			0	**123**
Proposed Public School	PPS	43	14	16	21	94	60	164	224	**318**
Existing Public School	EPS	116	70	84	52	322			0	**322**
Existing Park/Rec Open Space	EROS	35	187	40	230	492			0	**492**
Proposed Park/Rec Open Space	PROS		78	5	12	95	89	970	1,059	**1,154**
Non-recreational Open Space	NROS	29	362	82	264	737		192	192	**929**
Town Center	TC		229			229			0	**229**
East Holt Blvd. Redevel Res/Com	EH		171			171			0	**171**
Grove Avenue Corridor	GR		7	210		217			0	**217**
Infrastructure	INF		217		12	229	14	137	151	**380**
Landfill	LF				135	135			0	**135**
Right of Way	ROW	503	2,051	767	833	4,154	115	541	656	**4,810**
TOTAL		2,049	12,013	4,558	4,455	23,075	1,290	6,925	8,215	**31,290**

Note: Based on Table 2-6 of the City of Ontario Water Master Plan, August 2000.

Table 2-10 of the WMP organized these designators under the 7 broad categories listed in Table 4 and portrayed on Figure 7. Two additional categories: right of way and infrastructure comprise the total acreage at build out. Three

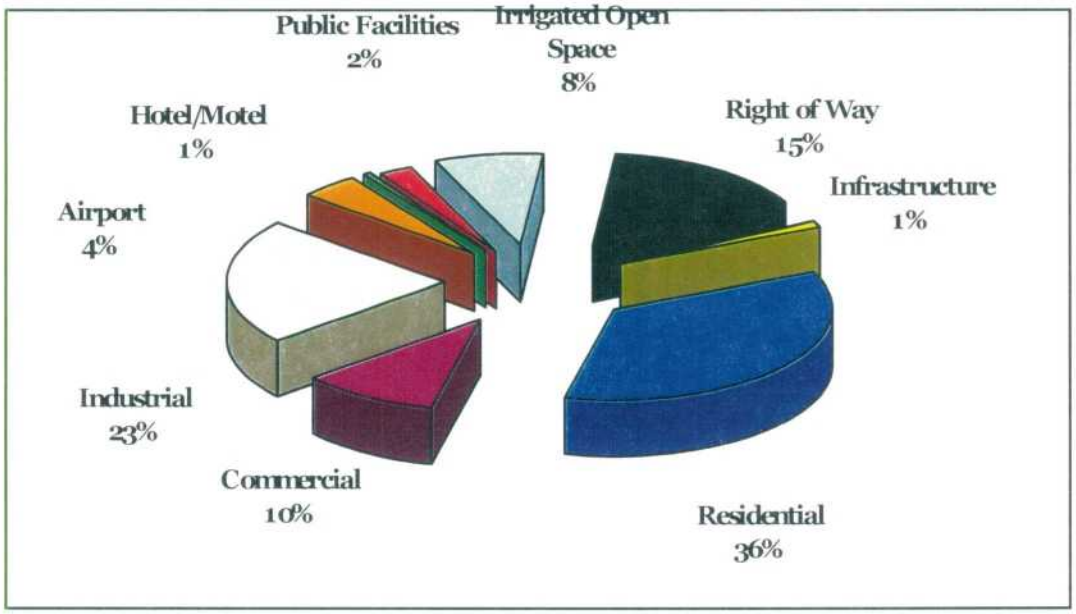
* Bound in the back of the report.

of the nine categories (residential, commercial, and industrial) represent about 70%, or almost three-quarters (¾) of the total acres.

Table 4 Land Use Categories and Acres

Category	Acres	% of Total
Residential	11,002	~70%
Commercial	3,266	
Industrial	6,926	
Airport	1,395	~30%
Hotel/Motel	171	
Public Facilities	763	
Irrigated Open Space	2,574	
Right of Way	4,810	
Infrastructure	380	
Total	31,289	100%

Figure 7 Ultimate Land Use Percentages



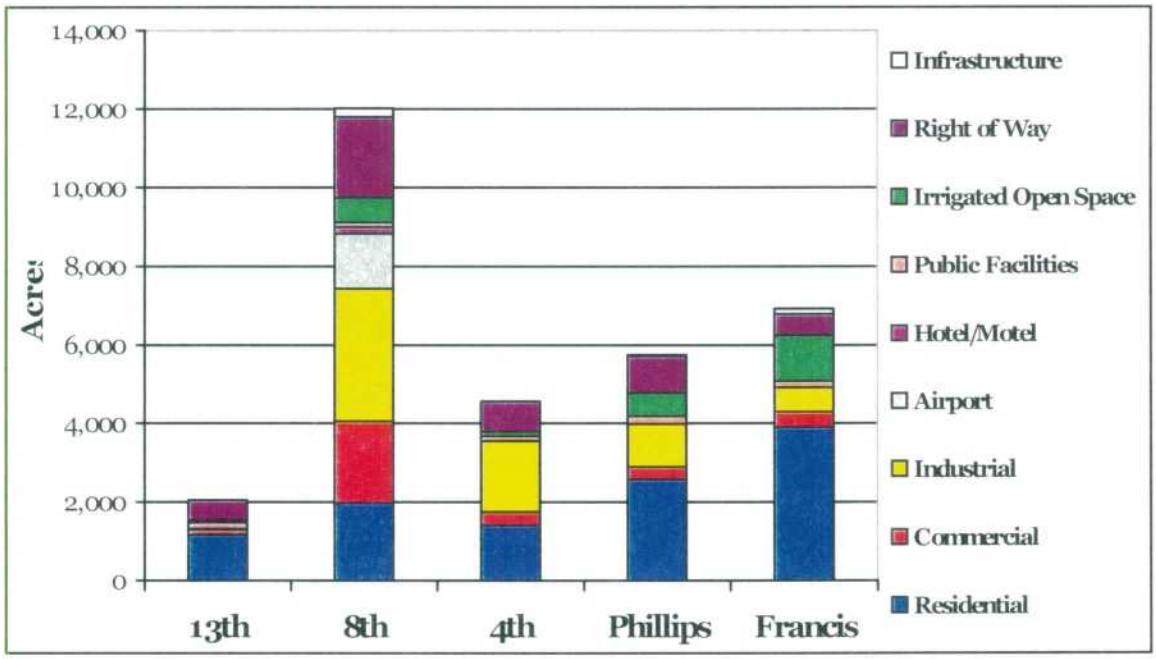
Using the data from Table 4, the nine land use categories and total acreage for each pressure zone are summarized in Table 5. Right of way and infrastructure are included to complete the total acreage within the City boundaries.

Table 5 Ultimate Land Use and Total Acreage for Each Pressure Zone

Category	13th	8th	4th	Phillips		Francis	Totals
				OMC & NMC			
Residential (All)	1,166	1,965	1,403	1,617	956	3,895	**11,002**
Commercial	125	2,081	348	261	56	396	**3,267**
Industrial	23	3,386	1,795	1,093	0	630	**6,927**
Airport	0	1,395	0	0	0	0	**1,395**
Hotel/Motel	0	171	0	0	0	0	**171**
Public Facilities	168	120	118	133	60	164	**763**
Irrigated Open Space	64	627	127	506	89	1,162	**2,575**
Right of Way	503	2,051	767	833	115	541	**4,810**
Infrastructure	0	217	0	12	14	137	**380**
Total	**2,049**	**12,013**	**4,558**	**4,455**	**1,290**	**6,925**	**31,290**

Figure 8 graphically illustrates the acreage of Table 5.

Figure 8 Land Use Acreage by Pressure Zone



The City's recorded water consumption, developed acreage, and current land use were analyzed for each of the above categories. Tables 6 and 7 were produced from these records to represent the average daily water demand per acre for each category:

Table 6 Recorded Consumption (Acre-feet) by Land Use

Category	1990	1995	2000
Residential- Low density	14,800	16,623	20,377
Residential- Medium density	3,473	3,901	4,782
Residential- High density	1,272	1,430	1,752
Commercial	3,666	4,117	5,047
Industrial	2,871	3,225	3,953
Airport	377	424	520
Hotel/Motel	703	790	968
Public Facilities	997	1,120	1,373
Irrigated Open Space	3,662	4,113	5,042
Total	**31,823**	**35,742**	**43,814**

Demand coefficients are numerical values representing the amount of water used on a given area (usually one (1) acre or 43,560 square feet) in one year. The WMP utilized recorded metered consumption records to produce annual and maximum daily demand history for each of the above land use categories. The WMP comments that the water production volumes for July 1, 1998, through June 30, 1999, and attendant demand coefficients represent an extremely dry year with cooler than normal temperatures. Therefore, the demand coefficients are intentionally conservative and representative of a dry year demand. Coefficients are listed on Table 7.[4]

Table 7 Average Daily Water Demand Factors (gpm per acre)

Category	Demand Factor
Residential – Low Density [1]	2.71
Residential – Medium Density [1]	2.82
Residential – High Density [1]	3.08
Commercial	1.57
Industrial	0.50
Airport	0.23
Hotel/Motel	4.50
Public Facilities	1.58
Irrigated Open Space	2.37
Right of Way	0
Infrastructure	0

Note 1: Composite demand factor for residential is approximately 2.75 gpm/acre.

[4] Boyle, page 20

6. FY 2002 Agricultural Water Demands

In 2001-02, the total production from private wells to meet the dairy and agricultural demands in the southern part of the Chino Basin, including the NMC, was 39,494 acre-feet. As urbanization of this area occurs, agricultural water demands will decrease and urban water demands will increase significantly. Production for agricultural use will reduce the current level to about 10,000 acre-feet per year in the year 2030 at build out. Future development in this area will be a combination of urban uses (residential, commercial, and industrial). Ontario is expected to experience a significant new water demand as the City begins serving urban customers in the former agricultural area. Municipal and industrial demands are projected to increase more than 90% between the current demand and ultimate build out.

7. Forecast of Ultimate Water Demand (Acre Feet)

The ultimate water demand requirements for the City of Ontario at or near build out were calculated using the land use acreage from Table 3 and the demand factors from Table 2.7. Table 8 presents these calculations. The year 2030 is the year assigned to the ultimate or build out demand condition.

Table 8 Existing and Future Average Demands in City With and Without NMC*

Land Use Category	Demand Factor	Existing		Ultimate				
	Gpm/ acre	City Pre-NMC (acres)	Demand (AF/yr.)	City Pre-NMC (acres)	City Pre-NMC (AF/yr.)	NMC (acres)	NMC Demand (AF/yr.)	Total Demand (AF/yr.)
1. Residential								
a. Low (RR+LDR)	2.71	4,552	19,875	4,689	20,473	4,666	20,374	40,847
b. Medium(LMDR+MDR+PR)	2.82	1,026	4,666	1,094	4,976	200	910	5,886
c. High (MH+HDR)	3.08	344	1,709	322	1,757	300	1,801	3,558
2. Commercial (AP+ARS+GR+HPC+ GC+NC+NCC+PC+TC)	1.57	1,944	4,923	2,766	9,661	504	1,761	11,422
3. Industrial (AI+LF+PIL+PI+IP+VI+GI)	0.50	4,781	3,856	6,283	5,715	338	307	6,023
4. Airport	0.23	1,393	507	1,394	507	0	0	507
5. Residential Commercial (EH)	4.50	130	944	944	1,342	0	0	1,342
6. Public (public facilities/schools) (EPF+EPS+PPS)	1.58	526	1,339	540	1,375	876	2,231	3,607
7. Irrigated Open Space (EROS+NROS+PROS)	2.37	1,287	4,918	1,325	5,061	997	3,809	8,870
TOTALS		15,983	42,737		50,867		31,193	82,062

* Boyle, Page 23

"The City pre-NMC City service area is approaching buildout; thus, the growth in demands, from approximately 43,000 AF/yr. to about 50,900 AF/yr., represents a modest 18 percent increase. Most of this projected increase is seen to be the commercial and industrial categories. The NMC demands are projected to be about 31,200 AF/yr. at buildout. Note that although current water use in the NMC area is estimated to be approximately 19,000 AF/yr from private agricultural and domestic wells, it is assumed to be "zero" in terms of demands supplied from City sources.

Total demands to be supplied from the City's ultimate system (assumed to serve the entire City service area including the recently annexed NMC) are thus projected to nearly double – from the current 43,000 AF/yr. to about 82,000 AF/yr."[*]

To comply with Section 10910, subdivision (d), (e), (f), and (g), we have incorporated by reference, the requested information in the adopted Urban Water Management Plan which is bound herein (Appendix A).

Water Supply Entitlements, Water Rights or Water Service Contracts

Law

> 10910. (d) (1) The assessment required by this section shall include an identification of any exiting water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.
>
> (2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:
> (A) Written contracts or other proof of entitlement to an identified water supply.
> (B) Copies of a 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.

[*] Boyle, page 23

1. Current and Recorded Water Supply Sources

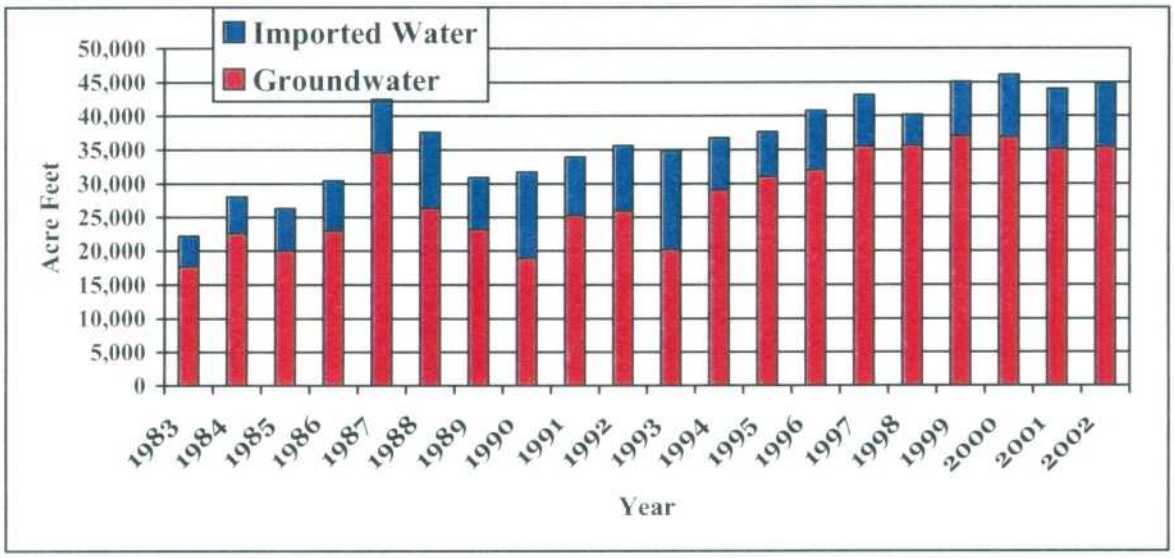
The proposed project represents about 38% of Ontario's ultimate water supply. The City of Ontario has three sources of supply (groundwater, desalter water from the Chino Desalter Authority, and recycled water) which will have to be expanded in order to meet the project and water demand. The City of Ontario also has a fourth source of supply (WFA) which is not anticipated to be expanded in the future for this project (NMC).

Ontario's potable water supplies come from two major sources (2002): local groundwater (79%) and imported surface water (21%). At build out, municipal water supply sources will consist predominantly of groundwater wells through direct use or treatment and use, and imported surface water from The Metropolitan Water District of Southern California (MWD) supplies. The reliability of MWD's water supplies is discussed in the Urban Water Management Plan (Appendix A). Other sources are more institutional, meaning water that is supplied through water transfers, deals, and agreements. Table 9 and Figure 9 provide the potable water sources utilized by Ontario, and the specific amount of water used from each source from 1983 through 2002. Table 10 and Figure 10 provide the same information on a monthly basis for the year 2002.

Table 9 Recorded Source of Supply

Year	Groundwater	Imported Water	Total
2002	35,396	9,355	44,751
2001	35,106	8,910	44,016
2000	36,862	9,258	46,120
1999	37,008	8,116	45,124
1998	35,587	4,582	40,169
1997	35,526	7,590	43,115
1996	32,006	8,759	40,765
1995	30,993	6,630	37,623
1994	29,032	7,695	36,726
1993	20,151	14,645	34,796
1992	26,016	9,572	35,588
1991	25,284	8,607	33,891
1990	18,927	12,758	33,498
1989	23,179	7,695	30,873
1988	26,395	11,217	37,612
1987	34,547	7,947	42,494
1986	23,007	7,434	30,441
1985	20,027	6,300	26,299
1984	22,625	5,436	28,061
1983	17,666	4,513	22,179

Figure 9 Recorded Source of Supply

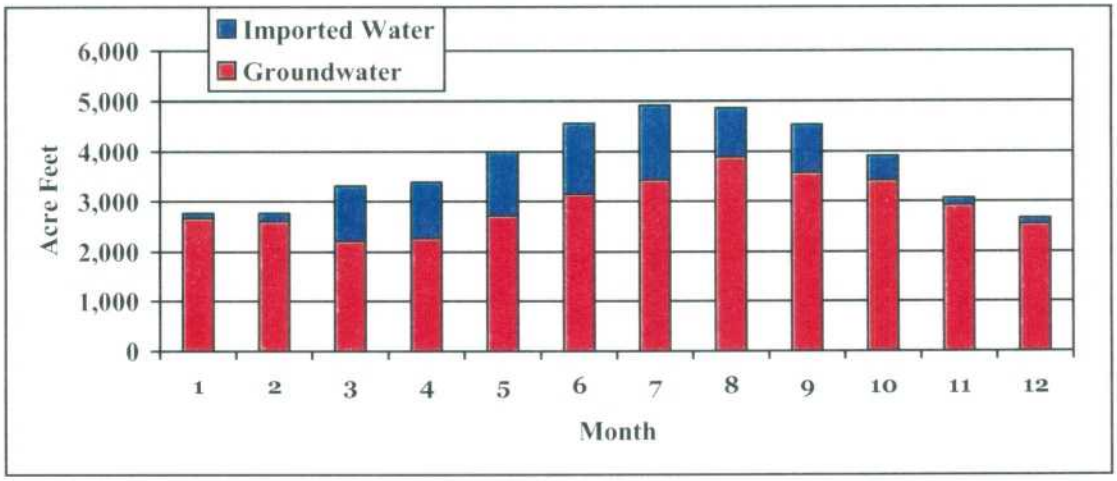


In 2002, total water production was 44,751 acre-feet, of which 35,396 or 79%, was produced from local groundwater supplies. The remaining 9,355 acre-feet (21%) was imported surface water. During the highest demand summer month (2002), the imported water constituted approximately 30% of the annual production. During the low demand month, the imported water was 4% of the total. Table 10 and Figure 10 represent the monthly water supplies for the year 2002.

Table 10 Monthly Water Production (Acre Feet) for 2002

Month	Groundwater	Imported Water	Total
1	2,664.3	100.5	2,764.8
2	2,602.1	162.6	2,764.7
3	2,214.0	1,092.4	3,306.3
4	2,269.2	1,116.3	3,385.5
5	2,715.4	1,279.4	3,994.7
6	3,148.2	1,414.3	4,562.5
7	3,428.1	1,487.2	4,915.3
8	3,895.2	975.1	4,870.4
9	3,576.5	961.6	4,538.1
10	3,417.4	496.2	3,913.6
11	2,917.9	150.9	3,068.8
12	2,548.2	118.2	2,666.5
2002 Total	35,396	9,355	44,751

Figure 10 Monthly Water Production for 2002



Ontario's projected water demand will be met using four water supply sources, imported water, local groundwater, treated groundwater (Desalter) and recycled water (Table 11).

Table 11 Water Supply Sources Forecast
Maximum Day Water Demand (MGD)

Pressure Zone	Source	2004	2005	2010	2015	2020	2025	2030
13th St.	Groundwater	0.0	0.0	3.6	3.6	3.6	3.6	3.6
	Imported (WFA)	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Desalter Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Recycled Water	0.0	0.0	0.1	0.1	0.2	0.2	0.2
	Total	9.0	9.0	12.7	12.7	12.8	12.8	12.8
8th St.	Groundwater	26.7	30.3	36.2	45.8	48.9	48.8	48.8
	Imported (WFA)	16.0	16.0	16.0	16.0	16.0	16.0	16.0
	Desalter Water	0.0	3.1	0.0	0.0	0.0	0.0	0.0
	Recycled Water	0.0	1.0	1.3	1.5	1.8	1.8	1.8
	Total	42.7	50.4	53.5	63.4	66.7	66.8	66.6
4th St.	Groundwater	13.6	24.5	28.1	38.8	41.4	41.4	41.4
	Imported (WFA)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Desalter Water	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Recycled Water	0.1	0.1	0.2	0.3	0.4	0.4	0.4
	Total	12.2	24.6	28.3	39.1	41.8	41.8	41.8
Phillips St.	Groundwater	5.3	5.3	8.9	8.9	13.9	13.9	13.9
	Imported (WFA)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Desalter Water	0.0	1.3	1.3	0.0	0.0	0.0	0.0
	Recycled Water	1.0	1.1	1.3	1.5	1.6	1.7	1.8
	Total	6.3	7.6	11.4	10.3	15.5	15.6	15.9
Francis St.	Groundwater	0.0	0.0	7.2	10.8	18.0	21.6	25.2
	Imported (WFA)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Desalter Water	0.0	0.0	3.1	4.4	4.4	4.4	4.4
	Recycled Water	0.0	0.2	0.9	1.7	2.5	3.3	4.0
	Total	0.0	0.2	11.2	16.9	24.9	29.3	33.6
City Totals	**Groundwater**	**45.5**	**60.1**	**84**	**107.9**	**125.8**	**129.3**	**132.9**
	Imported (WFA)	**25.0**	**25.0**	**25.0**	**25.0**	**25.0**	**25.0**	**25.0**
	Desalter Water	**0.0**	**4.4**	**4.4**	**4.4**	**4.4**	**4.4**	**4.4**
	Recycled Water	**1.1**	**2.4**	**3.8**	**5.1**	**6.5**	**7.4**	**8.2**
	Total	**71.6**	**91.9**	**117.2**	**142.4**	**161.7**	**166.1**	**170.5**
Maximum Day Demand		**64.2**	**66.3**	**77.0**	**85.0**	**92.9**	**100.9**	**108.8**

2. Description of All Water Supply Projects

Dry Year Yield Project: On April 15, 2003, the City Council authorized execution of an agreement (Appendix C) with the Inland Empire Utilities Agency (IEUA) that funds water facilities that improve the City's water reliability and reduces dependence on imported water. This agreement is in conjunction with and a part of The Metropolitan Water District of Southern California's (MWD) Chino Basin Dry-Year-Yield Project. MWD is the regional wholesale water agency that supplies imported water to southern California from the Colorado River and the State Water Project from northern California.

As a matter of background, the California voters approved Proposition 13 in March 2000 authorizing the State of California to sell $1.97 billion in general obligation bonds for water related projects throughout the State. Of these funds, $161,544,000 was appropriated to the California Department of Water Resources ("DWR") local assistance grants for groundwater storage and supply reliability projects. MWD was subsequently selected by DWR as a grant recipient for $45 million to be used for groundwater storage projects within its service area. Such groundwater storage programs are part of a larger effort to meet water supply demands in Southern California. In January 2002, Inland Empire Utilities Agency (IEUA) and the Chino Basin Water Master jointly submitted a proposal to MWD for a Groundwater Conjunctive Use Storage Program in conjunction with IEUA's local water agencies including the City of Ontario.

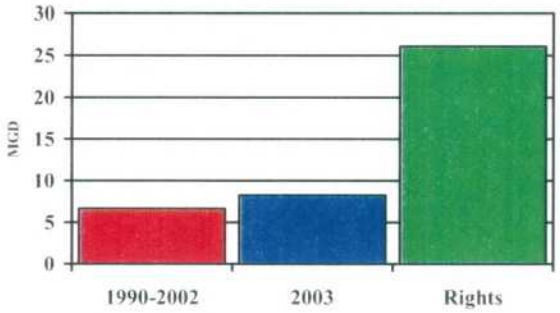
In April 2002, MWD approved the proposal that allows MWD to: 1) maintain a maximum of 100,000 acre-feet of groundwater in its Chino Basin storage account; and, 2) put a call on up to 33,000 acre-feet per year (but not more than the amount remaining in the storage account); and, 3) contribute up to $27.5 million to participating IEUA's local water agencies to build wells and wellhead treatment facilities.

IEUA has entered into an agreement with MWD, Three Valleys Municipal Water District, and Chino Basin Water Master whereby funding will be provided to local agencies to build the water production and treatment facilities. Each participating local water agency will receive a portion of these funds consistent with the agency's ability to use delivered MWD water during normal years and use groundwater from the MWD storage account during dry years (***shift obligation***). Ontario's shift obligation is 8,076 acre-feet, and its share of the funding is $5,674,168. These funds will be used to build three (3) new groundwater wells and a wellhead treatment facility to remove nitrates from several existing wells. The City agrees to complete the construction of the funded facilities no later than March 8, 2008. Upon call by MWD for stored water delivery, the City will operate these facilities, combined with the existing infrastructure to meet its shift obligation. As a result, the City is less reliant on imported water supply and improves its groundwater capacity during wet weather cycles.

Water Facilities Authority: The City of Ontario is a member of the Water Facilities Authority (WFA) that was created under the Joint Exercise of Powers Agreement (JPA) in 1980 (Appendix D). The other members are the Monte Vista Water District and the Cities of Chino, Chino Hills, and Upland. The WFA's charter is to provide for the acquisition and construction of water supply facilities for its member agencies. The WFA purchases imported water from IEUA as a member agency of the MWD. The City

of Ontario has capacity rights up to 25.4 mgd. Since 1990, the City has purchased an average of about 6.69 mgd (7,500 af per year). For 2003, the City purchased an average of 8.3 mgd (9,300 af per year). Figure 11 depicts these statistics. The rated capacity of the WFA treatment plant is 81 mgd (Appendix E). Per Ordinance No. 99-07-02, "Ordinance of the Water Facilities Authority – JPA: Repealing Ordinance 96-09-01", (Appendix F), notes that the City of Ontario has 31.4% of the design capacity of the treatment plant. The future reliability and vulnerability of MWD's supplies in addition to groundwater supplies is discussed in the "Urban Water Management Plan" (Appendix A).

Figure 11 Imported Water Purchases versus Capacity Rights in WFA



Chino Basin Desalting Authority: The City of Ontario is a member of the Chino Basin Desalting Authority (CDA), a joint exercise of powers agency created on September 25, 2001, along with Jurupa Community Services District, SARWC, IEUA and the Cities of Chino, Chino Hills, and Norco. The CDA issued $150M of Revenue Bonds in 2002 for:

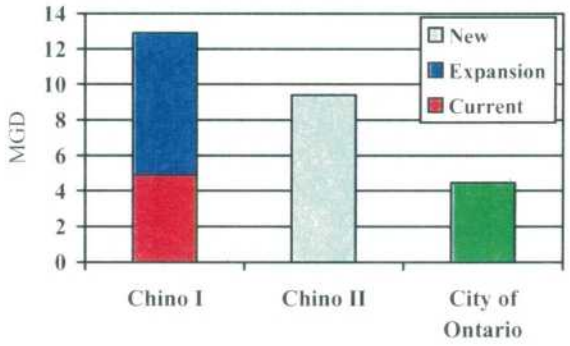
1) the acquisition of the Chino Desalter Unit I (Chino 1) from the Santa Ana Watershed Project Authority; and,

2) the design and expansion of Chino I from 8.0 to 12.9 mgd; as well as,

3) the design and construction of a 9.4 mgd Chino Desalter Unit II (Chino 2).

Chino 1 expansion is expected to be online by June 2005 and to produce an additional 5,000 acre-feet of desalted water per year bringing the total to 14,200 af. Chino 2 Plant is designed for 9.4 mgd which will produce 10,400 af of desalted water per year by June 2005. The City of Ontario has agreed (Appendix G) to purchase 5,000 af/year (average 4.46 mgd) of the 24,600 af/year production capacity (Figure 12).

Figure 12 CDA Desalter Capacity



City Well Production: The City currently (2004) has 26 production wells in the Chino Basin with a combined capacity of about 41,707 gallons per minute (60.1 mgd at 100% utilization). Twenty-three (23) City wells are currently in service. In addition to the nine (9) new wells proposed in the Water Master Plan, the City has also prepared a long range replacement plan for older wells that lose production and as water quality concerns arise in the future. Replacement wells are expected to have higher flow capacities than the well they are replacing. The data in Table 12 provides a snapshot of well capacity.

Table 12 Well Production Planning[5]

Well #	Capacity (GPM)	
	Current	Replacement
7	0	2,500
9	1,770	2,500
11	1,386	2,500
15	1,615	2,500
16	657	2,500
17	1,277	2,500
18	0	2,500
19	0	2,500
20	816	2,500
26	885	2,500
27	1,101	2,500
34	1,525	2,500
3	780	2,500
4	1,000	2,500
36	1,565	2,500
29	2,592	2,500
TOTAL	16,969	40,000

Well #	Capacity (GPM)
	Current
24	1,779
25	1,395
31	2,917
35	2,747
37	2,927
38	2,341
39	2,132
40	3,000
41	2,500
44	3,000
TOTAL	24,738

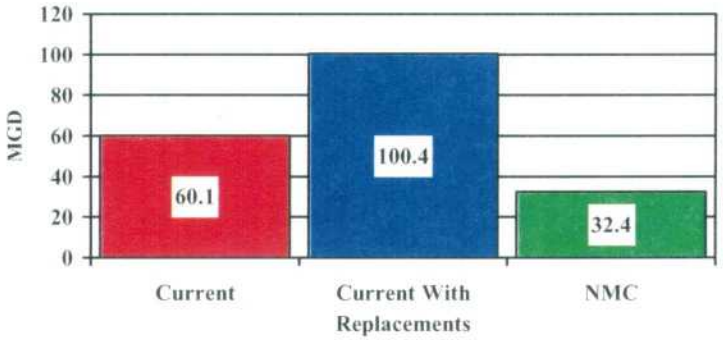
Well #	Capacity (GPM)
	Future
NMC 1	2,500
NMC 2	2,500
NMC 3	2,500
NMC 3	2,500
NMC 4	2,500
NMC 5	2,500
NMC 6	2,500
NMC 7	2,500
NMC 8	2,500
NMC 9	2,500
OMC 1	2,500
OMC 2	2,500
TOTAL	27,500

TOTAL CAPACITY AFTER REPLACEMENTS + ADDITIONS BY THE YEAR 2026.	**92,238**

At 100% utilization (24 hours per day and 7 days per week) 92,238 gpm well capacity produces 132.8 mgd. Figure 13 depicts the current, long range production plan for replacement and the additional new wells planned for NMC, by the year 2026.

[5] City of Ontario Source Planning Model July 2004. (Appendix H)

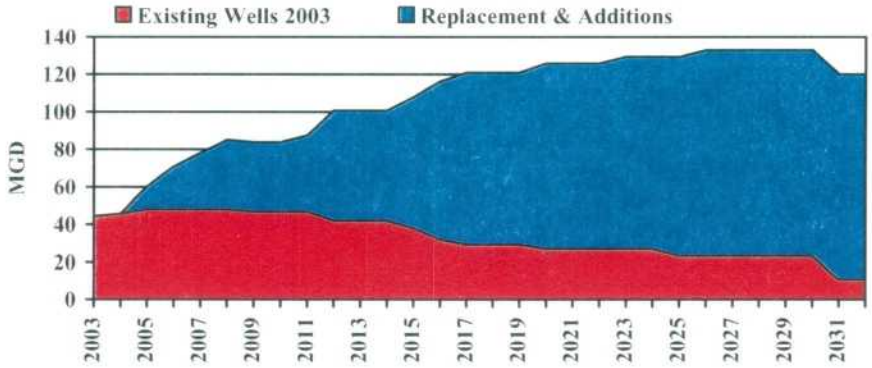
Figure 13 Well Production Capacity (100% Utilization)



The sixteen (16) wells listed in the first column of Table 11 are scheduled for replacement based on age and water quality. The estimated production capacity, excluding New Model Colony Wells, from replacement wells (100% utilization) is expected to increase the current capacity from 41,707 gpm (60.1 mgd) to 69,738 gpm (100.4 mgd) over the next 26 years. Figure 14 depicts this expected capacity increase.

On June 15, 2004 and July 20, 2004, the City Council approved Professional Services Agreements to design eight new wells. It is anticipated that the five wells drilled for the City will provide 12,500 gpm of additional production capacity. Three of the wells, which will serve the New Model Colony area, are anticipated to provide 7,500 gpm in production capacity.

Figure 14 Well Replacements and Additions Program



Recycled Water: The use of recycled water by the City of Ontario and the entities within the Inland Empire Utilities Agencies is extensively covered in the attached Urban Water Management Plan, (Appendix A). In 2000, IEUA delivered about 700 acre-feet of recycled water to the City of Ontario for landscape irrigation. Table 5-6 of the Urban Water Management Plan shows that the City of Ontario could use up to 12,000 acre-feet per year of reclaimed water. The projected recycled water use on Table 13 shows a more conservative trend than that which is shown in the Urban Water Management Plan.

3. Comparison of Supply and Demand

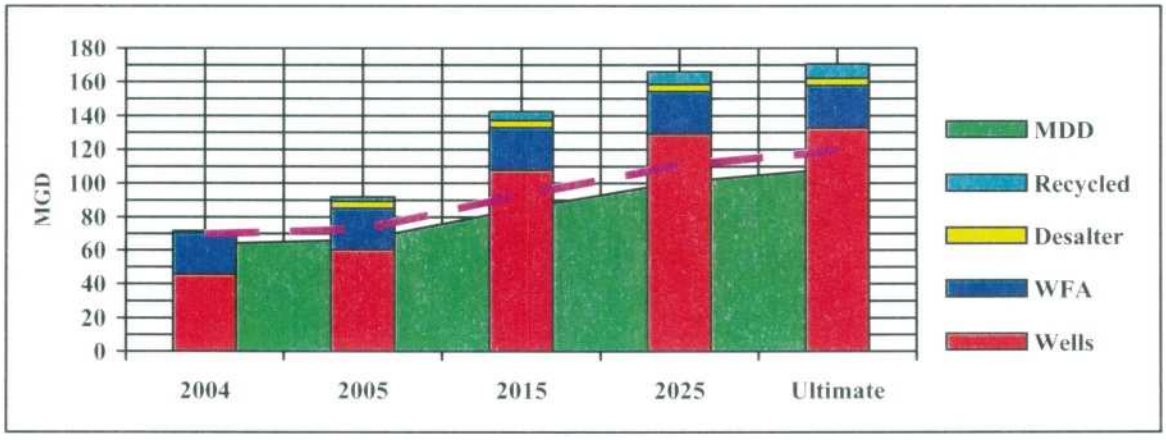
To meet this forecast of demand, the City has developed a computer model of all sources including wells, imported water, Chino Basin Desalter, and recycled water. Wells are at 100% utilization for comparison. Table 12 shows a comparison of sources of supply and demand.

Table 13 Comparison of Sources of Supply and Maximum Day Water Demand (mgd)[6]

	Groundwater	Imported (WFA)	Desalter Water	Recycled Water	**Total**	Demand	Dry Weather Demand[7]
2005	60.1	25	4.4	2.4	**91.9**	66.3	72.9
2010	84.0	25	4.4	3.8	**117.2**	77.0	84.7
2015	107.9	25	4.4	5.2	**142.4**	85.0	93.5
2020	125.8	25	4.4	6.5	**161.7**	92.9	102.2
2025	129.2	25	4.4	7.4	**166.0**	100.9	111.0
2030	132.8	25	4.4	8.3	**170.5**	108.8	119.7

Figure 15 demonstrates that excess capacity of production is available to meet maximum daily demands of the City of Ontario, including the New Model Colony area, for all years upon completion of the construction of planned water facilities.

Figure 15 Source of Supply and Maximum Daily Demand Comparisons



[6] City of Ontario Source of Supply Planning Model July 2004 (Appendix H).
[7] Dry Weather Demand equals Demand column plus 10%

10910. (f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand

associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

Introduction*

Since the major source of potable water in the City of Ontario's service area is groundwater, SB 610 requires a groundwater analysis as part of the WSA. This section will include: 1) review of information contained in the urban water management plan relevant to the proposed project, 2) a description of the groundwater basin used to supply potable water to the proposed project and a review of the City of Ontario's legal right to pump from this basin, 3) historic (past 5 years) analysis of amount and location of groundwater pumped from the basin, 4) projected analysis of groundwater to be pumped from the basin, and 5) analysis of the sufficiency of the groundwater basin to meet the demands of the proposed project and the suppliers demands.

1. Review of Urban Water Management Plan (Section 10910 (f)(1))

The "Urban Water Management Plan Year 2000 Update", prepared by Inland Empire Utilities Agency (August 2000) was adopted by the City of Ontario by Resolution 2001-1005 on November 20, 2001 and is attached as Appendix "A" and is incorporated by reference herein. The Plan includes information relevant to the identified water supply for the proposed project. This information includes: current and projected water supplies (*Planning for the Future*[8]) through Year 2020, a description of the Chino Groundwater Basin (*Water Use Trends*), the reliability of the water supply (*Planning for the Future*), historical, current and projected water use (*Planning for the Future*), projected supply and demand comparisons (*Planning for the Future*), demand management provisions (*Water Conservation Program*) and water shortage plans (*Planning for the Future*).

The Section of the UWMP entitled "Planning for the Future" includes a table identifying current supplies and projecting supply sources in five-year increments through the Year 2020. The conservative supply sources contemplated and included development projections through Year 2020, including the project subject to this WSA. This section also discusses groundwater production from the Basin and notes that nitrate and TDS (total dissolved solids) impacting groundwater quality.

The report states that "The Santa Ana Regional Water Quality Control Board (SARWQCB) and the Chino Basin Watermaster have developed water quality standards and management programs that will lead to the long term clean up and management of the water quality issues in the Chino Groundwater Basin. Treatment processes, including the construction of desalters and the removal of industrial waste and brine are a costly but essential part of the overall strategy to ensure maximum use of groundwater supplies."

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[8] Words and phrases italicized parenthetically are in reference to chapters so titled in the Inland Empire Urban Water Management Plan 2000 Update.

* The legal discussion of Chino Groundwater Basin is based upon Jurupa Community Services District's "Water Source Assessment for the County of Riverside EIR No. 450" April 10, 2003, Section 4, prepared by John J. Schatz.

2. Description of Chino Groundwater Basin and Legal Right to Pump (Section 10910 (f)(2)).

A. Description of Chino Groundwater Basin

The City of Ontario produces water from groundwater sources identified in this WSA located in the Chino Groundwater Basin ("the Basin"), which was adjudicated by the Superior Court of the State of California for the County of San Bernardino January 27, 1978 ("the Judgment"). A copy of the Judgment and Court-approved amendments thereto are attached as Appendix I.

Ontario's primary source for potable water comes from local groundwater sources (79%) located in the Chino Groundwater Basin (Basin). The Basin consists of approximately 235 square miles in the upper Santa Ana River Watershed that covers San Bernardino, Riverside and Orange Counties. While still considered a single basin for hydrologic purposes, the Basin is divided into five management zones (Figure 16), based on similar hydrologic conditions, and three sub-basins (Figure 17). The California Regional Water Quality Control Board – Santa Ana Region (Regional Board) in their 1995 Basin Plan divided the Chino Groundwater Basin into three sub-basins for management purposes (Figure 17). The Regional Board has established water quality objectives for these subbasins and writes waste discharge requirements for waste dischargers based in part on these objectives. Presently, the Basin Plan subbasin boundaries and objectives are being rigorously reviewed. New boundaries similar to the management zone boundaries (Figure 16) have been proposed. Revised boundaries and water quality objectives should be adopted sometime in the near future.

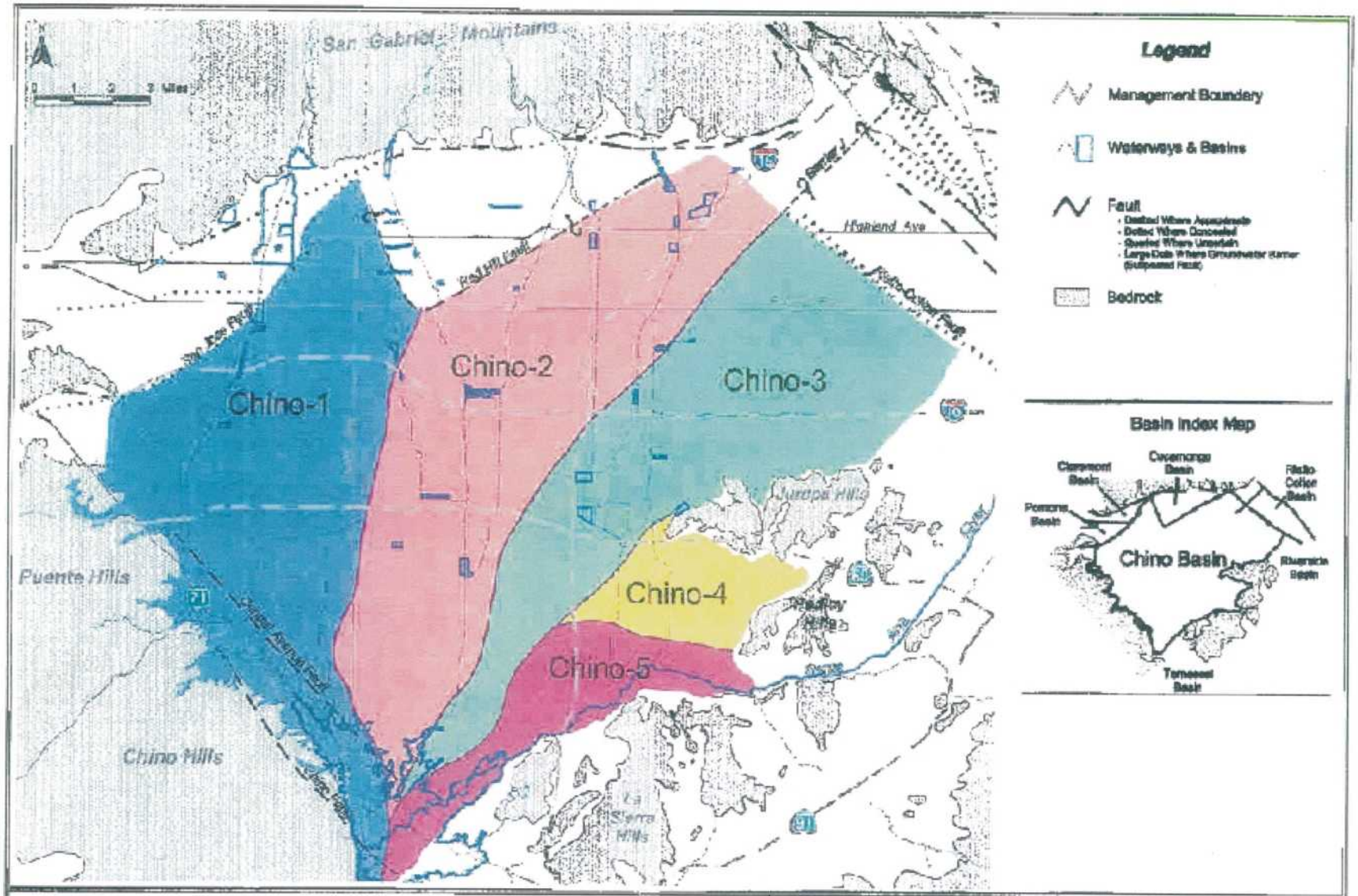
The Basin stores approximately five (5) million acre-feet of groundwater with the capability of storing additional one (1) million acre-feet. Geographically speaking, the City overlies the approximate center of the basin. Operation of the basin is governed by a 1978 court judgment and agreement among producers (Appendix I), whereby each is allotted a "base water right" to a certain percentage of the natural yield or "safe yield" of the basin. Under the judgment/agreement, entities (including the City of Ontario) can pump in excess of their allotted "base water right" but must pay a pump tax to cover the cost to replenish any overdraft caused by the excess pumping. The provisions of the judgment/agreement and the monitoring of the basin are carried out by a court appointed water-master. The water-master files an annual report on pumping and replenishment.[9]

B. Legal Right to Pump from the Chino Groundwater Basin

The Judgment represents a plenary adjudication of all water rights in the Basin and is currently administered under the authority of the Chino Basin Watermaster with continuing jurisdiction by the Court. The principal function of an adjudication generally is to control the use of a water source in order to ensure the source is utilized in an optimum manner. For purposes of an adjudication, the central feature is the determination of the safe yield of the Basin.

[9] Boyle Engineering Water Master Plan, pg 27

The safe yield of a groundwater basin has been defined as the amount of water that can be withdrawn annually without producing an undesirable result. Withdrawal in excess of safe yield is termed overdraft. The Judgment established the safe yield of the Basin in the amount of 140,000 acre-feet per year; however, Watermaster may determine that the operating safe yield can be higher from year-to-year depending on factors including favorable precipitation and management efforts that maximize the beneficial use of the groundwater Basin. These management efforts, which ensure the long-term sufficiency of groundwater from the Basin, including during dry years, are addressed in Subsection 5, which follows:

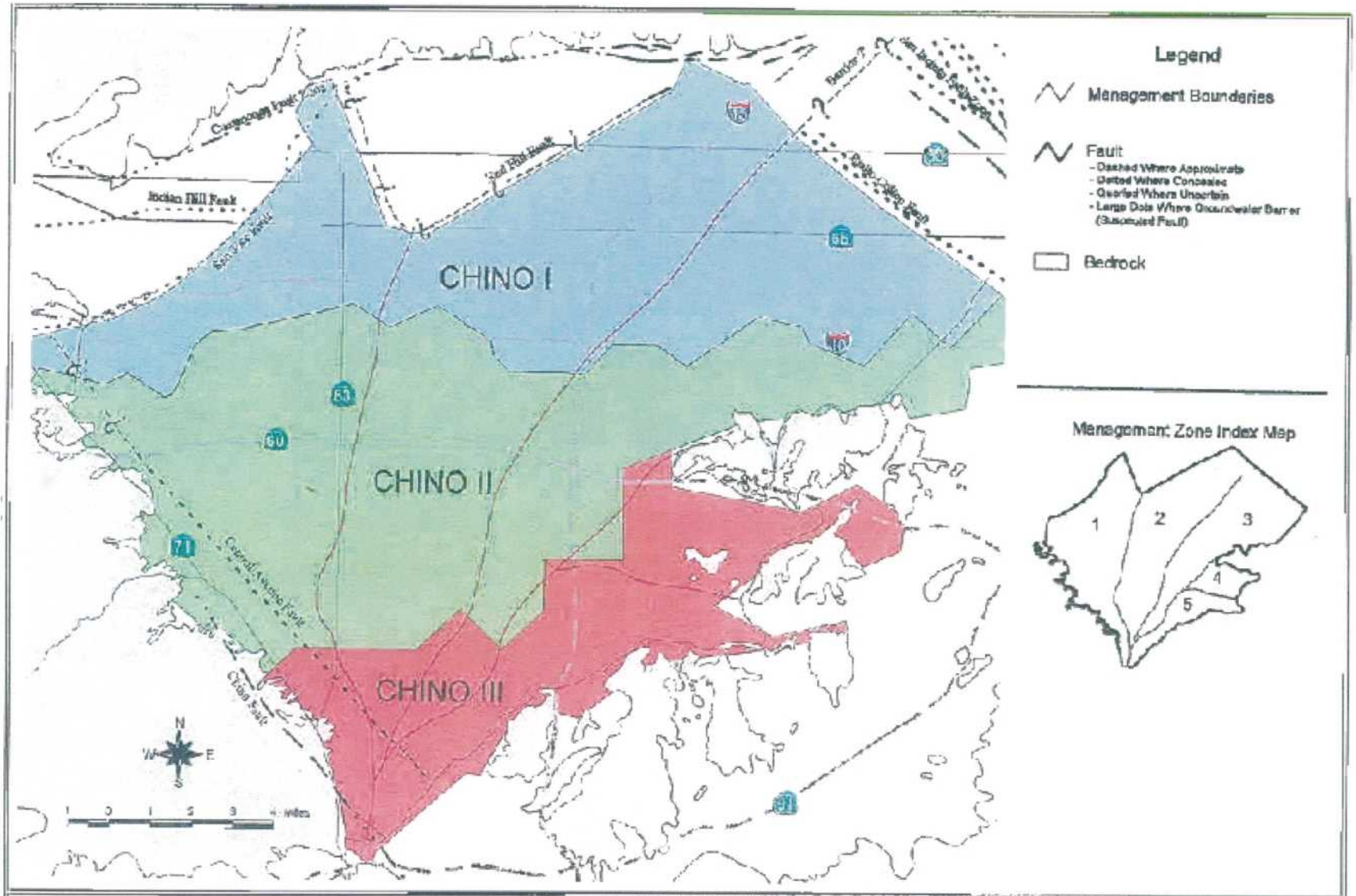


CHINO BASIN MANAGEMENT ZONES

Source: Wildermuth Environmental, Inc.

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

FIGURE 16



CHINO SUBBASINS DEFINED IN THE 1995 BASIN PLAN

Source: OBMP Phase I Report, Figure 2-6

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS

FIGURE 17

The Judgment does not place any limits upon the groundwater production by any party to the Judgment, which includes the City of Ontario. Non-parties to the Judgment are prohibited from pumping from the Basin (Judgment Paragraph 8), but parties are permitted to pump in accordance with the rights described by the Judgment.

The Judgment allocates safe yield of the Basin according to the three pools as described in Paragraph 13 of the Judgment. The members of each pool are then enjoined from producing water from the Basin in excess of such allocated amount "except pursuant to the provisions of the Physical Solution" (Judgment, Paragraph 13(a)-(c)).

The Physical Solution of the Judgment is described in broad terms by Paragraphs 39 through 57 of the Judgment. Paragraph 45 provides Watermaster with the authority to levy and collect assessments for the purchase of water necessary to balance the production by any party in excess of that party's allocated share of safe yield of the Basin. Paragraphs 49 and 50 then describe the sources of water which are authorized to function as sources of replenishment water and methods by which water can be replenished to the Basin. Exhibit "I", Paragraph 7, of the Judgment describes the way in which costs for replenishment water will spread among the members of the Appropriative Pool, which includes the City of Ontario.

The afore-cited paragraphs of the Judgment evince a clear expectation that parties, including the City of Ontario, would produce water in excess of their adjudicated production rights. The injunction in Paragraph 13 of the Judgment should thus be interpreted to mean that parties are enjoined from producing water in excess of their adjudicated rights except to the extent that they will pay a replenishment assessment upon production exceeding a specified amount.

The ability to produce water from the Basin is accordingly not a matter of availability, as contemplated and sanctioned by the Judgment for the reasons discussed above, but rather a matter of cost. Water produced in excess of production rights will cost more than water produced within a party's production rights. Thus, the quantity and reliability of groundwater supplies for purposes of this WSA is a matter of cost of the water produced from the Basin rather than limitations on production which may otherwise operate to reduce the sufficiency of the groundwater supply.

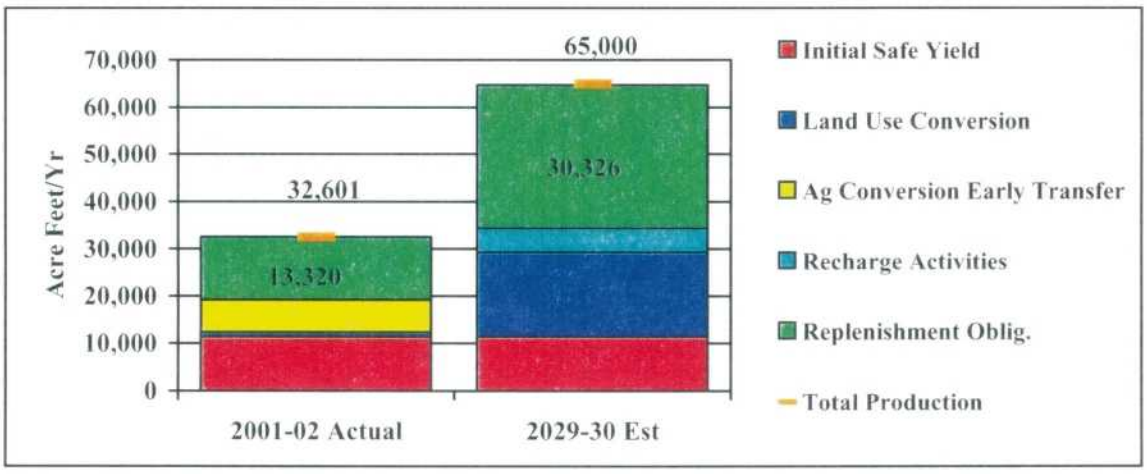
The amount of groundwater which the City of Ontario can pump without being subject to a replenishment assessment due to the combination of past and current agricultural land use conversions was 19,281 acre-feet out of 32,601 acre-feet of Basin production during fiscal year 2001-02 (Table 14 and Figure 18). The amount of water which the City of Ontario produced in 2001-2002 that was subject to a replenishment assessment was 13,320 acre-feet, representing 41% of the total groundwater production for the year (Table 14).

Table 14 Ontario's Water Rights and Replenishment Obligation[10]

Description	2001-02 (Actual) Acre-Feet	2029-30 (Estimated) Acre-Feet
Initial Safe Yield	11,374	11,374
Land Use Conversion	973	18,000
Ag Conversion Early Transfer	6,803	0
Recharge Activities	131	5,000
Total Operating Safe Yield	19,281	34,374
Total Groundwater Production (**note 1**)	32,601	65,000
Less Operating Safe Yield	(19,281)	(34,374)
Replenishment Obligation (net)	**13,320**	**30,626**

Note (1) Total Production is adjusted for assigned water rights from Sunkist Company (equal to water provided by the City, approximately 1500 acre feet per year) and from San Antonio Water Company (equal to shares owned by the City, an entitlement of about 850 acre feet per year).

Figure 18 Basin Production & Replenishment Obligation



[10] Based on 2001-02 Chino Basin Watermaster Assessment

3. Historic Use of Groundwater by the City of Ontario (Section 10910(f)(3))

Ontario's groundwater supply comes from their twenty-three operational groundwater wells located throughout their service area. The general location of these wells is shown on the attached Figure 19[*] is from Figure 4A of the City of Ontario's Water Master Plan. The amount of groundwater pumped by the City of Ontario since 1983 from the Chino Groundwater Basin is listed on Table 8.

4. Projected Use of Groundwater by the City of Ontario (Section 10910(f)(4))

The proposed project considered in the EIR for the subject property will receive water from the City of Ontario's groundwater sources, Chino Desalter Authority, (desalted water), and recycled water.

The City of Ontario's projected groundwater use is dependent upon the cost of extracting, treating and transporting the water to its customers. Groundwater from the Chino Groundwater Basin will be utilized by the City of Ontario either directly by pumping into its distribution system or by treating the groundwater by its proposed ion exchange plant and then pumping the treated groundwater into the City of Ontario's distribution system. The capacity of the City of Ontario's existing and future wells will be about 92,238 gpm (132.8 mgd) by the year 2026.

In addition to its well production, the City of Ontario will also utilize groundwater from the Chino Groundwater Basin from the Chino Desalter Authority's Chino Basin Desalters. As discussed previously, Ontario's contracted groundwater supply from the Chino Desalters, is 5000 acre-feet/year.

The amount of water that the City of Ontario expects to withdraw from the Chino Basin via their well field or from the Chino Desalters is well within appropriate right pursuant to the Chino Basin Adjudication of 1978. Therefore, the projected supplies needed to meet future demands are easily met from the various sources discussed in this report.

The City of Ontario's projected use of groundwater is presented in Table 11.

5. Sufficiency of Groundwater Basin (Section 10910 (f)(5))

The City of Ontario's legal right to pump water in an amount necessary to meet all demands as sanctioned and protected by the Judgment as discussed above, is buttressed by a number of programs and projects directed to ensuring the sufficiency of groundwater supplies from the Basin, particularly during dry years. An adjudicated water right has perhaps the most substantial indicia of reliability of any water right that currently exists in California. An adjudicated right is based upon long-term studies whose purpose it to protect the long-term functionality of the water source. These rights are coordinated in an established and binding manner with all the other users of the Basin and are overseen

[*] Bound in the back of the report

by Watermaster which has the authority to mandate and proscribe activities whose purpose is to protect the water source and maximize its long-term beneficial use.

Basin management activities include objectives, projects and programs identified in the Peace Agreement, entered into between Judgment parties on June 29, 2000, which are more specifically described in the Optimum Basin Management Program (OBMP) that implements the provisions of the Peace Agreement. All Watermaster processes are governed by Rules and Regulations and receive active oversight from the Court which, as noted above, retains continuing jurisdiction over the administration of the Judgment. Consequently, the sufficiency of the groundwater is not only directed by rigorous Watermaster management processes, but validated and ensured by continuing Court oversight.

OBMP projects directed to ensuring the maximization of safe yield and operating safe yield of the Basin include: 1) a comprehensive monitoring program; 2) a comprehensive recharge program; 3) development and implementation of a water supply plan for impaired areas of the Basin; 4) development and implementation of a comprehensive groundwater management plan for Management Zone 1; 5) development and implementation of a regional supplemental water program; 6) development and implementation of cooperative programs with the California Regional Water Quality Control Board – Santa Ana Region and other agencies to improve Basin management; 7) development and implementation of a salt management program; 8) development and implementation of a groundwater storage program; and, 9) development and implementation of storage and recovery programs.

As stated, the referenced elements of the OBMP collectively comprise a comprehensive regimen directed to ensuring and maximizing the long-term beneficial use of water in the Basin. In particular, and specific to the location of current and future groundwater production facilities upon which Ontario relies or will rely to provide water to meet all demands within its service area, OBMP Program Element No. 3-"Develop and Implement Water Supply Plan for the Impaired Areas of the Basin" and Program Element No. 5-"Develop and Implement Regional Supplemental Water Program", address the sufficiency of groundwater from the Basin.

Program Element Nos. 3 and 5 of the OBMP provides in part:

"As urbanization of the agricultural areas of San Bernardino and Riverside Counties in the southern half of the Basin occurs, the agricultural water demands will decrease and urban water demands will increase significantly. Future development in these areas is expected to be a combination of urban uses (residential, commercial, and industrial). The cities of Chino, Chino Hills, and Ontario, and the Jurupa Community Services District (JCSD) are expected to experience significant new demand as these purveyors begin serving urban customers in the former agricultural areas. Based on current estimates of overlying agricultural pool production, it is expected that at least

40,000 ACRE-FT/YR OF GROUNDWATER WILL NEED TO BE PRODUCED (SIC) IN THE SOUTHERN PART OF THE BASIN TO MAINTAIN THE SAFE YIELD.

BASED ON THE DATA PRESENTED IN *OPTIMUM BASIN MANAGEMENT PROGRAM, PHASE I REPORT* (AUGUST 1999), MUNICIPAL AND INDUSTRIAL DEMANDS ARE PROJECTED TO INCREASE 30 PERCENT BETWEEN 2000 AND ULTIMATE BUILD OUT (ASSUMED TO BE 2020 IN THE PHASE I REPORT). SEVERAL AGENCIES WILL EXPERIENCE INCREASES IN DEMAND EXCEEDING 30 PERCENT, INCLUDING THE CITIES OF CHINO, CHINO HILLS, NORCO, ONTARIO, CUCAMONGA COUNTY WATER DISTRICT (CCWD), FONTANA WATER COMPANY (FWC), JCSD, AND THE WEST SAN BERNARDINO COUNTY WATER DISTRICT (WSBCWD). FORECASTS FROM MUNICIPAL AND INDUSTRIAL ENTITIES INDICATE THAT MUNICIPAL WATER SUPPLY SOURCES FOR THE CHINO BASIN AT BUILD OUT WILL CONSIST PREDOMINANTLY OF CHINO BASIN WELLS THROUGH DIRECT USE OR TREATMENT AND USE, GROUNDWATER AND TREATED SURFACE WATER FROM OTHER BASIN, AND MWDSC SUPPLIES. THERE IS APPROXIMATELY 48,000 ACRE-FT/YR OF AGRICULTURAL PRODUCTION IN THE SOUTHERN PART OF THE CHINO BASIN IN THE YEAR 2000, AND THIS PRODUCTION WILL REDUCE TO ABOUT 10,000 ACRE-FT/YR IN THE YEAR 2020 AT BUILD OUT. THIS DECLINE IN AGRICULTURAL PRODUCTION MUST BE MATCHED BY NEW PRODUCTION IN THE SOUTHERN PART OF THE BASIN OR THE SAFE YIELD IN THE BASIN WILL BE REDUCED.

CONSIDERABLE DISCUSSION OF THE ALTERNATIVE WATER SUPPLY PLANS OCCURRED AT THE OBMP WORKSHOPS. THE DISCUSSIONS FOCUSED, IN PART, ON THE ASSUMPTION AND DETAILS OF EACH ALTERNATIVE AND COST. BASED ON TECHNICAL, ENVIRONMENTAL, AND COST CONSIDERATIONS, THE STAKEHOLDERS SELECTED THE WATER SUPPLY PLAN DESCRIBED IN TABLE 2. GROUNDWATER PRODUCTION FOR MUNICIPAL USE WILL BE INCREASED IN THE SOUTHERN PART OF THE BASIN TO: MEET THE EMERGING DEMAND FOR MUNICIPAL SUPPLIES IN THE CHINO BASIN, MAINTAIN SAFE YIELD, AND TO PROTECT WATER QUALITY IN THE SANTA ANA RIVER. A PRELIMINARY FACILITY PLAN (REVISED DRAFT WATER SUPPLY PLAN PHASE I DESALTING PROJECT FACILITIES REPORT) WAS PREPARED IN JUNE 2000, THAT DESCRIBES THE EXPANSION OF THE CHINO I DESALTER AND THE CONSTRUCTION OF THE CHINO II DESALTER TO BE BUILT IN THE JCSD SERVICE AREA (ATTACHMENT I).(UNDERLINING INCLUDED IN QUOTED TEXT). NEW SOUTHERN BASIN PRODUCTION FOR MUNICIPAL USE WILL REQUIRE DESALTING PRIOR TO USE. THE CITIES OF CHINO, CHINO HILLS, ONTARIO AND NORCO, AND THE JCSD WILL MAXIMIZE THEIR USE OF GROUNDWATER FROM THE SOUTHERN PART OF THE BASIN PRIOR TO USING OTHER SUPPLIES[11].

IMPORTED WATER USE WILL INCREASE TO MEET EMERGING DEMANDS FOR MUNICIPAL AND INDUSTRIAL SUPPLIES IN THE CHINO BASIN AREA, WATERMASTER REPLENISHMENT, AND STORAGE AND RECOVERY PROGRAMS OR CONJUNCTIVE USE.

[11] *Detailed discussion continues in this paragraph concerning the production capacity of the desalters and construction/expansion projections.*

EXPANDED USE OF IMPORTED WATER IN THE NORTHERN PART OF THE BASIN WILL HAVE A LOWER PRIORITY THAN MAINTAINING GROUNDWATER PRODUCTION IN THE SOUTHERN PART OF THE BASIN. RECYCLED WATER USE (DIRECT USE AND RECHARGE) WILL INCREASE TO MEET EMERGING DEMANDS FOR NON-POTABLE WATER AND ARTIFICIAL RECHARGE. UNDER THE CURRENT BASIN PLAN, ALL NEW RECYCLED WATER USE WILL REQUIRE MITIGATION FOR TDS AND NITROGEN IMPACTS. RECYCLED WATER USE WILL BE EXPANDED AS SOON AS PRACTICAL. THE TWO NEW DESALTERS DESCRIBED ABOVE AND THE INCREASE IN STORM WATER RECHARGE WILL PROVIDE MITIGATION FOR THE EXPANDED USE OF RECYCLED WATER."

As indicated in the foregoing quoted OBMP text, the City of Ontario overlies groundwater supplies in the southern part of the Basin which must be pumped for purposes of meeting new demands, maintain safe yield and to protect water quality in the Santa Ana River. As agricultural production in the southern part of the Basin declines, it will be necessary for these reasons to increase production for municipal uses. This will be achieved through the Chino I and Chino II Desalters, of which the City of Ontario has a contractual right to purchase 5,000 acre-ft/yr pursuant to the 2001 "Joint Exercise of Powers Agreement Creating the Chino Basin Desalter Authority". Thus, not only was increased Basin water production by the City of Ontario foreseen in the OBMP, but actually sanctioned and encouraged for purposes of achieving OBMP objectives.

The sufficiency of the City of Ontario's groundwater supply is assured due to the abundance of groundwater which it overlies in the central and southern portion of the Basin, OBMP objectives that prioritize and assure production from the southern Basin, coupled with desalting and ion-exchange treatment facilities that enable the use of this abundant supply for municipal (potable) purposes. As indicated in the quoted text of the OBMP, southern basin production, where the City of Ontario is partially located, is the linchpin of several critical OBMP objectives. Thus the sufficiency of groundwater is heightened and prioritized by the necessity of continued pumping from the southern Basin under the OBMP which is administered by the Watermaster and ultimately enforced by continuing Court jurisdiction over the Judgment.

The other referenced OBMP Program Elements are collectively directed to ensuring the sufficiency of Basin groundwater supplies, particularly during dry years, and comprehensively address water quality and quantity, thus maximizing beneficial use over the long-term. Sufficiency of groundwater from the Basin is further assured for the following reasons.

Inland Empire Utilities Agency (IEUA) is a member agency of The Metropolitan Water District of Southern California (MWD), which provides imported water from the State Water Project for direct use by parties to the Judgment in the Basin and for Basin recharge purposes. IEUA has also reviewed the sufficiency of supplies for its service territory that includes the Basin in connection with its Year 2000 Urban Water Management Plan (UWMP).

IEUA's UWMP is consistent with, and reiterative of, OBMP projects and programs. IEUA's UWMP projects increased requirements for imported water for direct and recharge use while noting reductions during dry years (due to increased reliance on groundwater from the Basin) and in the higher amount otherwise required in the absence of OBMP projects and programs. The UWMP also analyzes the sufficiency of water supplies for single and multiple year drought scenarios and concludes the region is expected to meet 100% of its dry year demand under every scenario.

IEUA's UWMP also discusses MWD's Year 2002 "Report on Metropolitan's Water Supplies". IEUA has augmented its assessment of imported water supply reliability via correspondence dated March 19, 2003, to the City of Chino[12]. This correspondence includes detailed discussion regarding contemporary circumstances, including the reduction of Colorado River water to MWD and MWD's most recent supply report: "Report on Metropolitan's Water Supplies", dated March 25, 2003. IEUA concludes, on the bases of the OBMP and its own activities in the Basin and MWD's latest report, that imported supply reliability will remain adequate to serve anticipated demand through 2025. California Water Code Section 10631(j) provides that urban water suppliers, such as IEUA, that rely upon a wholesale agency for a source of water may rely upon water supply information provided by the wholesale agency in fulfilling UWMP informational requirements.

IEUA's independent analysis of contemporary regional water conditions in conjunction with MWD's most recent report, provide additional and reliable assurances concerning the sufficiency of imported water supplies that comprise a portion of overall Basin supply sufficiency. As stated in the above-quoted OBMP text, however, "expanded use of imported water in the northern part of the Basin will have a lower priority than maintaining groundwater production in the southern part of the Basin".

IEUA's March 19, 2003 correspondence also references MWD's 100,000 acre-feet water storage and recovery program which, along with future storage and recovery projects will drought-proof the Basin and all other appropriative pool members (including the City of Ontario) from imported water shortages. Watermaster is currently finalizing an agreement for the MWD 100,000 acre-feet program that will include at least 9,000 acre-feet per year of participation by the City of Ontario and thus further enhancing the sufficiency of the City of Ontario's groundwater supply. This program is consistent with OBMP Program Element No. 9-Develop And Implement Storage And Recovery Program. Benefits to the Basin associated with this program include the construction of facilities to enhance imported water deliveries and the production of water from the Basin. Further demonstrating the sufficiency of Basin groundwater is MWD's program to use the Basin for dry year supply purposes, thus underscoring that sufficient Basin groundwater is available during dry years not only for local use by agencies such as the City of Ontario but also in connection with MWD's regional reliability programs.

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[12] *Attached hereto and incorporated by reference herein as Appendix "J".*

In conclusion, the sufficiency of groundwater from the Basin is assured due to the City of Ontario's legal right to produce water necessary to meet ultimate demands in conjunction with OBMP objectives. These OBMP objectives overseen and administered by the Chino Basin Watermaster specifically direct and assure, under the auspices of continuing Court jurisdiction, the long-term production of water from the southern part of the Basin where the City of Ontario is partially located.

Primary Issue for Assessment - Findings

Whereas:

1. The City of Ontario has been identified as the public water supplier for the New Model Colony.

2. The projected water demand for the project is 31,200 acre-feet per year.

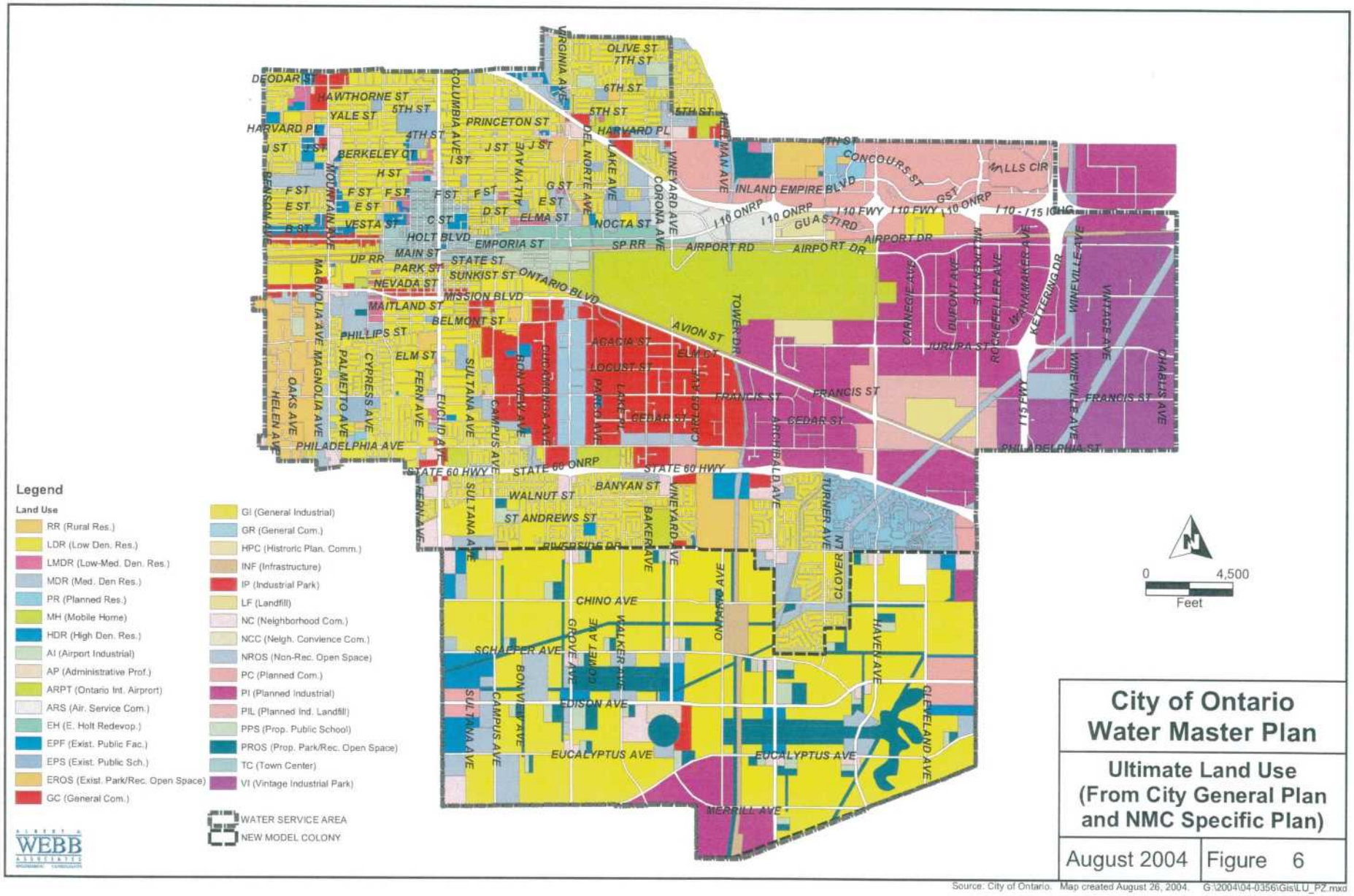
3. The water demand for this project was included in the "Urban Water Management Plan Year 2000 Update" by the Inland Empire Utilities Agency, August 2000 , which was adopted by the City of Ontario by Resolution 2001-1005 dated November 20, 2004.

4. The City of Ontario's existing water supply (2004) is 71.6 mgd, while the maximum day demand is 64.2 mgd. The projected 2025 water supply is 166.1 mgd and the maximum day demand is projected to be 100.9 mgd.

5. The City of Ontario has water rights in the Chino Groundwater Basin and capacity rights (25 mgd) in the WFA Treatment Plant. The City also has contracted for 5000 acre-feet per year from the Chino Desalter Authority. The projected recycled water use is 7.4 mgd by 2025.

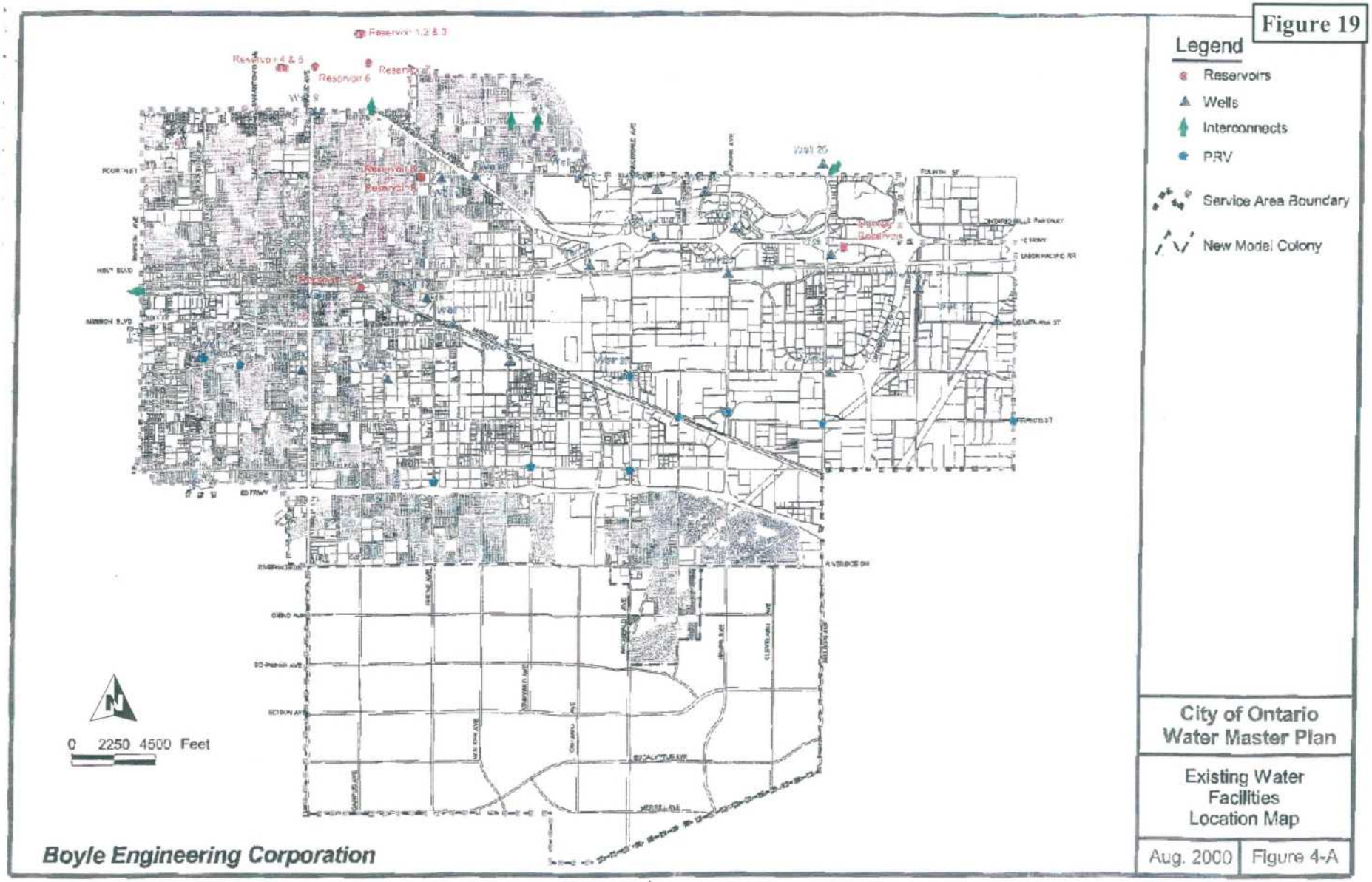
   The City of Ontario has sufficient water supply to provide water to the proposed project during normal, single dry, and multiple dry years during a 20 year projection, in addition to meeting the City's existing and planned future uses.

FIGURES 6 and 19



Source: City of Ontario. Map created August 26, 2004. G:\2004\04-0356\Gis\LU_PZ.mxd

Figure 19


Reservoir 1,2 & 3
Reservoir 4 & 5
Reservoir 6
Reservoir 7
Reservoir 8
Reservoir 9
Reservoir 10
Well 25
Legend
Reservoirs
Wells
Interconnects
PRV
Service Area Boundary
New Model Colony
0 2250 4500 Feet
Boyle Engineering Corporation
City of Ontario
Water Master Plan
Existing Water
Facilities
Location Map
Aug. 2000
Figure 4-A

CITY OF ONTARIO

SB 221 WRITTEN VERIFICATION OF SUFFICIENT WATER SUPPLY

FOR

THE NEW MODEL COLONY

Purpose of Report

Law

> This bill [excerpt from SB 221] would prohibit approval of a tentative map, or a parcel map for which a tentative map was not required, or a development agreement for a subdivision of property of more than 500 dwelling units, except as specified, including the design of the subdivision or the type of improvement, unless the legislative body of a city or county or the designated advisory agency provides written verification from the applicable public water system that a sufficient water supply is available or, in addition, a specified finding is made by the local agency that sufficient water supplies are, or will be, available prior to completion of the project.
>
> By increasing the duties of local legislative bodies and local planning agencies and commissions, the bill would impose a state-mandated local program.
>
> This bill would provide that for proposed subdivisions subject to specified requirements of the Subdivision Map Act, the true statement of the provisions that have been made for water is satisfied by submitting a copy of the written verification of the availability of a sufficient water supply, obtained pursuant to specified requirements as described in (1) above.
>
> This bill would provide that no requirement is required by this act for a specified reason.

The City of Ontario produced this "Written Verification" of sufficient water supply to meet the requirements of Senate Bill 221 in support of the New Model Colony Project. The purpose of preparing this "Written Verification" for the entire project is to preclude the need for individual "Written Verification" letters being prepared for residential development projects that will occur within the New Model Colony area.

Project Description and Water Demand

The New Model Colony (NMC) is an 8200 acre area that was annexed to the City of Ontario on November 30, 1999. The Water Supply Assessment to which this document is attached fully depicts the multiple land use types that will occur in the area. Figure 6 of the WSA shows the projected land use. About 5,000 acres have been general planned for residential use. The projected water demand for ultimate development is 31,200 acre-feet per year of which 23,100 acre-feet per year will be for residential use (Table 8, Water Supply Assessment).

Project Applicability

Law

> (c) A development agreement that includes a subdivision, as defined in Section 66473.7, shall not be approved unless the agreement provides that any tentative map prepared for the subdivision will comply with the provisions of Section 66473.7.
>
> 66473.7 (a) For the purposes of this section, the following definitions apply:
>
> (1) "Subdivision" means a proposed residential development of more than 500 dwelling units, except that for a public water system that has fewer than 5,000 service connections, "subdivision" means any proposed residential development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections.
>
> (i) This section shall not apply to any residential project proposed for a site that is within an urbanized area and has been previously developed for urban uses, or where the immediate contiguous properties surrounding the residential project site are, or previously have been, developed for urban uses, or housing projects that are exclusively for very low and low-income households.

SB 221 applies to the Project because there will be developments that will have more than 500 dwelling units which exceed the criteria set in 66473.7(a) of 500 dwelling units.

Identification of Public Water System

Law

> (3) "Public water system" means the water supplier that is, or may become as a result of servicing the subdivision included in a tentative map pursuant to subdivision (b), a public water system, as defined in Section 10912 of the Water Code, that may supply water for a subdivision.
>
> (e) If there is no public water system, the local agency shall make a written finding of sufficient water supply based on the evidentiary requirements of subdivisions (c) and (d) and identify the mechanism for providing water to the subdivision.

The City of Ontario operates the public water system that will supply the proposed project.

Schedule

Law

> SEC. 3. Section 66455.3 is added to the Government Code, to read:
>
> 66455.3. Not later than five days after a city or county has determined that a tentative map application for a proposed subdivision, as defined in Section 66473.7, is complete pursuant to Section 65943, the local agency shall send a copy of the application to any water supplier that is, or may become, a public water system, as defined in Section 10912 of the Water Code, that may supply water for the subdivision.
>
> (b) (1) The legislative body of a city or county or the advisory agency, to the extent that it is authorized by local ordinance to approve, conditionally approve, or disapprove the tentative map, shall include as a condition in any tentative map that includes a subdivision a requirement that a sufficient water supply shall be available. Proof of the availability of a sufficient water supply shall be requested by the subdivision applicant or local agency, at the discretion of the local agency, and shall be based on written verification from the applicable public water system within 90 days of a request.
>
> (2) If the public water system fails to deliver the written verification as required by this section, the local agency or any

other interested party may seek a writ of mandamus to compel the public water system to comply.

The City of Ontario's Planning Department requested that the City of Ontario's Water Department provide a report that meets the requirements of SB 221.

Verification of Sufficient Water Supply

Law

> (2) "Sufficient water supply" means the total water supplies available during normal, single-dry, and multiple-dry years within a 20-year projection that will meet the projected demand associated with the proposed subdivision, in addition to existing and planned future uses, including, but not limited to, agricultural and industrial uses. In determining "sufficient water supply," all of the following factors shall be considered:
>
> (A) The availability of water supplies over a historical record of at least 20 years.
>
> (B) The applicability of an urban water shortage contingency analysis prepared pursuant to Section 10632 of the Water Code that includes actions to be undertaken by the public water system in response to water supply shortages.
>
> (C) The reduction in water supply allocated to a specific water use sector pursuant to a resolution or ordinance adopted, or a contract entered into, by the public water system, as long as that resolution, ordinance, or contract does not conflict with Section 354 of the Water Code.
>
> (D) The amount of water that the water supplier can reasonably rely on receiving from other water supply projects, such as conjunctive use, reclaimed water, water conservation, and water transfer, including programs identified under federal, state, and local water initiatives such as CALFED and Colorado River tentative agreements, to the extent that these water supplies meet the criteria of subdivision (d).

A detailed evaluation of the water supply was performed under the attached SB 610 Water Supply Assessment for the New Model Colony. Attached to the Water Supply Assessment was the adopted City of Ontario's Urban Water Management Plan which addresses normal, single-dry and multiple dry year conditions. The plan concludes that sufficient water supply exists to support the Project.

20-Year Water Supply Availability

The City of Ontario has been able to meet all water demands with its available water supplies for the past 20 years. Table 9 of the attached Water Supply Assessment shows the recorded supplies of groundwater and imported water.

Urban Water Shortage Contingency Analysis

Appendix A (Urban Water Management Plan), provides an analysis of future reliability and vulnerability of water supplies in addition to a water conservation program.

On March 19, 1991, the City of Ontario adopted Ordinance No. 2500 (Attachment A) pertaining to emergency water conservation.

The purpose of the ordinance is to provide a mandatory water conservation plan to minimize the effects of a shortage of water supplies on the City's water customers during a water shortage emergency.

It contains three stages of action for water supply shortages. The ordinance also establishes procedures and policies necessary for the orderly administration of a water conservation program to prohibit waste and restrict water during a water shortage.

Water Supply Allocation Effects

The City of Ontario has not adopted any resolution or ordinance restricting water use for any specific sector.

Other Water Supplies

The attached SB 610 Water Supply Assessment discusses the City of Ontario's use of desalted water and recycled water.

Supporting Evidence of Verification of Sufficient Water Supply

Law

> (c) The applicable public water system's written verification of its ability or inability to provide a sufficient water supply that will meet the projected demand associated with the proposed subdivision as required by subdivision (b) shall be supported by substantial evidence. The substantial evidence may include, but is not limited to, any of the following:

> (1) The public water system's most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610) of Division 6 of the Water Code.
> (2) A water supply assessment that was completed pursuant to Part 2.10 (commencing with Section 10910) of Division 6 of the Water Code.
> (3) Other information relating to the sufficiency of the water supply that contains analytical information that is substantially similar to the assessment required by Section 10635 of the Water Code.

"Substantial evidence" of sufficient water supply is documented within the attached SB 610 report. Other documents referenced within that report include the Urban Water Management Plan Year 2000 Update and Ontario's August 2000 Water Master Plan.

Priority to Proposed Lower Income Housing Projects

Law

> (j) The determinations made pursuant to this section shall be consistent with the obligation of a public water system to grant a priority for the provision of available and future water resources or services to proposed housing developments that help meet the city's or county's share of the regional housing needs for lower income households, pursuant to Section 65589.7.

The City of Ontario's Sphere of Influence [New Model Colony] Final Environmental Impact Report certified by City Council Resolution No. 98-08 on January 7, 1998 stated the following policy with regard to "affordable" units.

> "a. Policy H-1 will allocate a portion of the City's regional housing need target to the SOI Plan area as appropriate. The policy requires that Specific Plan areas implement housing programs that comply with the State of California Housing and Community Development Requirements, and insure compliance and attainment of the regional housing need assessment "affordable" unit target. (EIR, p. 5.3-5.)
>
> b. Policy 3.7.1 requires each Specific Plan to ensure the provision of an adequate number of units affordable to very low, low and moderate income households within its Specific Plan area. (SOI Plan, p. 3-66.)"

Impact on Agricultural and Industrial Water Demands

Law

> (g) The written verification prepared under this section shall also include a description, to the extent that data is reasonably available based on published records maintained by federal and state agencies, and public records of local agencies, of the reasonably foreseeable impacts of the proposed subdivision on the availability of water resources for agricultural and industrial uses within the public water system's service area that are not currently receiving water from the public water system but are utilizing the same sources of water. To the extent that those reasonably foreseeable impacts have previously been evaluated in a document prepared pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) or the National Environmental Policy Act (Public Law 91-190) for the proposed subdivision, the public water system may utilize that information in preparing the written verification.

The City of Ontario's Sphere of Influence Final Environmental Impact Report Volumes 1 and 2 and Addendum to Volume 2 of 2, October 1997, addressed the conversion of the existing land use to a mix urban use development. The following, from Section 5.1.3 "Project Impacts", is from Volume 1 of the above referenced EIR.

> **"Project Impacts – Land Use Type, Function, and Character**
>
> The proposed project will result in the conversion of existing dairy and agricultural uses for a mix of residential, commercial, business park, industrial, open space, parks, golf courses, amenities, and supporting urban and suburban uses. Approximately 7,328 acres of agricultural uses will be re-used. Existing residential units (229 acres), commercial (19 acres), and industrial (67 acres) uses may be retained and integrated with new development or be replaced. Existing utility and flood control corridors and roads are likely to be retained, though some may be re-aligned and modified to reflect land use development patterns. The existing 200 acres of Southern California Agricultural Land Foundation (SoCALF) preserved for agricultural purposes would remain unchanged or relocated within the Sphere of Influence to establish a contiguous area.
>
> Approximately 31,200 residential units on 5,200 acres, 5.5 million square feet of commercial on 504 acres, 5.2 million square feet of industrial and business park uses on 338 acres, 500 acres of educational, 888 acres of parks and trials, and 776 acres of other

public and infrastructure uses will be accommodated in the Sphere of Influence.

Together, these actions will significantly change the existing function, type, and character of land use. Approximately 92 to 100 percent of the existing land uses, excluding streets and utilities will be redeveloped. Fundamentally, the area will evolve from an intensive dairy function characterized by extensive outdoor activities to a predominately urbanized character.

As urbanization of the NMC occurs, agricultural water demands will continue to decrease. For each acre of agricultural land that converts to urban use, the Initial Safe Yield of the appropriative pool member serving the converted land is increased by 2 acre-feet. Ontario's share of the Safe Yield will continue to increase as the NMC develops. Complete conversion of the 8,000 acres of the NMC agricultural land may result in an increase of Ontario's Safe Yield by 16,000 acre-feet."

Verification Based on Project Water Supplies

Law

(d) When the written verification pursuant to subdivision (b) relies on projected water supplies that are not currently available to the public water system, to provide a sufficient water supply to the subdivision, the written verification as to those projected water supplies shall be based on all of the following elements, to the extent each is applicable:

(1) Written contracts or other proof of valid rights to the identified water supply that identify the terms and conditions under which the water will be available to serve the proposed subdivision.
(2) Copies of a capital outlay program for financing the delivery of a sufficient water supply that has been adopted by the applicable governing body.
(3) Securing of applicable federal, state, and local permits for construction of necessary infrastructure associated with supplying a sufficient water supply.
(4) Any necessary regulatory approvals that are required in order to be able to convey or deliver a sufficient water supply to the subdivision.

The attached "Water Supply Assessment" addresses the projected water supplies and demand for the New Model Colony area.

Verification That Relies on Groundwater

Law

> (h) Where a water supply for a proposed subdivision includes groundwater, the public water system serving the proposed subdivision shall evaluate, based on substantial evidence, the extent to which it or the landowner has the right to extract the additional groundwater needed to supply the proposed subdivision. Nothing in this subdivision is intended to modify state law with regard to groundwater rights.

The attached "Water Supply Assessment" addresses the City of Ontario's legal right to pump groundwater from the Chino Basin.

Finding of Sufficient Water Supply

Law

> (3) If the written verification provided by the applicable public water system indicates that the public water system is unable to provide a sufficient water supply that will meet the projected demand associated with the proposed subdivision, then the local agency may make a finding, after consideration of the written verification by the applicable public water system, that additional water supplies not accounted for by the public water system are, or will be, available prior to completion of the subdivision that will satisfy the requirements of this section. This finding shall be made on the record and supported by substantial evidence.
>
> (f) In making any findings or determinations under this section, a local agency, or designated advisory agency, may work in conjunction with the project applicant and the public water system to secure water supplies sufficient to satisfy the demands of the proposed subdivision. If the local agency secures water supplies pursuant to this subdivision, which supplies are acceptable to and approved by the governing body of the public water system as suitable for delivery to customers, it shall work in conjunction with the public water system to implement a plan to deliver that water supply to satisfy the long-term demands of the proposed subdivision.

As depicted in Table 13 of the attached "Water Supply Assessment", the City of Ontario's existing and future water supply (129.2 MGD in 2025) is sufficient to meet the anticipated water demand from its service area including the New Model Colony of 100.9 MGD. Given that the NMC land use and water demand were included in the Urban

Water Management Plan, included in Appendix A of the attached Water Supply Assessment, the City of Ontario finds that "sufficient water supply" is available to support the projected developments* within the New Model Colony area.

* Based on the City of Ontario's General Plan and NMC Specific Plan.

Attachment A

Ordinance No. 2500

ORDINANCE NO. 2500

AN ORDINANCE OF THE CITY OF ONTARIO, CALIFORNIA, ADDING CHAPTER 8A (CONSISTING OF SECTIONS 6-8.20 THROUGH 6-8.29) TO TITLE 6 OF THE ONTARIO MUNICIPAL CODE PERTAINING TO EMERGENCY WATER CONSERVATION

The City Council of the City of Ontario, California, does ordain as follows:

SECTION 1. Title 6 of the Ontario Municipal Code is hereby amended by adding Chapter 8A thereto to read as follows:

"CHAPTER 8A.

EMERGENCY WATER CONSERVATION

SECTION 6-8.20. Scope and Title. This Chapter shall be known as "The Emergency Water Conservation Plan of the City of Ontario".

SECTION 6-8.21. Statement of Policy and Declaration of Purpose.

(a) Because of the water supply conditions prevailing in the City and/or in the area from which the City obtains a portion of its supply, the general welfare requires that the water resources available to the City of Ontario be put to the maximum beneficial use to the extent to which they are capable, and that the waste or unreasonable use, or unreasonable method of use of water be prevented and that the conservation of such water be practiced with a view to the reasonable and beneficial use thereof in the interest of the people of the City.

(b) The purpose of this ordinance is to provide a mandatory water conservation plan to minimize the effect of a shortage of water supplies on the water customers of the City during a water shortage emergency.

SECTION 6-8.22. Authorization to Implement Water Conservation Ordinance.

(a) The City Council is authorized to implement the provisions of this ordinance, following the public hearing required by sub-section (b), upon its determination that such implementation is necessary to protect the public welfare and safety.

(b) Prior to implementation of this ordinance, the City Council shall hold a public hearing for the purpose of determining whether a shortage exists and which measures provided by this ordinance should be implemented. Notice of the time and place of the public hearing shall be published not less than ten (10) days before the hearing in a newspaper of general circulation within the City.

(c) The City Council shall issue its determination of shortage and corrective measures by public proclamation published in a daily newspaper of general circulation within the City. Any prohibitions on the use of water shall become effective immediately upon such publication. Any provisions requiring curtailment in the use of water shall become effective with the first full billing period commencing on or after the date of such publication.

SECTION 6-8.23. **General Prohibition.** No water customer of the City shall make, cause, use, or permit the use of water from the City in a manner contrary to any provision of this ordinance or in an amount in excess of the use permitted by any curtailment provisions then in effect pursuant to action taken by the City Council in accordance with the provisions of this Chapter.

SECTION 6-8.24. **Phase I Shortage.**

(a) A Phase I Shortage may be declared when the City Council determines that it is likely that the City will suffer a shortage of up to ten percent (10%) shortage in its water supplies.

(b) The following restrictions on the use of water shall be in effect during a Phase I Shortage:

(1) There shall be no hose washing of sidewalks, walkways, driveways, parking areas or other paved surfaces, except as required for sanitary purposes;

(2) Washing of motor vehicles, trailers, boats and other types of mobile equipment shall be done only with a hand-held bucket or a hose equipped with a positive shutoff nozzle for quick rinses, except that washing may be done at the immediate premises of a commercial car wash or with reclaimed wastewater.

(3) No water shall be used to clean, fill or maintain levels in decorative fountains, ponds, lakes or other similar aesthetic structures unless such water is part of a recycling system.

(4) No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless

expressly requested.

(5) All water customers of the City shall promptly repair all leaks from indoor and outdoor plumbing fixtures.

(6) No lawn, landscape or other turf area shall be watered more often than every other day and during the hours between 10:00 a.m. and 4:00 p.m.; except that this provision shall not apply to commercial nurseries, golf courses and other water-dependent industries.

(7) No water customer of the City shall cause or allow the water to run off landscape areas into adjoining streets, sidewalks or other paved areas due to incorrectly directed or maintained sprinkler or excessive watering.

SECTION 6-8.25. Phase II Shortage.

(a) A Phase II Shortage may be declared when the City Council determines that it is likely that the City will suffer a shortage of more than ten percent (10%) but less than twenty percent (20%) in its water supplies.

(b) The following restrictions on the use of water shall be in effect during a Phase II Shortage:

(1) The restrictions listed in Section 6-8.24, subsection (b) shall be in effect, except that the restrictions on water lawn, landscape or other turf area shall be modified to prohibit more often than every third day between the hours of 6:00 a.m. and 6:00 p.m.

(2) Commercial nurseries, golf courses and other water-dependent industries shall be prohibited from watering lawn, landscape or other turf areas more often than every other day and between the hours of 10:00 a.m. and 4:00 p.m.; except that there shall be no restriction on water utilizing reclaimed wastewater.

(c) No water customer of the City shall make, cause, use or permit the use of water from the City for any purpose in an amount in excess of eighty-five percent (85 %) of the amount used on the customer's premises during the corresponding billing period during the prior calendar year.

SECTION 6-8.26. Phase III Shortage.

(a) A Phase III Shortage may be declared whenever the City Council determines that it is likely that the City will suffer a shortage of more than twenty percent (20%) in its water supplies.

(b) The following restrictions on the use of water shall be in effect during a Phase III Shortage:

(1) The restrictions listed in Section 6-8.25, subsection (b) shall be in effect, except that there shall be no residential outside watering of lawn, landscaping and other turf areas at any time except by bucket.

(2) Commercial nurseries, golf courses and other water dependent industries shall be prohibited from watering lawn, landscaping and other turf areas more often than every third day and between the hours of 6:00 a.m. and 6:00 p.m.; except that there shall be no restriction on watering utilizing reclaimed water.

(3) The use of water from fire hydrants shall be limited to fire fighting and related activities and other uses of water for municipal purposes shall be limited to activities necessary to maintain the public health, safety and welfare.

(c) No water customer of the City shall make, cause, use or permit the use of water from the City for any purpose in an amount in excess of eighty percent (80%) of the amount used on the customers premises during the corresponding billing period of the prior calendar year.

SECTION 6-8.27. Relief from Compliance.

(a) A water customer of the City may file an application for relief from any provisions of this Chapter. The City Manager shall develop such procedures as he considers necessary to resolve such applications and shall, upon the filling by a water customer of an application for relief, take such steps as he or she deems reasonable to resolve the application for relief. The decision of the City Manager shall be final. The City Manager may delegate his or her duties and responsibilities under this section as appropriate.

(b) The application for relief may include a request that the water customer be relieved, in whole or in part, from the water use curtailment provisions of Sections 6-8.25 (c) and 6-8.26 (c).

(c) In determining whether to grant relief, and the nature of any relief, the City Manager shall take into consideration all relevant factors including, but not limited to:

(1) Whether any additional reduction in water consumption will result in unemployment;

(2) Whether additional members have been added to the household;

(3) Whether any additional landscaped property has been added to the property since the corresponding billing period of the prior calendar year;

(4) Changes in vacancy factors in multi-family housing;

(5) Increased number of employees in commercial, industrial, and governmental offices;

(6) Increased production requiring increased process water;

(7) Water used during new construction;

(8) Adjustments to water used caused by emergency health or safety hazards;

(9) First filling of a permit-constructed swimming pool; and

(10) Water use necessary for reasons related to family illness or health.

(d) In order to be considered, an application for relief must be filed with the City Clerk within fifteen (15) days after the date the provision from which relief is sought becomes applicable to the applicant. No relief shall be granted unless the water customer shows that he or she has achieved the maximum practical reduction in water consumption other than in the specific areas in which relief is being sought. No relief shall be granted to any water customer who, when requested by the City Manager, fails to provide any information necessary for resolution of the customer's application for relief.

SECTION 6-8.28. Failure to Comply.

(a) For each violation by any customer of the water use curtailment provisions of Sections 6-8.25 (c) and 6-8.26 (c), a surcharge shall be imposed in an amount equal to one hundred

percent (100 %) of the portions of the water bill that exceeds the respective percentages set in those two subsections.

(b) Violations by any water customer of the water use prohibitions of Section 6-8.23, or subsection (b) of Sections 6-8.24, 6-8.25, 6-8.26, shall be penalized as follows:

(1) First violation. The City shall issue a written notice of the fact of a first violation to the water customer.

(2) Second violation. For a second violation during any one water shortage emergency, the City shall impose a surcharge in an amount of fifty dollars ($50.00) added to the water customer's water bill.

(3) Third violation. For a third violation during any one water shortage emergency, the City shall impose a surcharge in an amount of one hundred ($100.00) added to the water customer's water bill.

(4) After a fourth and any subsequent violation during any one water shortage emergency, the City shall impose a surcharge in an amount of one hundred fifty ($150.00) added to the customer's water bill.

(5) Fourth and Subsequent Violations. After a fourth violation during any one water shortage emergency, the City may install a flow restricting device of one (1) gallon per minute capacity for services up to one and one-half (1 1/2) inch size, and comparatively sized restrictors for larger services, on the service of the customer at the premises at which the violation occurred for a period of not less than forty-eight (48) hours. The City shall charge the water customer the reasonable costs incurred for installing and for removing the flow-restricting devices and for restoration of normal service. The charge shall be paid before normal service can be restored. In addition, the surcharge provided in subsection (b) (4) of this Section shall be imposed.

(c) The City shall give notice of violation to the water customer committing the violation as follows:

(1) Notice of violation of the water use curtailment provisions of Sections 6-8.25 (c)

and 6-8.26 (c) or of first violations of the water use prohibitions of Section 6-8.23 or of subsection (b) of Sections 6-8.24, 6-8.25, and 6-8.26 given in writing by regular mail to the address at which the water customer is normally billed.

(2) Notice of second or subsequent violations of the water use prohibitions of Section 6-8.23 or subsection (b) of Sections 6-8.24, 6-8.25, and 6.8-26 shall be given in writing in the following manner:

(A) by giving the notice to the water customer personally;

(B) if the water customer is absent from or unavailable at the premises at which the violation occurred, by leaving a copy with some person of suitable age and discretion at the premises and sending a copy through the regular mail to the address at which the water customer is normally billed; or

(C) if a person of suitable age or discretion cannot be found, then by affixing a copy in a conspicuous place at the premises at which the violation occurred, and also sending a copy through the regular mail to the address at which the customer is normally billed.

(d) The notice shall contain a description of the facts of the violation, a statement of the possible penalties for each violation on the merits of the violation pursuant to Section 6-8.28.

SECTION 6-8.29. Hearing Regarding Violations.

(a) Any water customer receiving notice of a second or subsequent violation of sections 6-8.23, 6-8.24 (b), 6-8.25 (b), or 6-8.26 (b) shall have a right to a hearing by the City Manager of the City within fifteen (15) days of mailing or other delivery of the notice of violation.

(b) The water customer's timely written request for a hearing shall automatically stay installation of flow-restricting device on the customer's premises until after the City Manager renders his or her decision.

(c) The water customer's timely written request for a hearing shall not stay the imposition of a surcharge unless within the time period to request a hearing, the water customer deposits with the City money in the amount of any unpaid surcharge due. If it is determined that the surcharge was wrongly assessed, the City will refund any money deposited to the water customer.

(d) The decision of the City Manager shall be final except for judicial review.

(e) The City Manager may delegate his duties and responsibilities under this section as appropriate."

SECTION 2. The Mayor shall sign this Ordinance and the City Clerk shall attest to the same, and the City Clerk shall cause the same to be published within fifteen (15) days after its passage, at least once in the **INLAND VALLEY DAILY BULLETIN**, a newspaper of general circulation in the City of Ontario, California.

APPROVED and ADOPTED this 19th day March , 1991.

Mayor

CITY OF ONTARIO INCORPORATED DECEMBER 1891 CALIFORNIA

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney

APPENDIX A

"URBAN WATER MANAGEMENT PLAN
YEAR 2000 UPDATE"
PREPARED BY
THE INLAND EMPIRE UTILTIES AGENCY
AUGUST 2000

Urban Water Management Plan
Year 2000 Update

Inland Empire
UTILITIES AGENCY

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PREFACE

The Inland Empire Utilities Agency (IEUA) is pleased to present this 2000 update of the Urban Water Management Plan (UWMP). IEUA is responsible for regional urban water supply planning for the western portion of San Bernardino County.

The UMWP 2000 is a public statement of the goals, objectives and strategies needed to maintain a reliable water supply for the IEUA service area. It is intended to be consistent with and to support the implementation of the Chino Basin Watermaster's Optimum Management Program, commonly called the "OBMP Peace Agreement".

The UWMP 2000 lays out a vision for water management over the next twenty years. For the short term, defined as the next five years (2001-2005), the UWMP 2000 provides a specific implementation program. But as the horizon broadens further into the future, a greater range of options and opportunities become possible. Therefore the plan is less specific for the year 2010—and even less so for 2020.

The preparation of this UWMP was primarily done by IEUA staff. However, the Metropolitan Water District of Southern California, Chino Basin Watermaster and all of the retail water agencies within the IEUA service area contributed to the technical documentation. This was a "team effort" and we thank all who helped to prepare this 2000 Urban Water Management Plan.

Richard W. Atwater
Chief Executive Officer
General Manager

12/15/00
Date

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ACRONONYMS AND ABBREVIATIONS

AF	acre feet
AFY	acre feet per year
Agency	Inland Empire Utilities Agency
BMP's	Best Management Practices
CBCWD	Chino Basin Conservation Water District
CBWM	Chino Basin Watermaster
CEQA	California Environmental Quality Act
CRA	Colorado River Aqueduct
CUWA	California Urban Water Agencies
CVP	Central Valley Project
EPA	Environmental Protection Agency
IID	Imperial Irrigation District
IEUA	Inland Empire Utilities Agency
IRP	Integrated Resources Planning
LPP	Local Projects Program
LRP	Local Resources Program
M&I	municipal and industrial
MOU	Memorandum of Understanding
MWD	Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act
O&M	Operations and Maintenance
OBMP	Optimum Basin Management Plan
RP	Regional Treatment Plant
RTS	readiness-to-serve
RWQCB	Regional Water Quality Control Board
SAWPA	Santa Ana Watershed Project Authority
SCAG	Southern California Association of Governments
SWP	State Water Project
SWRCB	State Water Resources Control Board
WTP	Water treatment plant

CHAPTER 1
INTRODUCTION

The future of the Inland Empire Utilities Agency (IEUA) service area depends upon the management of local and imported water supplies. IEUA service area is located at the west end of San Bernardino County and lies within the Santa Ana River Watershed. The Santa Ana Watershed is the fastest growing watershed in the United States (current population of 4.5 million is projected to increase to 2 million over the next 25 years). With this growth comes immense challenges and opportunities.

The Urban Water Management Plan 2000 prepared by Inland Empire Utilities Agency describes a regional approach to the management of imported and local water supplies in the Chino Basin service area. Information from this Plan will help local agencies to:

- Implement water conservation programs in a cost effective manner;
- Identify opportunities to maximize the beneficial use of recycled and local groundwater supplies, providing the region with new local water sources to reduce the need for State Water Project supplies;
- Coordinate the implementation of the Chino Basin Optimum Basin Management Plan (OBMP) with other local water supplies to ensure efficient water resources management;
- Develop a "drought-proofing" strategy for the region and minimize future dependence on costly imported water supplies; and
- Provide an integrated and comprehensive strategy for water and wastewater infrastructure development.

1.1 URBAN WATER MANAGEMENT PLAN ACT

The Inland Empire Utilities Agency Urban Water Management Plan 2000 (Plan) has been prepared in response to the State of California Water Code Sections 10610 through 10656, known as the Urban Water Management Planning Act.

Passed into law in 1983, the Act mandates that "every urban water supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually prepare and adopt, in accordance with prescribed requirements, an urban water management plan." The Act requires urban water suppliers to prepare plans that describe and evaluate reasonable and practical efficient water uses, recycling and conservation activities. These plans must be filed with the California Department of Water Resources every five years. The deadline for filing the 2000 plan is December 31st of this year.

Since 1983, several amendments have been added to the Act, the most recent occurring in 1995. These amendments require additional actions addressing urban water management plan preparation and consideration of such issues as metering, drought contingency planning, and water recycling. A copy of the Urban Water Management Plan Act is included in Appendix D.

1.2 IEUA'S RESPONSIBILITIES

The Inland Empire Utilities Agency (IEUA) prepared an Urban Water Management Plan in 1995 in compliance with the Act's 1990 amendment that wholesale water providers write such a document. This Plan is an update of IEUA's 1995 Plan. It includes a number of significant changes in the region's water planning and management activities that have taken place in the last five years, most notably the achievement of the Chino Basin Peace Agreement, the approval of the Chino Basin Optimum Basin Management Plan, the passage of California Water Bond (Proposition 13) which will provide over $235 million for infrastructure investments in the Santa Ana Watershed, and the development by IEUA of a comprehensive water recycling plan.

IEUA's Urban Water Management Plan 2000 was prepared in consultation with the Metropolitan Water District of Southern California (MWD), the Santa Ana Watershed Project Authority (SAWPA), Chino Basin Watermaster (CBWM), Chino Basin Water Conservation District (CBWCD), Cucamonga County Water District, San Antonio Water Company, Fontana Water Company, Monte Vista Water District, the cities of Chino, Chino Hills, Montclair, Ontario, Rancho Cucamonga, and Upland, and the California Urban Water Conservation Council of which IEUA is a member.

The specific water management activities being undertaken by IEUA's member agencies are not explicitly discussed in this Plan unless they relate to one of IEUA's water demand or supply programs. Presumably, these management activities will be discussed in the urban water management plans developed by each member agency. Information from this document will be available to all water agencies in the region to assist in the preparation of their own water management plans.

1.3 DWR GUIDANCE

The Department of Water Resources (DWR) has provided detailed background information to guide water districts in developing the 2000 Urban Water Management Plans. Appendix E has a copy of DWR's check list for preparing a UWMP in compliance with the water code. Additional information can be found

on DWR's web page (wwwdpla.water.ca.gov). IEUA followed the DWR guidelines and checklist in the development of this Plan.

1.4 IEUA Service Area and Utility Activities

The Inland Empire Utilities Agency distributes water, provides industrial/municipal wastewater collection and treatment services and other related utility services for the western portion of San Bernardino County (see Figure 1-1). The Agency's service area is located in the southwestern section of San Bernardino County. The 242 square mile service area encompasses the Chino Groundwater Basin, which consists of a relatively flat alluvial valley from east to west and slopes from north to south at a one to two percent grade. Valley elevation ranges from about 2,000 feet in the foothills below the San Gabriel Mountains to about 500 feet near Prado Dam.

IEUA's service area is located with the desert climate zone of Southern California. The region receives an average annual rainfall of about 13 inches. Monthly average temperatures range from a low of 66 degrees in December and January to a summer high of 92 degrees. Records show daily summer temperatures have been as high as 114 degrees.

The principal drainage for the Chino Groundwater Basin is the Santa Ana River. It flows sixty-nine miles across the Santa Ana Watershed from its origin in the San Bernardino Mountains to the Pacific Ocean. The Santa Ana River enters the Basin at the Riverside Narrows and flows along the southern boundary to the Prado Flood Control Reservoir where it is eventually discharged through the outlet at Prado Dam. Year-round flow occurs along the entire reach of the Santa Ana River due to surface inflows at Riverside Narrows, discharges from municipal water recycling plants to the Santa Ana River, and rising groundwater.

IEUA was formed by popular vote of its residents in June 1950 to become a member agency of the Metropolitan Water District of Southern California for the purpose of importing supplemental water, augmenting local stream and groundwater supplies. Since its formation in 1950, the Agency has significantly expanded its services. These include production of recycled water, distribution of imported and recycled water supplies, sewage treatment, co-composting of manure and municipal biosolids, desalinization of groundwater supplies and disposal of non-reclaimable industrial wastewater and brine.

The Agency serves the cities of Chino, Chino Hills, Fontana, Montclair, Ontario and Upland, as well as the Monte Vista Water District and the Cucamonga County Water District. Approximately 700,000 people reside in the Agency's service area. A five-member Board of Directors lead the Inland Empire Utilities Agency. Each Director is elected by division, Division 1 (Upland/Montclair); Division 2 (Ontario); Division 3 (Chino/Chino Hills); Division 4 (Fontana); Division 5 (Rancho Cucamonga), and serves a four-year term.

Inland Empire Utilities Agency boundaries, which lie almost entirely within the Chino Groundwater Basin (Figure 1-2), include the cities of Chino, Chino Hills, Montclair, Upland, Ontario, Rancho Cucamonga and Fontana and unincorporated areas within San Bernardino County. Within the boundaries, there are eight retail water agencies (table 1-1) that provide water to residents in the Agency's service area. Some of these water agencies provide water to areas outside of the Agency's service area.

1.5 Regional Intergovernmental Water Agency Coordination

There are many agencies involved in water management within the Chino Basin. IEUA is working in cooperation with each of these agencies to achieve water supply reliability, water quality and watershed management goals for the Santa Ana River Watershed and the Southern California region.

Metropolitan Water District of Southern California (MWD)

IEUA is a member of the Metropolitan Water District of Southern California (MWD). MWD is a public agency that provides supplemental imported water from Northern California (State Water Project) and the Colorado River to 27 member agencies located in portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties.

Nearly 90% of the population within these counties, about 16 million people, reside within MWD's 5,200 square mile service area. A map of MWD's service area is shown in Figure 2-7.

As a water wholesaler, MWD has no retail customers. It distributes treated and untreated water directly to its member agencies. The district provides an average of 60% of the municipal, industrial and agricultural water used within its service area. The remaining 40% comes from local wells, local surface water, recycling and from the City of Los Angeles' aqueduct in the eastern Sierra Nevada.

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

To address these challenges, MWD and its member agencies developed an Integrated Water Resources Plan (IRP) in 1996. The overall objective of the IRP process is the selection and implementation of a Preferred Resource Mix (or strategy) consisting of complementary investments in local water resources,

imported supplies and demand-side management that meet the region's desired reliability goal in a cost-effective and environmentally sound manner. As a member of MWD, IEUA is chairing the current review of the 1996 IRP. This examination will guide the development and implementation of revised MWD water management programs over the next five years. The IRP planning process is expected to be completed in 2001.

MWD prepares its own Regional Urban Water Management Plan (RUWMP). IEUA's Plan was developed with the information provided from MWD's draft RUWMP.

Finally, MWD provides financial support for local water projects implemented by its member agencies that contribute to an increase in the reliable water supplies available to the region. Currently, MWD sponsors two programs:

- The Local Resources Program (LRP) was established in June, 1998, to encourage the construction of recycled water and recovered groundwater projects. It replaces the longstanding Local Projects Program (LPP) and the Groundwater Recovery Program (GRP), originally established in 1982, and 1991, respectively. MWD currently provides a financial contribution of $154 for each new acre-foot of water developed from local water recycling that replaces a demand on MWD's system. Local agencies may receive up to a maximum of $250 per acre-foot of firm yield for groundwater recovery projects that treat contaminated groundwater and produce clean water. Participation in the program is through a competitive request for proposal (RFP) process that seeks to identify local projects that best meet the region's need and provide the greatest return on investment.

- MWD also provides financial and technical assistance to its member agencies for implementing the water conservation measures, known as Best Management Practices (BMPs), contained in the Urban Water Conservation Best Management Practices Memorandum of Understanding. The Conservation Credits Program was established in 1988. MWD pays the lesser of one-half the program cost or the equivalent of $154 per acre-foot of water saved through conservation. A variation of this policy provides funding for ultra-low-flow toilet replacements programs at the flat rate of $60 per toilet.

With the recent approval of the California State Water Bond (Proposition 13), MWD will also be responsible for distributing $45 million in funds for the development of conjunctive management programs in Southern California. Like the LRP, this program will be administered through a competitive RFP process.

Table 1-1: Water Agencies within IEUA service area

City of Chino	The City of Chino serves water to approximately 66,000 residents of the city and some unincorporated areas in San Bernardino County.
City of Chino Hills	The City of Chino Hills provides water to approximately 50,000 residents of the city within its 46 square mile service area.
Cucamonga County Water District	Cucamonga County Water District is a retail agency that provides water to approximately 140,000 residents within a 47 square mile area comprised mainly of the City of Rancho Cucamonga. The District also provides water to small portions of the cities of Upland, Ontario, Fontana and unincorporated areas of San Bernardino County.
Fontana Water Company	Fontana Water Company is a retail investor-owned utility company that provides water to approximately 130,000 residents mainly in the City of Fontana, and also serves portions of the cities of Rancho Cucamonga and Rialto, outside the Agency service area.
Monte Vista Water District	Monte Vista Water District is an independent special district that serves a population of about 42,000 in the City of Montclair, portions of the City of Chino and unincorporated areas of San Bernardino County.
City of Ontario	The City of Ontario supplies water to approximately 160,000 residents of the City and some unincorporated areas of San Bernardino County. The City of Ontario also serves a small portion of the City of Rancho Cucamonga.
San Antonio Water Company	San Antonio Water Company is a retail investor-owned utility company that provides water to approximately 3,000 residents in the unincorporated area of the City of Upland.
City of Upland	The City of Upland encompasses 15 square miles and serves water to approximately 70,000 residents.

Santa Ana Watershed Project Authority

IEUA is a member of the Santa Ana Watershed Project Authority (SAWPA). Formed in 1972, SAWPA is a joint powers agency that coordinates regional planning within the Santa Ana Watershed to address water quality and supply improvements. SAWPA is comprised of the five major water supply and wastewater management agencies within the Santa Ana Watershed: Inland Empire Utilities Agency, Eastern Municipal Water District, Orange County Water District, San Bernardino Valley Municipal Water District and Western Municipal Water District.

Since the early 1970's, SAWPA has played a key role in the development and update of the Regional Basin Plan for the Santa Ana Regional Water Quality Control Board. SAWPA conducts water-related investigations and planning studies, and builds facilities needed for regional water supply, wastewater treatment or water quality remediation. Current studies include the Chino Basin Water Resources Management Study, the Colton-Riverside Conjunctive Use Project, an investigation of water quality in Lake Elsinore and studies on the nitrogen and organic carbon levels in the Prado Basin.

SAWPA will administer the State Water Bond Act (Prop. 13) funds, approved in March, 2000, for the development of water quality and improvement projects within the Watershed. This Bond Measure will provide significant funding for the construction of new water supply and treatment infrastructure within the region. Out of the $235 million approved for the Santa Ana River Watershed, the Chino Basin will receive approximately $87 million for the construction of water desalters, groundwater recharge facilities and new wells.

Chino Basin Watermaster

IEUA is a member of the Chino Basin Watermaster Board of Directors. The Chino Basin Watermaster (Watermaster) was established in 1978, by a judgment entered by the Superior Court of California. The Judgment requires that the Watermaster develop a management plan for the Chino Groundwater Basin that meets water quality and water quantity objectives for the region.

In 1998, the Chino Basin Watermaster 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 Chino Groundwater Basin. The OBMP encourages the increased use of local supplies to help "drought proof" the Chino Basin.

In July 2000, the Watermaster's planning process culminated with the adoption of a "Peace Agreement" that ended over 15 years of litigation within the Chino Basin. The Peace Agreement outlines the schedule and actions for implementing the OBMP.

Chino Basin Water Conservation District

The Chino Basin Water Conservation District (CBWCD) was established in 1949, to protect and replenish the Chino Groundwater Basin with rainfall and stormwater runoff from the San Gabriel Mountains. CBWCD uses an extensive system of percolation ponds and spreading grounds to augment the natural capacity of the region to capture runoff for the recharge of the groundwater basin. CBWCD also promotes water conservation through public education programs. IEUA works closely with the Chino Basin Water Conservation District.

Santa Ana Regional Water Quality Control Board

The Santa Ana Regional Water Quality Control Board (SARWQCB) is responsible for the development and enforcement of water quality objectives to meet the requirements of the Federal Clean Water Act, California Porter-Cologne Act, and the National Pollution Discharge Elimination System (NPDES).

In 1975, the SARWQCB completed the Water Quality Control Plan for the Upper portion of the Santa Ana Watershed. The plan outlined specific water quality management actions to address water quality and salt (total dissolved solids) build up within the Chino Groundwater Basin. These included the construction of a large wellfield and desalters in the lower part of the Basin to extract and treat poor quality water; the construction of a pipeline to export brines from the upper Basin to the ocean; and the use of large volumes of low TDS water for groundwater recharge.

Since 1975, a brine line (known as the Santa Ana River Interceptor or SARI line) has been built and is in operation. In addition, two groundwater desalting plants are in place. The 2000 Optimum Basin Management Plan by the Chino Basin Watermaster has been developed to meet the requirements of the 1975 plan.

Figure 1-1: Santa Ana Watershed Boundaries

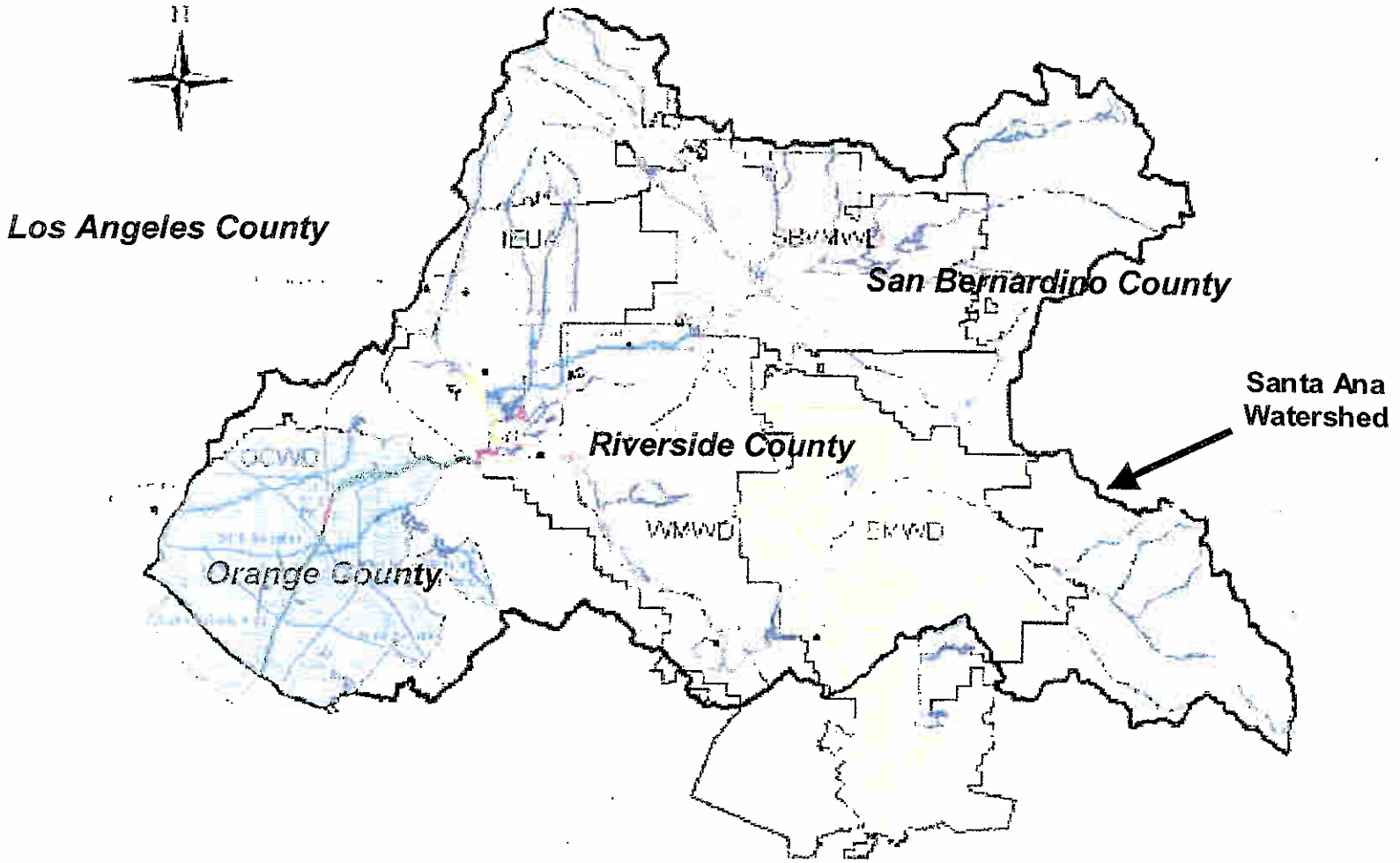
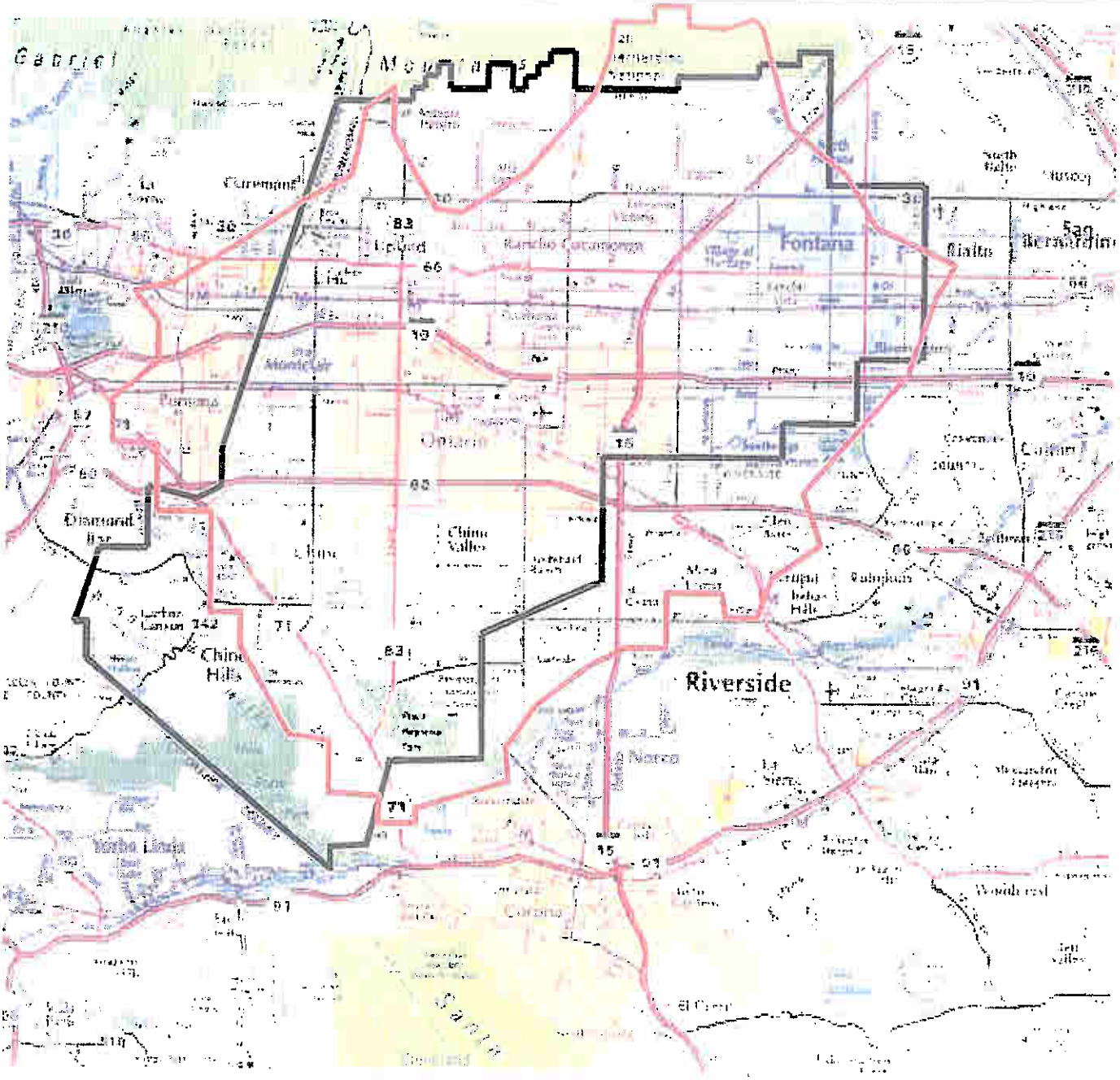


Figure 1-2: Inland Empire Utilities Agency Service Area

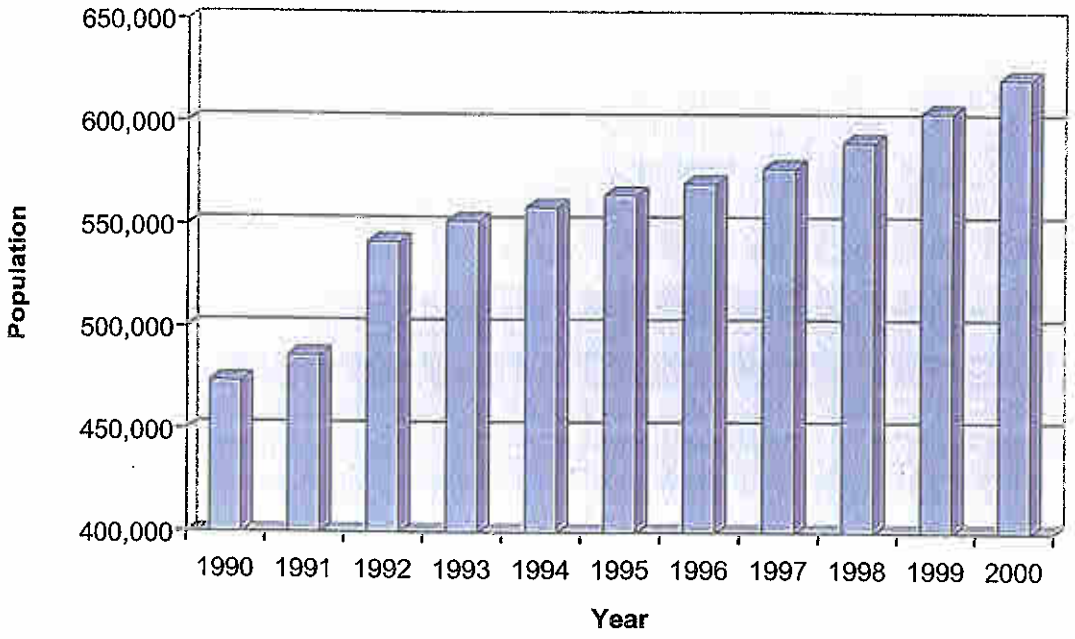


CHAPTER 2
WATER USE TRENDS

2.1 PAST POPULATION AND WATER USE

In 1990, the population of IEUA's service area was approximately 474,000 people. By 2000, the area had grown to 620,000 people. This represents an increase of almost 146,000 people over an 10 year period, or an annual growth rate of over 3% as shown in Figure 2-1.

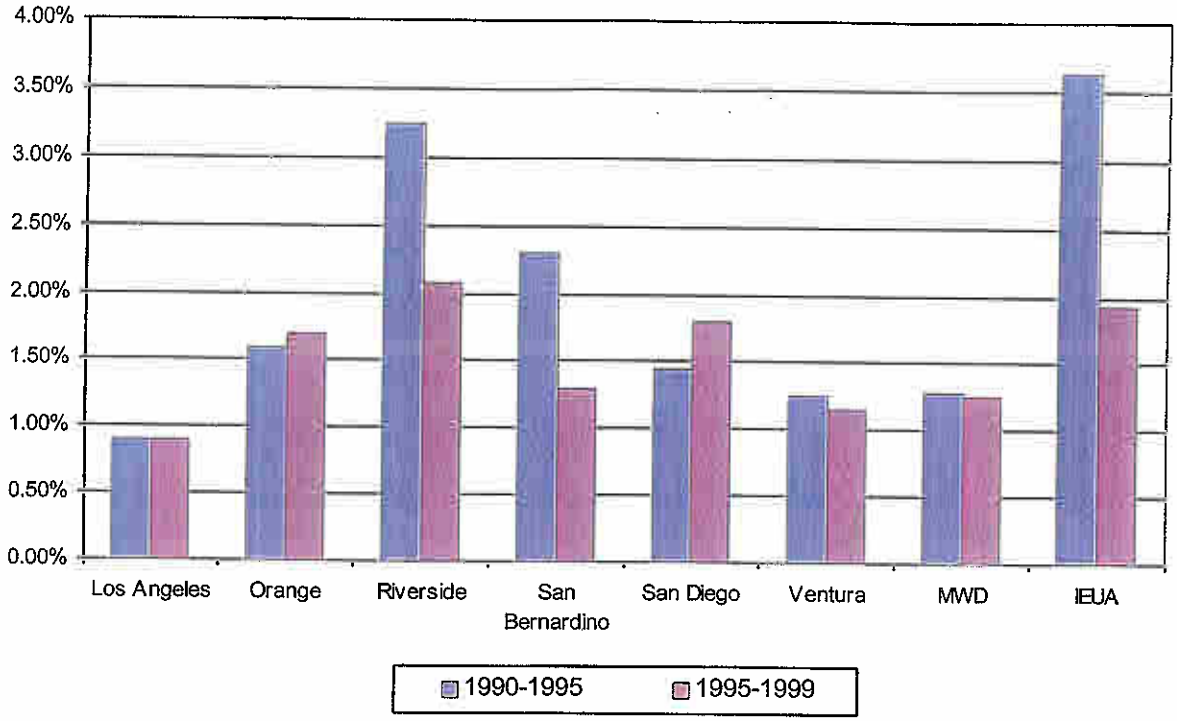
Figure 2-1: Historical Population in Local retail agencies



Source: California Department of Finance

Relative to population increases within MWD's service area, IEUA's region has experienced some of the fastest rates of growth. Despite the severe economic recession in the early 1990's, the western portions of the San Bernardino and Riverside Counties grew by 3% annually between 1990 and 1999, while Los Angeles County grew by .9% over the same period (see Figure 2-2). The Santa Ana River Watershed is one of the most rapidly urbanizing watersheds in the United States.

Figure 2-2: Average Annual Population Growth Rate in Metropolitan's Service Area



Source: Draft Urban Water Management Plan by MWD and California Department of Finance

The most populated areas within IEUA's service area are the cities of Ontario, Rancho Cucamonga, and Fontana, as shown in Table 2-1. Between 1990 and 1998, the areas, which experienced the most rapid rate of growth were the City of Fontana (3%), the City of Chino Hills (2%) and Rancho Cucamonga (2%).

Table 2-1: Historical Population in Local retail agencies

	90	91	92	93	94	95	96	97	98	99	00
Chino	59,682	60,481	60,072	60,821	61,717	62,685	63,295	63,275	64,844	65,862	66,740
Chino Hills	0	0	42,591	45,176	46,274	47,791	49,689	51,982	54,966	58,271	60,236
Fontana	87,535	91,555	96,875	99,677	101,125	102,230	103,108	105,342	108,177	112,142	117,395
Montclair	28,434	28,861	29,256	29,584	29,559	29,731	29,923	30,058	30,298	30,625	30,943
Ontario	133,179	136,031	137,933	139,262	140,953	141,581	142,229	143,140	145,533	147,423	151,488
Rancho Cucamonga	101,409	105,139	109,761	111,541	112,698	114,587	115,768	117,294	119,068	122,221	125,585
Upland	63,374	64,221	65,134	65,755	66,081	65,940	66,133	66,450	67,377	68,112	68,795
Total	473,613	486,288	541,622	551,816	558,407	564,545	570,145	577,541	590,263	604,656	621,182

*Source: California Depart of Finance

Several retail water agencies serve water outside of the Agency's service area. For analysis purpose, the entire water demand and supply for these retail water agencies are used rather than a pro-rated share. This assumption is considered reasonable since the amount of water supplied to customers outside of the Agency's service area is small and this 2000 Urban Water Management Plan represents the data provided by the individual retail water agencies.

Retail water demands have increased from 180,000 in 1986 to over 200,000 acre-feet in 1999. The highest water use occurred in 1990, during the 1987-1993 drought, when 225,000 acre-feet of water was used within the service area.

Significant population growth combined with the rapid urbanization within the Chino Basin has caused municipal and urban water demand to increase. As illustrated in Figures 2-3 (OBMP Figure 4.5-35a-h) a-d, agricultural lands in the northern and central portions of the Basin have been converting to residential, commercial and industrial land uses. Between 1933, and 1993, total urban area increased from 4,770 acres to 68,966 acres, while non-urban land uses including agriculture and dairies decreased from 109,415 acres to 50,095 acres. Between 1984 and 1993, total urban area rose from 55,099 acres to 68,966 acres while non-urban uses including agriculture and dairies decreased from 77,109 acres to 50,095 acres. The agricultural and dairy operations in the southern portions of the Basin are expected to urbanize over a 20-year period. The recent annexation of unincorporated agricultural lands to the Cities of Ontario and Chino will likely speed this process. An exception to this occurs in the southern Chino Basin where local dairies have concentrated their operations.

2.2 PER CAPITA WATER USE

Per capita water use figures were prepared by MWD for each county in its service area and are presented in Table 2-2. Per capita water use for IEUA's service area is represented by the figures for San Bernardino County.

Table 2-2: MWD Per Capita

Municipal and Industrial per Capita Water Use					
Served County	1980	1985	1990	1995	1998
Los Angeles	191	197	188	164	158
Orange	224	229	233	197	191
Riverside	275	262	304	226	225
San Bernardino	325	318	281	221	234
San Diego	186	213	209	164	164
Ventura	206	211	228	179	181
Metropolitan	203	212	210	176	172
Unit of Measure: Gallons per person per day					

Figure 2-3 (a-d): Historical Land Use

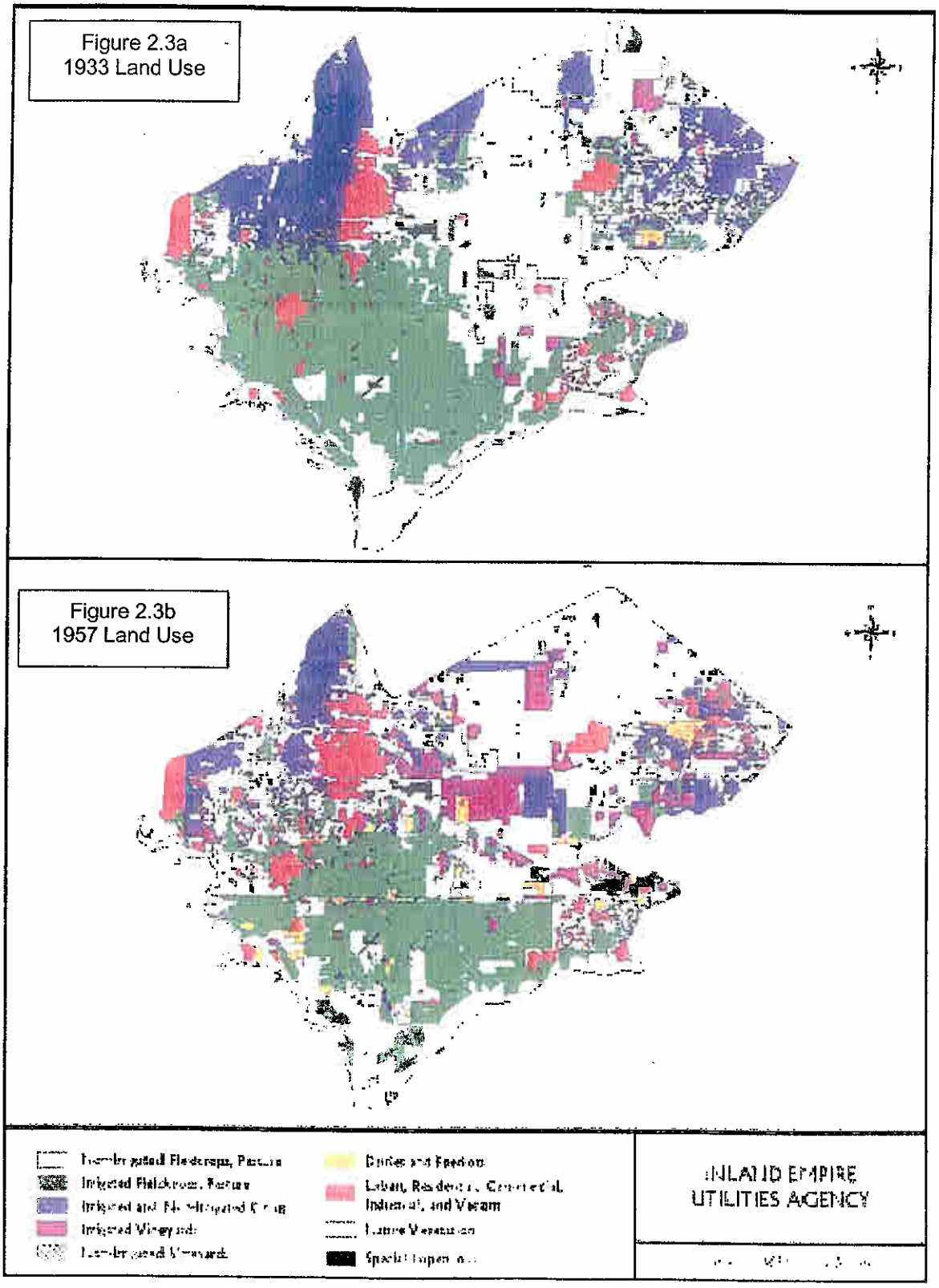


Figure 2.3c
1975 Land Use

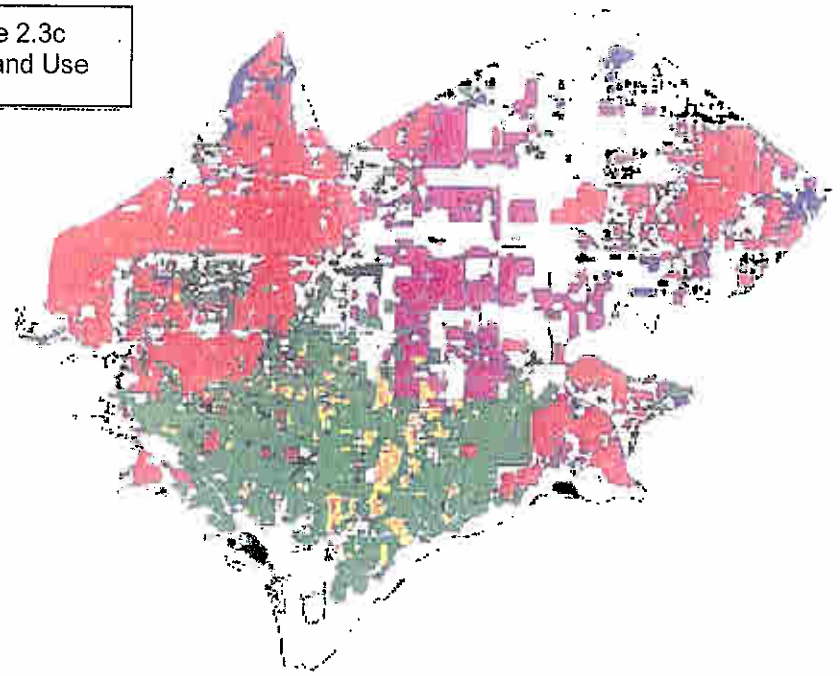
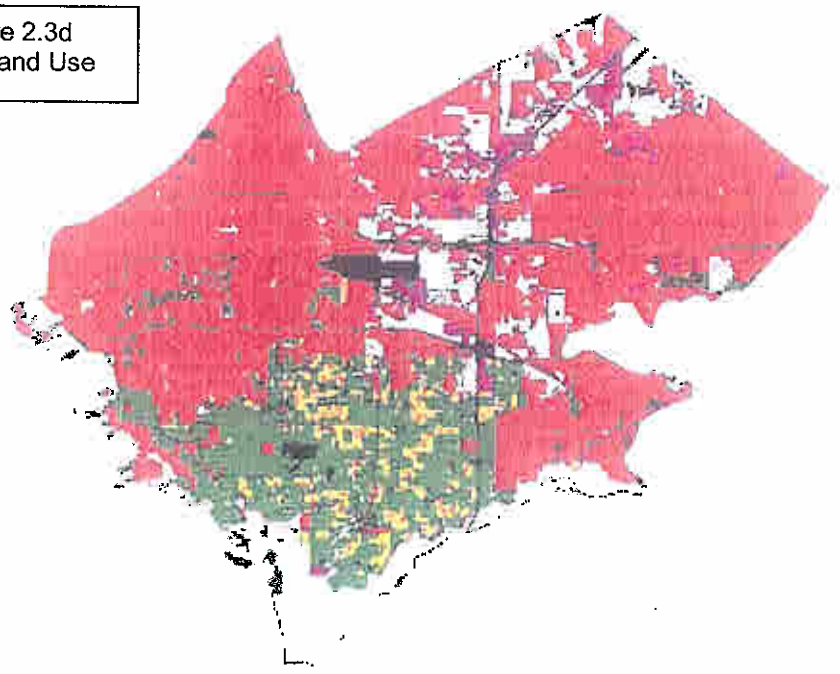


Figure 2.3d
1993 Land Use



INLAND EMPIRE
UTILITIES AGENCY

Table 2-3: Estimated Historical Land Uses in Chino Basin

Land Use Category	1933	1957	1975	1993
Non-irrigated Field Crops and Pasture	37,242	52,950	20,754	5,411
Irrigated Field Crops and Pasture	32,539	24,320	18,295	13,141
Irrigated and Non-irrigated Citrus	15,866	9,464	1,947	0
Irrigated Vineyards	1,332	7,268	9,353	2,975
Non-irrigated Vineyards	94	79	0	1,629
Dairies and Feedlots	259	3,963	6,280	7,611
Urban Residential, Commercial, Industrial and Vacant	7,135	17,695	41,405	65,115
Special Impervious	305	305	309	3,851
Native Vegetation	22,083	21,633	20,481	19,328
Total Urban	7,440	18,000	41,714	68,966
Total Non-urban	109,415	119,678	77,109	50,095
Potential Dairy Disposal Area	87,073	94,082	50,349	23,156
Units of Measure: acres				

Since 1980, per capita water usage within IEUA's service area has declined from 325 gallons per person per day to 234 gallons per capita per day in 1998, a 28% decrease. Overall, per capita water use within MWD's total service area has also decreased significantly since 1980. The development of effective local water conservation programs and the implementation of national water efficiency standards are likely significant contributors to this trend.

It is important to note that per capita water use does not really express the amount of water actually used by an individual because it includes all categories of urban water use, including residential, commercial, industrial, fire fighting and system wide losses. A number of factors affect per capita water use including the relative share of residential versus nonresidential water use in an area, the number and types of housing units, the number of employees, the types of businesses, the number of people per household, average lot sizes, income levels and climate.

Typically, counties that are located in the drier, hotter inland areas are expected to have higher levels of municipal and industrial use than the cooler coastal areas. In addition, IEUA's service area has significant water intense industries (i.e., steel making, dairies, fabric dyeing) that tend to increase the per capita levels. Per capita water use estimates are the basis for projecting future water demand.

2.3 WATER SUPPLIES

Water used in IEUA's service area comes from both local and imported sources. Local sources include groundwater, surface water and, most recently, recycled water. Imported water is purchased by IEUA from MWD for redistribution to local retail agencies within IEUA's service area. Sources of MWD's imported water include the Colorado River and facilities of the State Water Project (SWP).

Over 80% of the available runoff is captured within the Santa Ana River Watershed. Within IEUA's service area, an extensive system of flood control channels and percolation ponds support the natural capacity of the region to capture and hold runoff.

Between 1990 and 1999, local sources met about 60% of the water needs within IEUA's service area while imported MWD water purchased through IEUA supplied the remaining 40% (see Figure 2-4).

Figure 2-4: Historical Water Use by Source

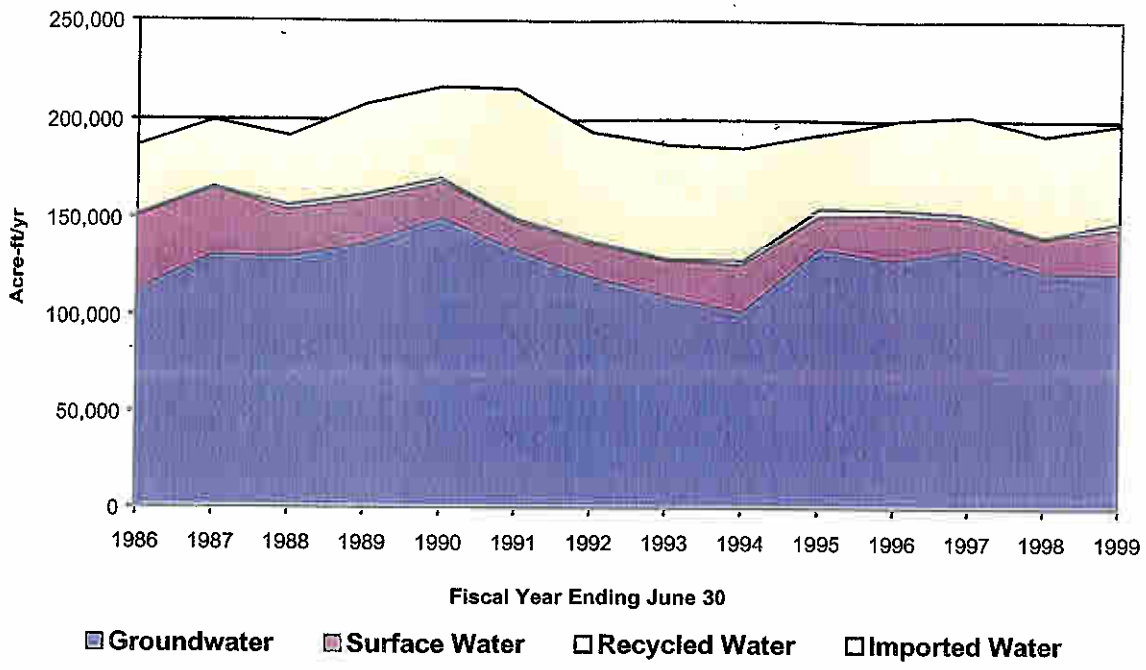


Figure 2-5: Historical Water Use by Usage Class

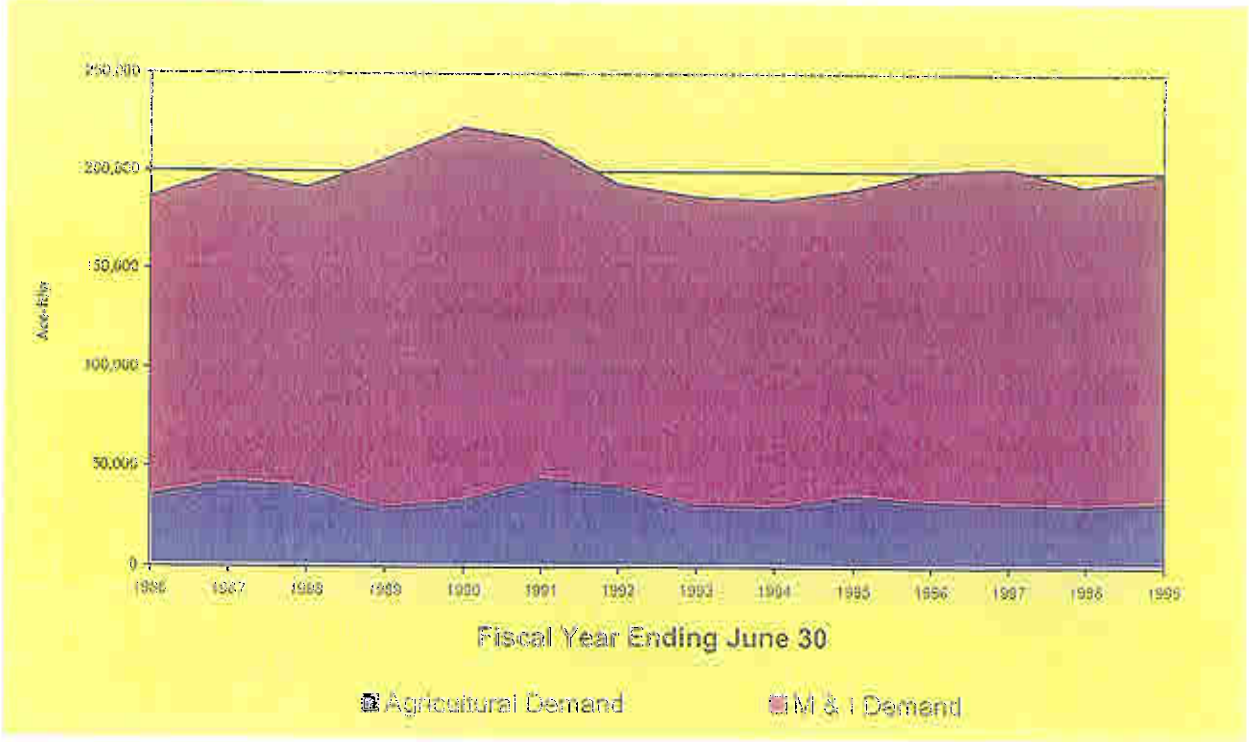


Table 2-3 shows the quantities of local and imported water used by local retail agencies between 1990 and 1999. IEUA's largest customers for purchase of imported water supplies are the Cucamonga County Water District (40%), the City of Chino Hills (22%), and City of Ontario (15%).

Recycled water use is currently about 5,600 acre-feet per year. Water reuse is expected to expand rapidly over the next decade. The following sections describe the current supply sources in more detail.

Local Supplies

Chino Basin Groundwater

The Chino Basin is the largest groundwater basin in the Upper Santa Ana Watershed. It currently contains 5 million acre-feet of water in storage, with an additional unused storage capacity based upon historic water levels in the basin of about 1,000,000 acre-feet. About 100,000 AFY is pumped for municipal and industrial purpose. In addition, 300 to 400 agricultural users pump about 45,000 AFY from the Chino Basin.

Water rights within the Chino Basin have been adjudicated. The average safe-yield of the Basin is 140,000 acre-feet per year. The safe yield is allocated among three pools as follows: (1) Overlying Agricultural Pool: 82,800 acre-feet per year; (2) Overlying Non-Agricultural Pool: 7,366 acre-feet per year; and (3) Appropriative Pool: 49,834 acre-feet per year. Table 2-4 presents the Historical Chino Groundwater Production by Pool.

Production in excess of the safe yield of the groundwater basin must be replaced with replenishment water. Water to replenish the Chino Basin is purchased from the MWD by IEUA in coordination with the Chino Basin Watermaster. Supplemental sources of replenishment water are expected to come from recycled water and storm water. In addition, water is reallocated to the Appropriative Pool for urban use from the Overlying Agricultural Appropriative Pool when it is not put to use by agricultural users. As agricultural production declines within the IEUA service area, the reallocation of water to the Appropriative Pool is expected to increase.

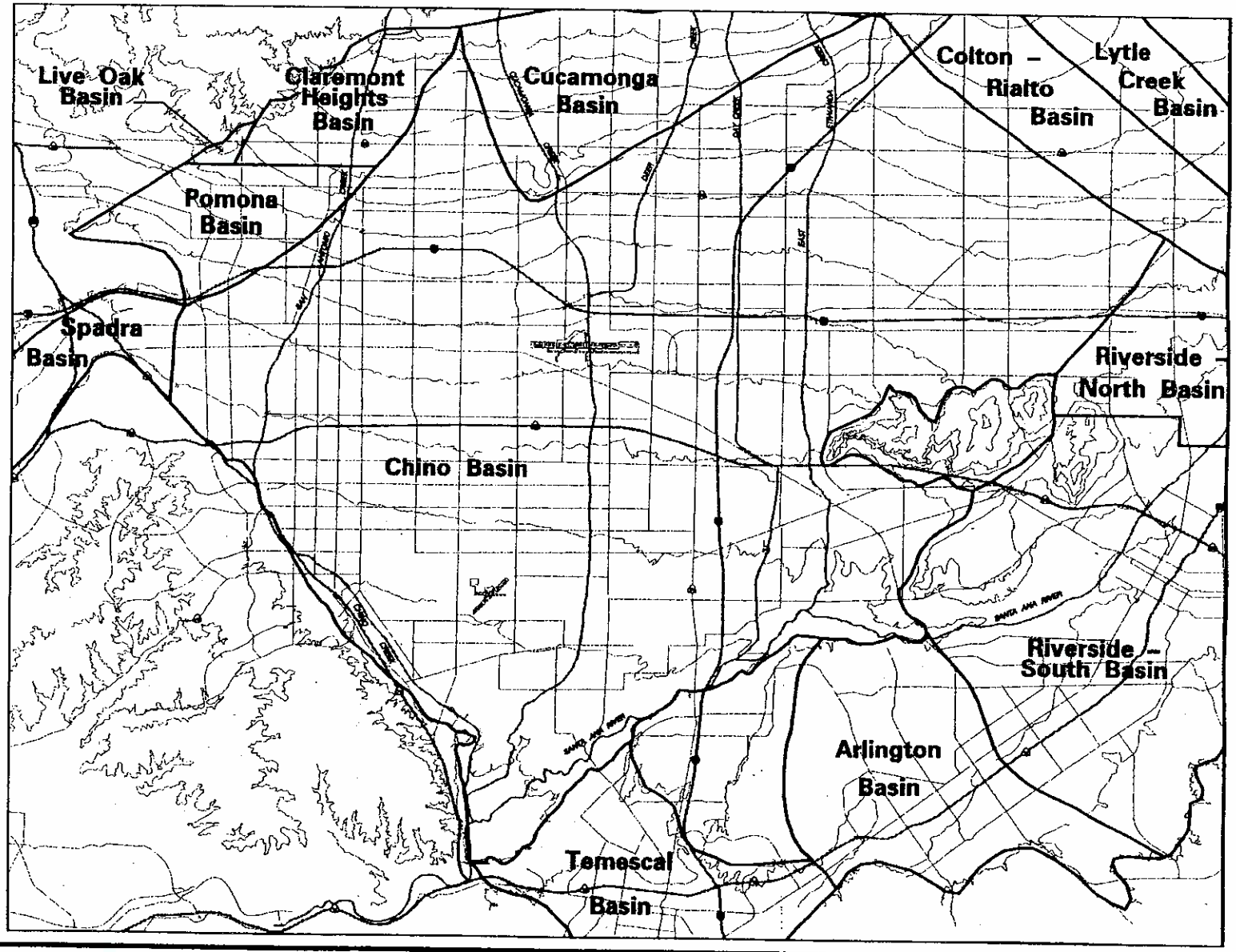
Total groundwater production from the Chino Basin is currently 180,000 acre-feet per year. These figures include production from other groundwater sources described below.

Table 2-5: Historical Chino Groundwater Production by Pool [1]

Fiscal Year	Appropriative Pool	Overlying (Agricultural) Pool	Overlying (Non-Agricultural) Pool	Total
1974-75	70,312	96,567	8,878	175,757
1975-76	79,312	95,349	6,356	181,017
1976-77	72,707	91,450	9,198	173,355
1977-78	60,659	83,934	10,082 [2]	154,675
1978-79	60,597	73,688	7,127	141,412
1979-80	63,834	69,369	7,363	140,566
1980-81	70,726	68,040	5,650	144,416
1981-82	66,731	65,117	5,684	137,532
1982-83	63,481	56,759	2,395	122,635
1983-84	70,558	59,033	3,208	132,799
1984-85	76,912	55,543	2,415	134,870
1985-86	80,859	52,061	3,193	136,113
1986-87	84,662	59,847	2,559	147,068
1987-88	91,579 [3]	57,865	2,958	152,402
1988-89	93,617 [4]	46,762	3,619	143,998
1989-90	101,344 [5]	48,420	4,856	154,620
1990-91	86,658 [6]	48,085	5,407	140,150
1991-92	91,982 [7]	44,682	5,240	141,904
1992-93	86,367 [8]	44,092	5,464	135,923
1993-94	80,798 [9]	44,298	4,586	129,682
1994-95	93,419 [10]	55,022	4,327	152,768
1995-96	101,616 [11]	43,639	5,424	150,669
1996-97	110,163 [12]	44,809	6,309	161,281
1997-98	97,435 [13]	43,345	4,955 [14]	145,735
1998-99	107,723	47,538	7,006	162,267

(1) Assesed production or production reported in Water master Annual Reports
(2) Includes 3,945 AF of mined water pumped by Edison as agent for IEUA
(3) Does not include 7,674.3 AF exchanged with MWDSC.
(4) Does not include 6,423.6 AF exchanged with MWDSC.
(5) Does not include 16,377.1 AF exchanged with MWDSC.
(6) Does not include 14,929.1 AF exchanged with MWDSC.
(7) Does not include 12,202.4 AF exchanged with MWDSC.
(8) Does not include 13,657.3 AF exchanged with MWDSC.
(9) Dose not include 20,194.7 AF exchanged with MWDSC.
(10) Does not include 4,221.9 AF exchanged with MWDSC.
(11) Does not include 6,167.2 AF exchanged with MWDSC and reflects corrected production after reporting errors accounted for
(12) There were no MWDSC exchanges in FY 96-97 and reflects corrected production after reporting errors were accounted for
(13) Does not include 4,275.4 AF exchanged with MWDSC.
(14) Does not include 216.5AF exchanged with MWDSC.

Figure 2-6: Chino Basin and Surrounding groundwater Basins



Recycled Water

Water recycling involves the treatment of wastewater to create a high quality, safe source of water for outdoor irrigation, industrial and groundwater recovery uses. Recycled water is a critical component of the Optimum Basin Management Plan, developed in 2000, to address water quality issues in the Chino Groundwater Basin. It will become an increasingly important source of local water supply for the region.

IEUA operates four regional wastewater treatment plants that produce disinfected and filtered tertiary treated recycled water in compliance with California's Title 22 regulations: RP-1, RP-2, RP-4 and the Carbon Canyon Water Reclamation Facility. The water quality from these plants is outstanding, with an average level of total dissolved solids well below 500 mg/l and a total nitrogen level of less than 10 mg/liter. A fifth plant is under construction and is expected to be on line by 2002.

Current production of recycled water is 65,000 AFY and is expected to increase to 89,000 acre-feet of water by the year 2020. A recycled water marketing program was initiated in 1999. Current annual sales are estimated at 5,600 acre-feet in 2000.

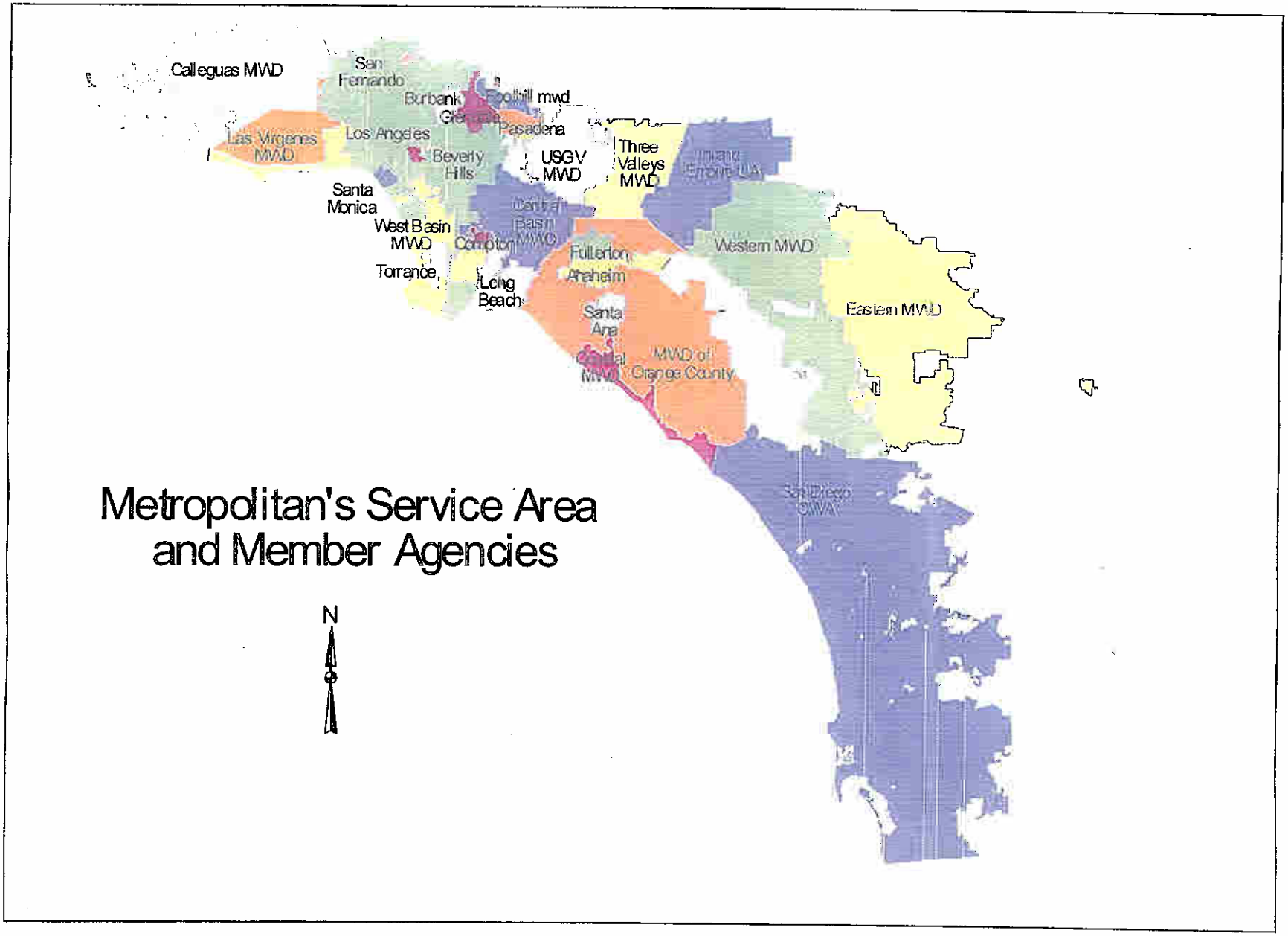
Additional sources of recycled water within IEUA's service area include the Pomona Water Reclamation Plant (operated by the Los Angeles County Sanitation District), the Upland Hills Water Reclamation Plant (operated by the City of Upland), CIM Water Reclamation Plant (operated by the California Institution for Men at Chino), and the Indian Hills Water Reclamation Plant (operated by Jurupa Community Services District).

Imported Water

The Metropolitan Water District of Southern California (MWD) provides imported water supplies to IEUA. MWD is a wholesale water agency that serves supplemental imported water from Northern California (State Water Project) and the Colorado River to 27 member agencies located in portions of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties. Nearly 90% of the populations within these counties, about 16 million people, reside within MWD's 5,200 square mile service area. Figure 2-7 provides a location map of MWD's service area.

Since the 1980's the total regional water retail water demands within MWD's service area has increased from about 3.0 million acre-feet to 3.9 million acre-feet in 1999. MWD currently provides an average of 50% of the municipal, industrial, and agricultural water used within its boundaries. The remaining 50% comes from local wells, local surface water, recycled water supplies, and from the City of Los Angeles' aqueduct in the eastern Sierra Nevada.

Figure 2-7: MWD Service Area Map



Over the past decade supplies from the Colorado River have averaged 1.2 million acre feet. Supplies from the State Water Project over the same period have averaged 700,000 acre-feet of water. The future reliability of these supplies is increasingly uncertain.

One of MWD's primary goals is to develop additional reliability through the California Aqueduct by purchasing out-of-region storage for SWP water and SWP water transfers. MWD's Integrated Resources Plan calls for developing a total of 460,000 acre-feet of dry-year storage and water transfer deliveries by 2020. Current projects include Semitropic and Arvin Edison storage and exchange agreements.

Historic MWD deliveries to the IEUA service are shown in Table 2-5. Imported water for direct use has increased significantly in the past twenty years, from 11,000 acre-feet of water in 1980 to a peak of 57,000 acre-feet in 1999. Additional imported water supplies are used for groundwater replenishment, contributing to the annual production from the Chino Basin. On average, 6,000 acre-feet of imported water have been used annually for this purpose. During the peak of the 1987-1993 drought, 156,000 acre-feet of imported water was purchased over a three year period for groundwater replenishment.

Table 2-6: MWD Historical Water Purchases by IEUA

Fiscal Year	Full Service	Agricultural	Interruptible	Storage*	*Total*
1953-1954	3,135.0				***3,135.0***
1954-1955	4,820.5				***4,820.5***
1955-1956	5,033.3				***5,033.3***
1956-1957	5,983.6				***5,983.6***
1957-1958	6,850.3				***6,850.3***
1958-1959	4,363.7	41.0			***4,404.7***
1959-1960	3,568.1	83.0			***3,651.1***
1960-1961	4,908.6	459.0			***5,367.6***
1961-1962	6,416.4	796.0			***7,212.4***
1962-1963	6,865.2	1,195.0			***8,060.2***
1963-1964	14,598.7	1,579.0			***16,177.7***
1964-1965	18,993.5	2,699.0			***21,692.5***
1965-1966	13,422.2	2,154.0			***15,576.2***
1966-1967	10,071.7	1,072.0			***11,143.7***
1967-1968	10,883.8	1,681.0			***12,564.8***
1968-1969	8,565.2	134.0			***8,699.2***
1969-1970	7,262.5	370.0			***7,632.5***
1970-1971	8,583.8	462.0			***9,045.8***
1971-1972	9,611.7	660.0			***10,271.7***
1972-1973	8,592.6	634.0			***9,226.6***
1973-1974	8,427.7	800.0			***9,227.7***
1974-1975	8,841.0	933.0			***9,774.0***
1975-1976	9,474.0	1,842.0			***11,316.0***
1976-1977	11,096.0	1,698.0			***12,794.0***
1977-1978	20,357.0	924.0			***21,281.0***
1978-1979	10,361.6	817.3	16,088.6		***27,267.5***
1979-1980	11,196.0	69.4	7,841.4	10,677.6	***29,784.4***
1980-1981	13,163.1	335.6	17,861.9	3,020.6	***34,381.2***
1981-1982	7,837.4	588.1	25,914.6	2,453.7	***36,793.8***
1982-1983	4,792.3	303.4	21,797.5		***26,893.2***
1983-1984	4,727.6	404.2	21,230.0		***26,361.8***
1984-1985	8,201.0	558.6	21,001.6		***29,761.2***
1985-1986	9,150.3	398.4	24,701.0	1,072.5	***35,322.2***
1986-1987	11,673.6	368.7	18,393.2	3,522.6	***33,958.1***
1987-1988	9,728.8	459.0	12,245.1	13,142.2	***35,575.1***
1988-1989	20,247.2	175.3	25,931.5		***46,354.0***
1989-1990	15,773.0	117.8	26,156.5	26,616.5	***68,663.8***
1990-1991	20,015.9	26.2	28,071.0	4,011.7	***52,124.8***
1991-1992	31,924.5	152.0		75,976.1	***108,052.6***
1992-1993	29,407.0	94.4		51,553.7	***81,055.1***
1993-1994	28,897.1			28,046.9	***56,944.0***
1994-1995	36,967.8	8.5		1,579.5	***38,555.8***
1995-1996	35,204.1	77.4		4,408.8	***39,690.3***
1996-1997	44,728.2	118.8		5,058.7	***49,905.7***
1997-1998	39,320.6	83.8		11,895.1	***51,299.5***
1998-1999	41,607.8	68.1		8,414.1	***50,090.0***
1999-2000	57,070.3	104.1		5,332.1	***62,506.5***

Unit of Measure: Acre-feet/Year

*Seasonal Storage Service program and Cyclic Storage Account

CHAPTER 3
PLANNING FOR THE FUTURE

3.1 FUTURE POPULATION AND WATER DEMAND

As shown in Table 3-1, the population within IEUA's service area is projected by the local retail water agencies to grow from 650,000 people in 2000 to over 850,000 people by the year 2020. This represents an increase of 300,000 people over a twenty-year period with an annual growth rate of 1.2%. Other growth estimates including MWD's suggest that the region's population could reach 1 million people by 2020.

Table 3-1: Estimated and Projected Population[1]

Estimated and Projected Population (Projection by retail agencies)

	1990	1995	2000	2005	2010	2015	2020
Chino	59,700	62,800	66,100	69,400	72,900	76,700	80,400
Chino Hills	38,400	40,700	62,400	68,100	72,400	72,700	72,200
Fontana Water Company	87,500	103,100	119,900	136,800	154,400	173,500	192,600
Monte Vista Water District	28,400	30,200	32,200	34,200	36,300	38,600	40,900
Ontario	133,200	144,000	149,500	155,100	161,000	167,300	173,700
Cucamonga County Water District	101,400	115,000	144,300	161,200	174,500	189,300	203,300
Upland	63,400	67,500	70,800	74,200	77,800	81,600	85,400
San Antonio Water Company	3,100	3,200	3,200	3,300	3,300	3,300	3,400
Total	515,100	566,500	648,400	702,300	752,600	803,000	851,900

Population Projection by MWD[2]

1990	1995	2000	2005	2010	2015	2020
548,200	613,800	667,000	764,800	862,600	955,000	1,045,900

[1]population estimates will be updated with 2000 census data when it becomes available.
[2]comparison only

Employment within the service area is forecasted to increase by 242,000 jobs between 2000 and 2020. With a projected growth rate of 90% over the next twenty years, the Chino Basin one of the fastest growing regions in the State. Housing stock will increase dramatically as well. Over 120,000 units will built and occupied over the next twenty years, representing an increase of 65%.

As a result of this growth, water demand is expected to increase by approximately 30% over the next twenty years. Table 3.2 presents the forecasted water demands for retail, municipal and industrial, and agricultural uses. Based on normal weather conditions, total annual water use (without conservation) is expected to be 242,000 acre-feet in 2000 and to increase to 316,000 acre-feet by

the year 2020. Figure 3.1 shows future water demands in relation to population growth for the region.

The water demand forecasts used in the preparation of this Urban Water Management Plan 2000 are based upon information provided by the respective water agencies within IEUA's service area. In the absence of agency-provided data, the assumptions from the Chino Basin Water Resources Management Study (1995) and the Chino Basin Watermaster Optimum Basin Management Program Programmatic Environmental Impact Report (2000) were used. These demand projections were compared with the forecasts made by MWD through its MWD-MAIN model (MWD RUMP, draft October 2000, see Appendix C and are included in tables 3-3, 3-4, and 3-13.

Significant urban development is expected to occur throughout the Agency, but especially in the southern portion of the Chino Basin. The conversion of agricultural lands to urban uses will increase municipal and industrial demand for water, while agricultural water demands are expected to decrease. Over the twenty year planning period, the relative share of M&I demand is expected to grow from 210,000 acre-feet (87%) to 306,000 acre-feet (97%), while agricultural water use is expected to decline from 32,000 acre-feet (14%) to 10,000 acre-feet (3%), as shown in Figure 3-2.

Figure 3-1: Demographic Projections for IEUA Service Area

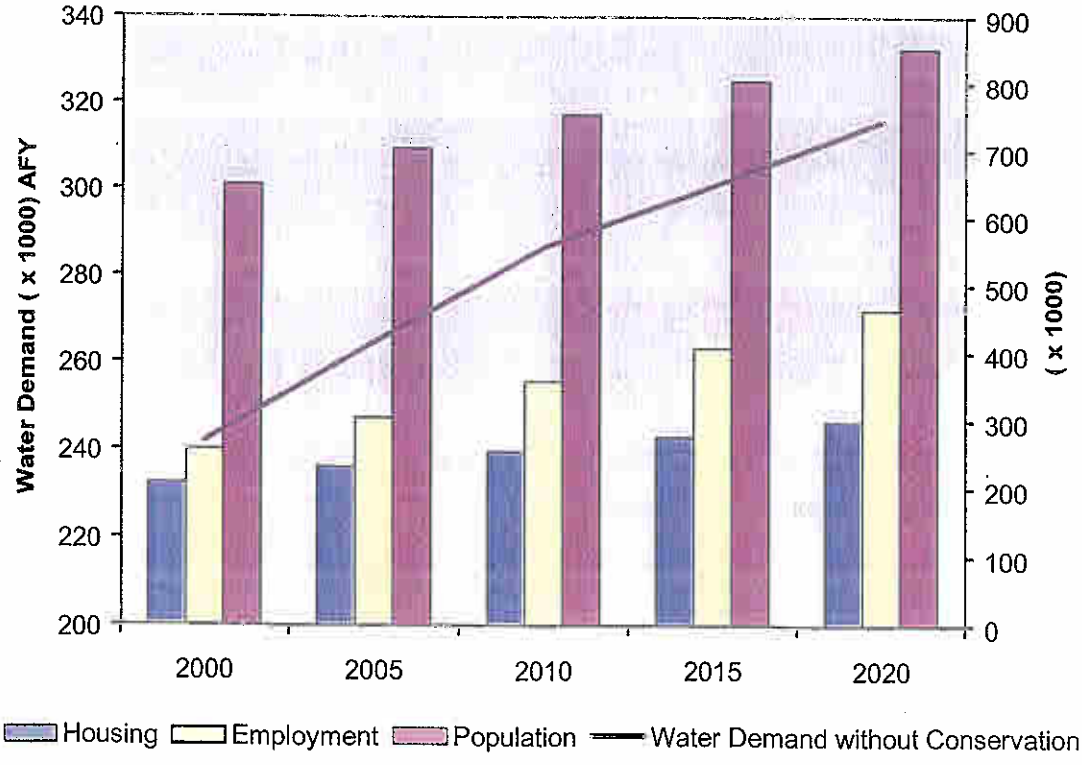


Table 3-2: Demographic Projections for IEUA Service Area

	2000	2005	2010	2015	2020
Population[1]	648,400	702,300	752,600	803,000	851,900
Occupied Housing Units[1]	206,600	230,700	252,600	274,700	296,400
Employment[1]	256,400	303,000	355,900	405,400	462,200

[1]Based on the retail water agencies' projection.

Table 3-3: Water Supply & Demand Plan by Local retail agencies

M&I Demand Output

	1990	1995	2000	2005	2010	2015	2020
Chino	9,500	12,600	15,900	17,800	18,400	19,600	20,800
Chino Hills	5,200	13,100	17,500	19,200	20,700	20,900	21,300
Fontana Water Company	35,400	33,100	44,300	50,000	54,400	61,200	68,500
Monte Vista Water District[1]	12,900	10,500	12,000	12,900	14,700	14,700	14,800
Ontario	35,800	36,700	45,200	54,300	63,500	72,800	82,100
Cucamonga County Water District	41,300	40,000	49,900	54,500	59,000	63,500	68,100
Upland	20,100	19,900	21,300	22,000	23,000	24,200	25,800
San Antonio Water Company[1]	12,500	5,200	3,700	3,800	3,900	4,000	4,300
Subtotal	172,700	171,100	209,800	234,500	257,600	280,900	305,700
Agricultural Demand[2]	33,400	36,000	32,000	30,000	28,900	19,700	10,000
Total Demand[4]	206,100	207,100	241,800	264,500	286,500	300,600	315,700

Retail Demand Projected by MWD[3]

	1990	1995	2000	2005	2010	2015	2020
MWD M&I Demand	172,500	152,100	186,300	214,400	243,700	273,500	305,800
Agricultural Demand	37,200	32,200	27,800	25,000	22,200	19,400	16,700
Total Demand	209,700	184,300	214,100	239,400	265,900	292,900	322,500

[1]***Supplies to other agencies not counted to avoid double counting***

[2]***OBMP Projection***

[3]***Comparison only***

[4]***Does not include conservation***

Water demand in IEUA's service area can also be broken down by sector of usage. Not all of the local retail water agencies have detailed information on water uses within their service areas. These agencies are in process of upgrading their database and reporting systems so they can track their water use at the level of detail required by the Act and recommended by the California Urban Water Conservation Council. Only the water use data available from all retail water agencies were used in this document.

Figure 3-2: Projected Municipal & Industrial and Agricultural Demand

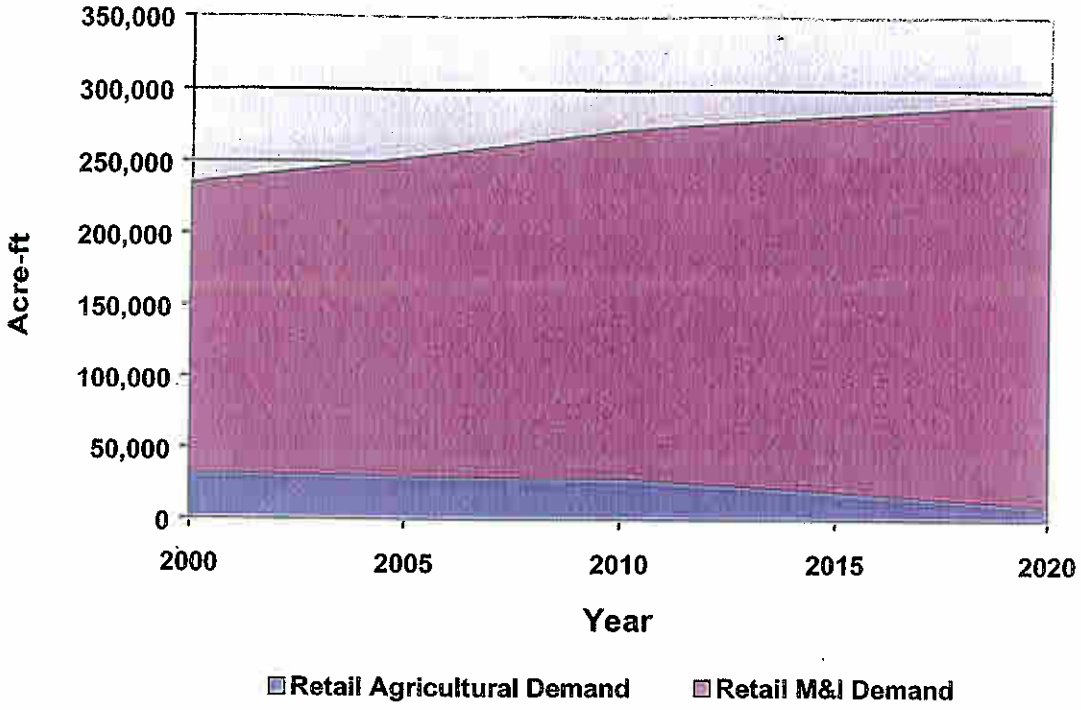


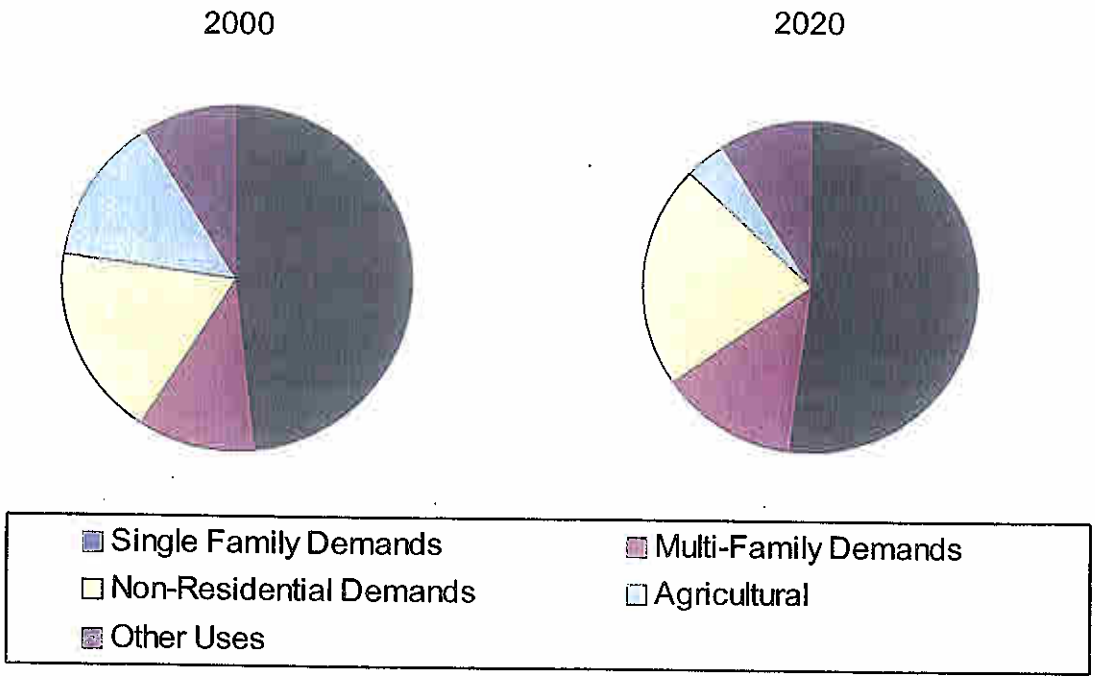
Table 3-4: Projected Municipal & Industrial and Agricultural Demand*

	2000	2005	2010	2015	2020
Agricultural Demand	32,000	30,000	29,000	20,000	10,000
M&I Demand	219,000	235,000	258,000	281,000	306,000
Total	251,000	265,000	287,000	301,000	316,000
Units: Acre-feet per year					

*Derived from Table 4.5-19 from PEIR of OBMP – includes water consumption outside IEUA service area

As shown in Figure 3-3. In the year 2000, single-family retail water demands account for almost half (48%) of the water used within the Agency. The remaining demand is divided among non-residential (industry, government, institutions) uses (18%), agricultural (14%), multi-family residential (11%) and system losses/other uses (9%). By 2020, single-family retail water demand will account for more than half (52%) of the Agency's water use. Similar increases are expected for the non-residential (22%) and multi-family (13%) sectors, while agricultural use is expected to decline (3%) and system losses/other uses to remain unchanged at 9% of the total demand.

Figure 3-3: Total Water Demand by Sector for Year 2000 and 2020



The implementation of conservation programs is expected to reduce projected municipal and industrial demands within IEUA's service area. As shown in Table 3-5, current conservation programs are saving over 6,000 acre-feet of water. With full implementation of the statewide Best Management Practices (BMP's), the Agency could reduce ultimate water demands in the basin by approximately 24,000 acre-feet of water, or about 7%. Thus, with conservation, total water demand in the year 2000 is forecasted to be 236,000 acre-feet and to increase to 292,000 acre-feet by 2020.

Table 3-5: Estimated and Projected Conservation Savings

Conservation Projections

	1990	1995	2000	2005	2010	2015	2020
Chino	0	400	700	1,200	1,700	2,200	2,600
Chino Hills	0	300	500	900	1,200	1,400	1,500
Fontana Water Company	0	600	1,100	1,900	2,700	3,400	4,100
Monte Vista Water District	0	200	400	700	900	1,100	1,300
Ontario	0	1,000	1,700	3,000	4,300	5,600	6,700
Cucamonga County Water District	0	900	1,500	2,600	3,600	4,600	5,400
Upland	0	500	800	1,300	1,700	2,000	2,300
San Antonio Water Company	0	19	30	49	62	72	79
Total	0	3,900	6,700	11,600	16,200	20,400	24,000

Conservation Projections by MWD*

1990	FY97	2000	2005	2010	2015	2020
0	4,300	7,400	13,600	19,300	24,400	29,400

****Comparison only***

Table 3-6: Estimated and Projected Municipal and Industrial Employment

Employment Output

	1990	1995	2000	2005	2010	2015	2020
Chino	33,100	29,400	41,700	53,100	66,100	78,200	92,100
Chino Hills	1,200	3,500	5,000	5,500	6,000	6,600	7,200
Fontana Water Company	34,000	29,600	35,200	40,500	46,600	52,200	58,700
Monte Vista Water District	18,100	16,000	18,000	19,900	22,000	24,100	26,400
Ontario	54,600	61,600	75,200	88,000	102,400	115,900	131,500
Cucamonga County Water District	31,500	40,500	52,600	63,800	76,600	88,500	102,200
Upland	29,100	24,700	28,400	31,900	35,900	39,600	43,800
San Antonio Water Company	200	200	300	300	300	300	300
Total	201,800	205,500	256,400	303,000	355,900	405,400	462,200

Employment Data by MWD*

1990	1995	2000	2005	2010	2015	2020
190,000	221,400	265,300	324,900	384,500	442,200	506,900

****Comparison only***

Table 3-7: Estimated and Projected Occupied Housing

Estimated and Projected Occupied Housing

	1990	1995	2000	2005	2010	2015	2020
Chino	15,600	16,400	17,500	18,600	19,700	20,900	22,300
Chino Hills	15,500	17,100	18,900	20,900	22,400	22,900	22,900
Fontana Water Company	26,400	29,700	34,300	39,100	44,100	49,600	55,000
Monte Vista Water District	8,500	8,800	12,800	14,100	14,600	15,300	16,000
Ontario	40,300	42,000	50,700	58,900	67,100	75,400	83,600
Cucamonga County Water District	33,600	36,500	46,600	52,100	56,600	61,400	66,000
Upland	23,100	23,700	24,700	25,800	26,900	28,000	29,400
San Antonio Water Company	900	1,000	1,100	1,200	1,200	1,200	1,200
Total	163,900	175,200	206,600	230,700	252,600	274,700	296,400

Housing Numbers by MWD*

1990	1995	2000	2005	2010	2015	2020
174,500	186,900	198,200	230,800	263,300	293,400	326,000

*Comparison only

Table 3-8: Single Family Demands without Conservation

Single-Family Retail Demands

	1990	1995	2000	2005	2010	2015	2020
Chino	6,700	6,900	7,100	7,300	7,500	8,000	8,500
Chino Hills	11,000	11,900	12,900	14,000	14,800	14,900	14,900
Fontana Water Company	22,800	26,100	29,900	34,200	36,500	41,100	45,900
Monte Vista Water District	5,100	5,600	6,100	6,600	6,800	6,800	6,800
Ontario	13,200	15,900	19,100	22,900	26,900	30,800	34,700
Cucamonga County Water District	25,200	27,600	30,200	33,000	35,500	38,100	40,600
Upland	9,800	9,900	10,000	10,100	10,200	10,400	10,700
San Antonio Water Company	1,600	1,600	1,600	1,600	1,600	1,700	1,700
Total	95,400	105,500	116,900	129,700	139,800	151,800	163,800

Single-Family Demands by MWD*

1990	FY97	2000	2005	2010	2015	2020
90,700	102,700	99,700	112,100	124,800	137,300	149,200

*Comparison only

Table 3-9: Multi-Family Demands without Conservation

Multi-Family Retail Demands

	1990	1995	2000	2005	2010	2015	2020
Chino	1,200	1,300	1,400	1,500	1,600	1,700	1,800
Chino Hills	900	1,100	1,300	1,600	2,000	2,100	2,200
Fontana Water Company	4,700	5,000	5,300	5,600	6,400	7,200	8,100
Monte Vista Water District	1,500	1,700	1,900	2,100	2,500	2,500	2,500
Ontario	5,000	6,000	7,200	8,600	10,100	11,600	13,000
Cucamonga County Water District	4,700	5,200	5,700	6,200	6,300	6,700	7,100
Upland	4,100	4,400	4,700	5,000	5,300	5,700	6,200
San Antonio Water Company	14	13	13	13	13	14	14
Total	22,100	24,700	27,500	30,600	34,200	37,500	40,900

Multi-Family Demands by MWD*

1990	FY97	2000	2005	2010	2015	2020
22,400	24,200	25,800	30,700	36,500	42,100	49,700

*Comparison only

Table 3-10: Non-Residential Demands without Conservation

Non-Residential Demands

	1990	1995	2000	2005	2010	2015	2020
Chino	3,400	4,300	5,500	7,000	7,200	7,600	8,100
Chino Hills	1,600	1,900	2,200	2,500	2,700	2,700	3,000
Fontana Water Company	4,100	4,500	5,000	5,600	6,400	7,100	8,000
Monte Vista Water District	2,200	2,400	2,600	2,800	3,800	3,800	3,800
Ontario	8,900	10,900	13,300	16,300	19,300	22,400	25,100
Cucamonga County Water District	7,600	8,200	8,900	9,700	11,100	12,100	13,100
Upland	3,500	3,800	4,100	4,400	4,900	5,400	6,000
San Antonio Water Company	1,800	1,900	2,000	2,100	2,200	2,300	2,500
Total	33,100	37,900	43,600	50,400	57,600	63,400	69,600

Non-Residential Demands by MWD*

1990	FY97	2000	2005	2010	2015	2020
32,500	34,200	37,900	45,200	52,500	60,400	69,300

*Comparison only

Table 3-11: System Losses and Other Uses

System Losses and Other Uses

	1990	1995	2000	2005	2010	2015	2020
Chino	1,800	1,900	2,000	2,100	2,100	2,300	2,400
Chino Hills	800	900	1,000	1,100	1,200	1,200	1,300
Fontana Water Company	3,100	3,500	4,000	4,600	5,200	5,700	6,500
Monte Vista Water District	1,000	1,200	1,400	1,600	1,600	1,600	1,600
Ontario	4,300	4,900	5,600	6,400	7,300	8,100	9,200
Cucamonga County Water District	4,100	4,500	5,000	5,600	6,100	6,600	7,300
Upland	2,200	2,300	2,400	2,500	2,600	2,700	2,900
San Antonio Water Company	100	100	100	100	100	100	100
Total	17,400	19,300	21,500	24,000	26,200	28,300	31,300

System Losses and Other Uses by MWD*

1990	FY97	2000	2005	2010	2015	2020
32,500	34,200	37,900	45,200	52,500	60,400	69,300

*Comparison only

Table 3-12: Actual and Projected Per-Capita Demands

Actual and Projected Per-Capita Demands

	1990	1995	2000	2005	2010	2015	2020
Chino	142	179	215	229	225	228	231
Chino Hills	121	287	250	252	255	257	263
Fontana Water Company	361	287	330	326	315	315	318
Monte Vista Water District	406	310	333	337	362	340	323
Ontario	240	228	270	313	352	389	422
Cucamonga County Water District	364	311	309	302	302	300	299
Upland	283	263	269	265	264	265	270
San Antonio Water Company	900	725	516	514	528	541	565
Average[1]	274	266	282	289	296	299	304

Per-Capita Demands by MWD[2]

1990	1995	2000	2005	2010	2015	2020
281	221	249	250	252	256	261

[1]Average without San Antonio Water Company
[2]Comparison only

3.2 FUTURE SOURCES OF WATER SUPPLIES

The principal water supplies in the IEUA service are groundwater pumped from the Chino Basin and adjacent groundwater basins, surface water supplies, recycled water and imported water purchase from MWD. Background information about each of these supplies is given in Chapter 2. The following sections describe the potential yield from these sources.

Local Supplies

Chino Basin Groundwater

Total production from the Chino Basin is projected to range between 180,000 to 190,000 acre-feet per year over the next twenty years, absent the development of groundwater/conjunctive management programs.

Surface Water

Total production from surface water supplies is projected to range between 15,500 acre-feet to 26,500 acre-feet over the next twenty years for average years. Surface water flows are substantially less during dry years.

Recycled Water

Current use of recycled water is 5,600 acre-feet per year. Recycled water use is expected to increase to 70,000 acre-feet per year with the development of a recycled water program for landscape irrigation (29,000 acre-feet), groundwater recharge (producing 28,000 acre-feet of increased yield from the Chino Groundwater Basin), industrial use (13,000 acre-feet) and agriculture use (100 acre-feet).

Imported Water

The demand for direct delivery of imported water for the Chino Basin is projected to increase from about 50,000 acre-feet per year in 2000 to 75,000 acre-feet by 2020, an increase of 50%. If recycled water supplies were not developed as outlined above, an additional 35,000 to 55,000 acre-feet of additional imported supplies would be needed to meet the region's needs.

3.3 FUTURE SUPPLIES TO MEET FUTURE DEMANDS

The purpose of the UWMP 2000 is to identify a comprehensive water resources strategy that will meet the region's water quality goals and provide IEUA's local

retail agencies with a reliable and affordable water supply over the next twenty years.

A mix of water management strategies will be needed to meet the region's long-term needs. IEUA's water management goals are the following:

- implement an effective conservation program that will maximize efficient water use in the service area;
- increase the safe storage capacity of the Chino Groundwater Basin to 500,000 acre-feet and implement a conjunctive use/groundwater management program that provides dry year water supplies for the Santa Ana Watershed;
- achieve maximum use of all available storm water;
- achieve maximum reuse of all available recycled water; and,
- minimize dependence on imported water supplies;

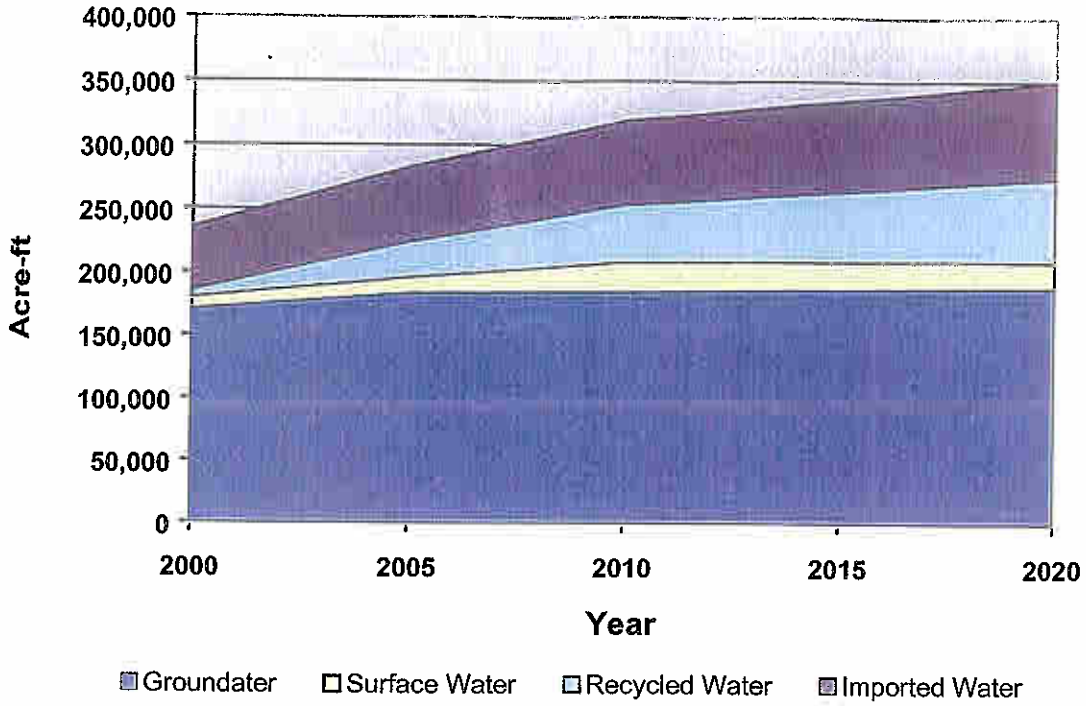
The following table 3-13 summarizes the available supplies and water demands under a "normal year." By emphasizing local water supply development within the service area, it is estimated that over 58,000 acre-feet of additional imported water can be saved by the year 2020.

Table 3-13: Water Demand/Supply Balance Average Year[1]

	2000	2005	2010	2015	2020
Groundwater[2]	182,800	183,700	184,600	186,700	188,800
Surface Water	15,500	18,400	29,600	28,200	26,500
Recycled Water[3]	5,600	28,000	45,000	55,000	65,000
Imported Water	43,800	52,700	59,800	65,000	69,400
Total Supply	247,700	282,800	319,000	334,900	349,700
Total Demand	241,800	264,500	286,500	300,600	315,700
Total Demand with Conservation	240,940	252,900	270,300	280,200	291,700
Units: Acre-feet per year					

[1]Source : Derived from Table 4.5-19 from OBMP
[2]Includes groundwater from other basins.
[3]Modified from the Table 4.5-19 from OBMP to reflect the recent IEUA's recycled water plan

Figure 3-4: Water Supply Projection



3.4 FUTURE RELIABILITY AND VULNERABILITY OF WATER SUPPLIES

The primary challenges facing the Agency's supplies are water quality problems, future droughts and the potential for a catastrophic event that interrupts water service to the region.

Water Quality

The quality of the groundwater in the northern and central portions of the Chino Basin is generally good and in most areas meets the California Department of Health Services' Safe Drinking Water Standards. However, the quality of groundwater in the southern portion of the basin becomes increasingly poor, with very high total dissolved solids (TDS) and nitrate concentrations resulting from past and continuous agricultural and other activities overlying the southern half of the basin. In addition, new contaminants such as perchlorate and mercury have been discovered in the region and other contaminants such as TCE, PCE, DBCP and Chromium IV threaten the future expanded use of the Chino Groundwater Basin.

The Santa Ana Regional Water Quality Control Board (SARWQCB) and the Chino Basin Watermaster have developed water quality standards and management programs that will lead to the long term clean up and management of the water quality issues in the Chino Groundwater Basin. Treatment processes, including the construction of desalters and the removal of industrial waste and brine are a costly but essential part of the overall strategy to ensure maximum use of groundwater supplies.

Storm water quality varies depending upon the timing of the storm event. Since the majority of storm water is captured in local groundwater basins for recharge, filtration of most of the contaminants occurs as the water percolates through the soil to the underground aquifer. Generally, storm water is an excellent source of high quality water in the region.

Recycled water holds the greatest potential as a new source of supply in the region and it also requires the highest level of treatment to meet water quality use requirements. The TDS and nitrogen concentrations in recycled water can exceed the basin management objectives set by SARWQCB and the Chino Basin Watermaster. Additional actions may be needed to make full use of recycled water including contributing to a salt offset program (such as through the construction of desalters) and the blending of recycled water with other lower TDS sources.

Reliability During a Drought

The water demands and supplies for IEUA's service area were analyzed to assess the region's ability to meet demands given a repeat of California's severe 1987-1993 drought. Table 3-14 presents the supply-demand balance for single and multiple year drought scenarios for 2000 – 2020. With the implementation of the local programs outlined above, the region is expected to meet 100% of its dry year demand under every scenario.

The development of groundwater storage, surface and recycled water supplies, along with water quality improvements and conservation, will significantly reduce the region's need for imported water supplies during dry year periods. By 2010, the region could potentially become self-sufficient, requiring only minimal imported water supplies during droughts. Under this scenario, IEUA's service area could potentially generate a surplus of 70,000 acre-feet of water which could be used to meet regional demands. Similarly, by 2020, dry year supplies are projected to exceed demand by more than 100,000 acre-feet per year.

Table 3-14: Water Demand/Supply Scenarios under Single & Multiple Dry Years

Current Supply without Water Banking

Single Dry Year and Multiple Dry Water Years					
Water Supply Sources	Current Supply 2000[1]	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Groundwater[2]	182,800	192,700	192,700	206,200	223,700
Imported Water[3]	43,800	37,600	37,600	33,300	6,000
Surface Water[2]	15,500	14,800	14,800	11,600	9,200
Recycled Water[4]	5,600	5,600	5,600	6,200	7,100
Total Supply	247,700	250,700	257,700	257,300	246,000
Total Demand[2]	241,800	262,300	262,300	273,500	258,700
Total Demand w/ Conservation[5]	235,040	250,700	250,700	257,300	238,300
Difference	12,660	-	-	-	7,700

Unit of Measure: Acre-feet/Year

Year 2005 - Groundwater Banking up to 167,000 AF

Single Dry Year and Multiple Dry Water Years					
Water Supply Sources	Supply 2005[1]	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Groundwater[2]	183,700	238,700	238,700	238,700	238,700
Imported Water[3]	52,700	17,700	17,700	26,700	6,000
Surface Water[2]	15,500	14,800	14,800	11,600	9,200
Recycled Water[4]	28,000	28,000	28,000	30,800	35,400
Total Supply	279,900	299,200	299,200	307,800	289,300
Total Demand[2]	286,500	310,800	310,800	324,000	306,500
Total Demand w/ Conservation[5]	279,700	299,200	299,200	307,800	286,100
Difference	200	-	-	-	3,200

Unit of Measure: Acre-feet/Year

Year 2010 - Groundwater Banking up to 325,000 AF

Single Dry Year and Multiple Dry Water Years					
Water Supply Sources	Supply 2010[1]	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Groundwater[2]	184,600	292,600	292,600	292,600	292,600
Imported Water[3]	59,800	6,000	6,000	6,000	6,000
Surface Water[2]	29,600	28,300	28,300	22,200	17,700
Recycled Water[4]	45,000	45,000	45,000	49,500	56,900
Total Supply	319,000	371,900	371,900	370,300	373,200
Total Demand[2]	286,500	310,800	310,800	324,000	306,500
Total Demand w/ Conservation[5]	279,740	299,200	299,200	307,800	286,100
Difference	39,260	72,700	72,700	62,500	87,100

Unit of Measure: Acre-feet/Year

Year 2015 - Groundwater Banking up to 500,000 AF

Single Dry Year and Multiple Dry Water Years					
Water Supply Sources	Supply 2015[1]	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Groundwater[2]	186,700	346,700	346,700	346,700	346,700
Imported Water[3]	65,000	6,500	6,500	6,500	6,500
Surface Water[2]	28,200	27,000	27,000	21,200	16,900
Recycled Water[4]	55,000	55,000	55,000	60,500	60,500
Total Supply	334,900	435,200	435,200	434,900	430,600
Total Demand[2]	315,700	342,500	342,500	357,100	337,800
Total Demand w/ Conservation[5]	308,940	330,900	330,900	340,900	317,400
Difference	25,960	104,300	104,300	94,000	113,200
Unit of Measure: Acre-feet/Year					

Year 2020 - Groundwater Banking up to 500,000 AF

Single Dry Year and Multiple Dry Water Years					
Water Supply Sources	Supply 2020[1]	Single Dry Water Year	Multiple Dry Water Years		
			Year 1	Year 2	Year 3
Groundwater[2]	188,800	348,800	348,800	348,800	348,800
Imported Water[3]	69,400	7,000	7,000	7,000	7,000
Surface Water[2]	26,500	25,300	25,300	19,800	15,700
Recycled Water[4]	65,000	65,000	65,000	71,500	71,500
Total Supply	349,700	446,100	446,100	447,100	443,000
Total Demand[2]	315,700	342,500	342,500	357,100	337,800
Total Demand w/ Conservation[5]	308,940	330,900	330,900	340,900	317,400
Difference	40,760	115,200	115,200	106,200	125,600
Unit of Measure: Acre-feet/Year					

[1]Source : Derived from Table 4.5-19 from OBMP

[2]Projection based on the 1987 - 1991 drought records

[3]Minimum required to meet the local demand

[4]10% to 15% increase during drought

[5]Conservation savings derived using "Econometric Model" from MWD

MWD has taken the lead in drought planning for the southern California region. In 1999, MWD developed the Water Surplus and Drought Management (WSDM) Plan. This plan addresses both surplus and shortage contingencies. Each year, MWD will consider the level of supplies available and the existing levels of water in storage to determine the appropriate management stage for that year. Each stage is associated with specific resource management actions designed to (1) avoid an Extreme Shortage to the maximum extent possible and (2) minimize adverse impacts to retail customers should an Extreme Shortage occur. The current sequencing outlined in the WSDM plan reflects anticipated responses based on detailed modeling of Metropolitan's existing and expected resource mix.

Table 3-15 lists the definitions used in the WSDM Plan for surplus, shortage, severe shortage, and extreme shortage conditions. Except in severe or extreme shortages or emergencies, MWD's resource management will allow shortages to be mitigated without impacting municipal and industrial customers. Table 3-16 identifies the management actions MWD will implement under the WSDM plan.

Table 3-15: WSDM Plan Definition

Surplus	Metropolitan can meet full-service and interruptible program demands, and it can deliver water to local and regional storage.
Shortage	Metropolitan can meet full-service demands and partially meet or fully meet interruptible demands, using stored water or water transfer as necessary.
Severe Shortage	Metropolitan can meet full-service demands only by using stored water, transfers, and possibly calling for extraordinary conservation. In a Severe Shortage, Metropolitan may have to curtail Interim Agricultural Water Program deliveries.
Extreme Shortage	Metropolitan must allocate available supply to full-service customers

MWD undertook an extensive analysis of system resources, forecasted demands and probable hydrologic conditions to estimate the likelihood of reaching each shortage stage defined through 2010. The results of this analysis demonstrated the benefits of coordinated management of regional supply and storage resources. The expected occurrence of a Severe Shortage, calling for extraordinary conservation efforts and suspension of deliveries for certain interruptible consumptive uses, is four percent or less in most years and it never exceeds six percent. This equates to an expected shortage occurring once every 17 to 25 years. An Extreme Shortage was avoided in every simulation run. This analysis was not extended to years past 2010 because the supply situation at that time will vary considerably depending on the outcomes of the CALFED analysis.

Within IEUA's service, local retail agencies have adopted or are in the process of developing ordinances that address urban water shortage requirements. Table 3-17 summarizes the drought planning provisions approved by each agency.

Table 3-16: Resource Stage Anticipated Actions

Surplus Stage						Shortage Stages						
Surplus						Shortage				Severe Shortage		Extreme Shortage
5	4	3	2	1	Actions	1	2	3	4	5	6	7
					Make Cyclic Deliveries Fill Semitropic, Arvin-Edison Store supplies in SWP Carryover Fill Contractual GW Fill Monterey Res. Fill Eastside							
					Conduct Public Affairs Program							
					Take from Eastside Take from Semitropic, Arvin-Ed Cut LTS and Replen. Deliveries Take from Contractual GW Take from Monterey Res. Call for Extraordinary Conservation Reduce IAWP Deliveries Call Options Contracts Buy Spot Water Implement Allocation Plan							

Potential Simultaneous Actions

Table 3-17: Water Shortage Contingency Plan Check List

Agencies	Catastrophic Interruption Plan	Ordinance/ Resolution	Contingency Plan	Mandatory Prohibition	Penalties	Consumption Reduction Methods	Rationing Allocation Method	Reduction Measuring Mechanism	Emergency Fund
Chino	x	x	x	x	x	x	x	x	X
Chino Hills	x	x	x	X					
Fontana Water Company		x	x	x	x	x	x	X	
Monte Vista Water District	x	x	x	x	x	x	x	x	X
Ontario	X	x	x	x	x	x	x	x	x
Cucamonga County Water District	x	x	x	x	x	x		x	X
Upland	X	x	x	x	x	x	x	x	x
San Antonio Water Company	x		x			x		x	X

Because IEUA is both a water wholesale and a wastewater treatment utility, prolonged periods of wet or dry weather that cause imported water sales to decrease will not strongly impact the Agency's annual budget. When water sales decline, IEUA reduces its purchases from MWD. Income from wholesale water represents about 23% of IEUA's annual budget. Revenue shortfalls caused by abrupt, extended periods of reduced demand are more likely to impact retail water agencies within the service area.

3.5 PLANNING FOR A CATASTROPHE

Southern California's three imported water supplies (State Water Project, Colorado River Aqueduct and Los Angeles Aqueduct) cross the San Andreas Fault. Many other fault lines bisect major water facilities throughout the region. Experts consider it likely that one or more of these supplies will be disrupted in the event of a major earthquake.

MWD estimates that restoring service on any of these facilities following a catastrophic outage could take up to six months. This, in turn, could reduce annual deliveries by roughly up to 50% for MWD-supplied water. The UWMP requires agencies to consider the effect of a 50% cutback in water supplies. This corresponds approximately to the degree of cutback contemplated by Metropolitan's earthquake disruption scenario.

To safeguard the region from a catastrophic loss of water supply, MWD and its member agencies are making substantial investments in emergency storage and interconnections with adjacent water purveyors. MWD's emergency plan assumes that demands are reduced by 25% from the 2020 baseline demand forecast through extraordinary conservation, and the local water supplies are largely undisrupted. Metropolitan has reserved half of Diamond Valley Reservoir's 800,000 acre-feet of capacity for storage to meet such an emergency. With few exceptions, MWD asserts that it can deliver this emergency supply throughout its service area via gravity, thereby eliminating dependence on power sources that could also be disrupted by a major quake. Metropolitan has identified a water shortage plan (WSDM) that will guide MWD's management of available supplies and resources during the emergency.

IEUA is in the process of updating the 1996 emergency response plan for its service area. This updated plan will be completed by the end of 2000. IEUA expects to meet emergency demands within the region through extraordinary conservation and groundwater pumping measures. Multiple sources of power exist within the service area, making any electrical shortages a temporary disruption. In addition, IEUA is pursuing Mutual Aid Agreements between itself and its local retail agencies and is encouraging agreements between local retail agencies. A Mutual Aid Agreement for Natural or Man-Made Disasters was developed in 1999 between the City of Fontana and the Cucamonga County

Water District. Table 3-18 lists the array of emergency response plans for the service area.

Table 3-18: Current Emergency Response Plans

Title	Membership	Administration	Release of Liability	Reimbursement of Expenses	Notes
Master Mutual Aid	State of California; all counties, cities, and public agencies in California who have signed agreement. Signed by Gov. Earl Warren 1950.	For planning, California Office of Emergency Services (OES); Mutual Aid Regional Advisory Committee (MARC) at regional level. In emergency, Regional Emergency Operational Center (REOC) has major authority, reports to State Operations Center (SOC).	No	No – Unless otherwise expressly provided by agencies. Cost may be recoverable from state or federal govt., if declared disaster. State reimbursement of response-related personnel costs requires SEMS compliance.	City can call county Operational Area (OA); OA can call REOC (state); REOC can call state (SOC); SOC can call federal govt. for aid in emergency.
WARN	California water agencies (public or private) who have signed agreement	State Steering Committee (DOHS, CUEA, AWWA, and chairs of 5 Regional Committees). No provision in agreement for organizational relationships or administrative functions in time of emergency.	Yes	Yes	Any participating agency can request assistance directly from any other participating water agency. Agreement provides for arbitration of disputes.
MARS	Member Agencies of MWD who have signed agreement	MWD	Yes	Not specifically in agreement, but assumed	Offers communications on a dedicated radio system.
Plan Bulldozer	Construction equipment is available to any public agency in time of disaster for the initial emergency period when danger to life and to property exists.	Associated General Contractors of California (AGCC) & California OES.	Borrowing agency is responsible for payment for damage or loss to equipment. Contractor works under full control and direction of the borrowing agency.	Agency pays contractor. Method of setting prices holds costs to normal levels.	Contact District Coordinator, Alternate, or District Manager of AGCC to arrange use of equipment.
* Signers reserve the right to limit assistance offered in order to avoid overly depleting their own resources.					

CHAPTER 4
WATER CONSERVATION PROGRAM

This chapter provides a summary of the Inland Empire Utilities Agency's water conservation and public affairs activities. It addresses efforts currently underway and programs to help target future conservation efforts.

The Inland Empire Utilities Agency is a signatory to the Memorandum of Understanding (MOU) Regarding Urban Water Conservation in California and is a member of the California Urban Water Conservation Council (CUWCC). IEUA has made the State-mandated Best Management Practices (BMP's) the cornerstone of its conservation programs and a key element in the overall regional water resource management strategy for the region. Descriptions of the Agency's current water conservation programs are below.

The Agency plans to significantly expand the conservation programs offered within its service area to achieve and, if possible, exceed the state-mandated BMP's. By 2020, IEUA expects to reduce water demands by 24,000 acre-feet of water, or about 7%. During the next five years, IEUA anticipates increasing its funding of water conservation programs from an initial investment of $100,000 in Spring, 2001, to an annual investment of $300,000. Additional funding assistance will be sought from entities will be sought from entities such as MWD, State Water Resources Control Board, California Department of Water Resources and the U.S. Bureau of Reclamation.

4.1 BMP 1 – Water Survey Programs for Single-family Residential and Multi-family Residential Customers

IMPLEMENTATION DESCRIPTION: Since 1995, through a combination of efforts by IEUA and local agency staff, free residential indoor and outdoor water use surveys have been offered to single-family and multi-family customers. The agencies focused on the top 20% of water users in each sector, but also continued to offer surveys to any customer who so requested. Consistent with the MOU, it is the Agency's goal to work with its local agencies and complete surveys for 15% of the single-family and 15% of the multi-family connections over the next ten years.

Several of the local agency's computer services department have an inquiry program to sort billing records by water use within sectors so that letters offering the free surveys can be mailed to the highest water users. Single-family surveys take about two hours and are conducted by agency staff. During the interior portion of the survey, the staff measures flow rates of existing plumbing fixtures

and tests for toilet leakage with dye tablets; offers and installs showerheads and faucet aerators (if necessary); and provides information on ultra-low flush toilet replacement programs. During the exterior portion of the survey, the staff shows the customer the location of the water meter and how to read it; measures the landscaped areas, tests the sprinkler system for irrigation efficiency, and distribution uniformity; teaches the customer how to set the irrigation controller; develops a three-season irrigation schedule (based on soil type, evapotranspiration, and irrigation system), recommends sprinkler system repairs or improvements and provides brochures on water efficient landscaping, design and plants. Multi-family surveys are similar, but require coordination with owner/managers, tenants, and landscaping services.

METHODS TO EVALUATE EFFECTIVENESS: For each dwelling unit the staff completes a customer data form (including number of people per household, number of bathrooms, age of appliances, and lot and landscaped area square footage). The staff compares historic with current use for one year after the survey. If the reduction in water use is not in line with BMP water savings estimates, staff will offer the customer a follow up survey.

4.2 BMP 2 – Residential Plumbing Retrofits

IMPLEMENTATION DESCRIPTION: IEUA and its local agencies participate in the distribution of showerheads, aerators, and toilet tank leak detection tablets at community fairs, business expos, and during Water Awareness Month. At these events, the agencies also emphasize water use surveys and ultra-low flush toilet replacement programs.

IMPLEMENTATION SCHEDULE: IEUA and its local agencies will develop and implement a strategy to identify single-family and multi-family residences constructed prior to 1992, and distribute or directly install high-quality, low-flow showerheads, toilet displacement devices (as needed), toilet flappers (as needed) and faucet aerators as practical to residences requiring them. It is the Agency's goal to work with its local agencies until it can be demonstrated that 75% of single-family and multi-family residences are fitted with high-quality, low-flow showerheads. To date, actions required by this BMP have been included as part of BMP 1 and BMP 14.

METHODS TO EVALUATE EFFECTIVENESS: Refer to BMP 1 and 14.

4.3 BMP 3 – System Water Audits, Leak Detection and Repair

IMPLEMENTATION DESCRIPTION: The local retail water agencies maintain an active distribution system auditing program of their distribution system. The agencies incorporate their system water audit and leak detection, and meter calibration (production and customer meters) programs into their operations.

IMPLEMENTATION SCHEDULE: The local retail water agencies have permanently incorporated this BMP into their operations and maintenance procedures.

METHODS TO EVALUATE EFFECTIVENESS: The operations staff of the local retail water agencies annually review their data records to confirm that the unaccounted for water losses stay under 6%.

4.4 BMP 4 – Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

IMPLEMENTATION DESCRIPTION: The local retail water agencies are fully metered for all customer sectors, including separate meters for single-family residential, multi-family complexes, and all institutional facilities. Two of the seven IEUA local retail water agencies have an inclining multi-block rate structure. Several of the IEUA local retail water agencies have mixed-use accounts. A billing unit is one hundred cubic feet (748 gallons), commonly abbreviated HCF or CCF.

IMPLEMENTATION SCHEDULE: The local retail water agencies will continue to install and read meters on all new services, and will continue to conduct their meter calibration and replacement programs. IEUA and the local agencies will conduct a feasibility study examining incentive programs to move landscape water uses on mixed-use meters to dedicated landscape meters. This will be completed within two years.

METHODS TO EVALUATE EFFECTIVENESS: IEUA will work with its local agencies and conduct a periodic review of customer water use, comparing current water use per capita with historic data.

4.5 BMP 5 – Large Landscape Conservation Programs and Incentives

IMPLEMENTATION DESCRIPTION: IEUA and local agency staff offer large landscape irrigation surveys as requested. During the survey, staff calculates a water budget for the site - - the amount of water necessary for that site based on the size of the landscape and the climate. Local agency staff review landscape customers' water use. On-site follow-up evaluations are recommended for customers whose annual water use exceeds their water budget.

Another landscape and education effort that IEUA has sponsored is the Protector del Agua training course in landscape irrigation efficiency. The curriculum for Protector del Agua was created for MWD by professors at the Irrigation Training and Research Center at Cal Poly, San Luis Obispo. Targeted class participants are the smaller landscape maintenance personnel and public agency grounds keepers. IEUA and the local agencies have sponsored two classes in English and Spanish each year since 1997. Class size has averaged about thirty participants.

IMPLEMENTATION SCHEDULE: The Agency plans to work with its local agencies and implement a Landscape Performance Certification Program (developed by Municipal Water District of Orange County) to develop Landscape Irrigation Budgets (LIB) to accurately quantify landscape water savings. If the site irrigates at or below the LIB, the Landscape Contractor would be certified as an efficient irrigator. Both residential and commercial property management companies would be introduced to the program to facilitate participation by contractors and inform their clients of program benefits including lower water bills and healthier landscapes. Additionally, the Agency plans to work with its local agencies and develop a financial incentive program to encourage high water users to convert to more water efficient landscapes. Financial incentives may include: irrigation system conversions, automatic controllers, soil moisture sensors, automated CIMIS scheduling, and plants and other landscape materials.

METHODS TO EVALUATE EFFECTIVENESS: The Agency will continue to implement this BMP by encouraging annual review of customers' water use by the local agencies, and developing programs such as Landscape Irrigation Budgets to cost effectively achieve quantifiable water savings.

4.6 BMP 6 – High-Efficiency Washing Machine Rebate Programs

IMPLEMENTATION DESCRIPTION: IEUA and local agency staff have promoted the high-efficiency washing machine through consumer education and manufacturer incentives.

IMPLEMENTATION SCHEDULE: The Agency plans to work with its local agencies and energy service providers and implement an incentive program to encourage customers to purchase and install front-loading washing machines to reduce water and energy usage.

METHODS TO EVALUATE EFFECTIVENESS: The agencies will continue to implement this BMP. IEUA will work in cooperation with its local agencies and track water savings achieved by customers participating in the program.

4.7 BMP 7 – Public Information Programs

IMPLEMENTATION DESCRIPTION: IEUA promotes water conservation in coordination with its local agencies. The agencies distribute public information through bill inserts, brochures, community speakers, and many special events every year. With the advent of the World Wide Web, the agencies have established home pages which include information on water conservation, water recycling, and other water issues.

IMPLEMENTATION SCHEDULE: IEUA and the local agencies will continue to provide public information services and materials to remind the public about water and other resource issues.

METHODS TO EVALUATE EFFECTIVENESS: The agencies will monitor the commentary regarding the information provided.

4.8 BMP 8 – School Education Programs

IMPLEMENTATION DESCRIPTION: IEUA and its local agencies joined together in 1989, and formed the Water Education Water Awareness Committee (WEWAC). WEWAC works with the school districts to promote water conservation, acquaints children and adult consumers with the critical importance of water in our everyday lives, provides them with information on how to use water as efficiently as possible, and sponsor teachers' Project Water Education for Teachers (WET) training. Additionally, the agencies provide educational

materials for several grade levels, State water system maps, posters, workbooks, tours (for example, the surrounding water and wastewater treatment facilities), and water conservation poster contests. In addition, the agencies and IEUA encourage schoolteachers to adopt the highly regarded water education programs developed and supported by the MWD Water District. These programs, including "Admiral Splash" (4th grade), "California Smith, Water Detective" (6th grade), and "Water Politics" and "Water Quality" for the high school level, are widely used in the Inland Empire's service area.

IMPLEMENTATION SCHEDULE: WEWAC and the agencies will continue to implement this BMP at the levels described.

METHODS TO EVALUATE EFFECTIVENESS: The agencies will continue to monitor use and effectiveness of the programs, materials, and participation in water conservation activities.

4.9 BMP 9 – Conservation Programs for Commercial, Industrial and Institutional Accounts

IMPLEMENTATION DESCRIPTION: IEUA and the local agencies provide water use audits to any commercial/industrial/institutional (CII) customer who so requests. During 1996, three local agencies participated in MWD's CII Analyst Survey Program. The purpose of the program was to demonstrate to the local agencies and their consumers that through implementation of conservation activities, significant savings in water usage and reduced water costs could be achieved. Based on full implementation of the recommendations contained in the surveys, water demand in the three participating agencies would be reduced by 420 acre-feet annually.

IMPLEMENTATION SCHEDULE: IEUA continues to pursue implementation of the recommended efficiency measures with the local agencies.

METHODS TO EVALUATE EFFECTIVENESS: IEUA and the local agencies will continue to implement this BMP. IEUA will encourage the local agencies to establish baselines for their CII accounts and annually review their customers' water use. In addition, IEUA will seek funding and work with its local agencies to develop a customer targeting and marketing strategy to provide water use surveys and customer incentives to ensure that 10% of the CII accounts are surveyed within 10 years.

4.10 BMP 10 – Wholesale Agency Assistance Programs

IMPLEMENTATION DESCRIPTION: IEUA provides conservation-related technical support and information to their local agencies, including ULFT replacement; residential retrofits; commercial, industrial and institutional surveys; residential and large turf irrigation; and conservation-related rates and pricing.

IMPLEMENTATION SCHEDULE: During the next five years, IEUA shall work in cooperation with their local agencies to identify opportunities to encourage and reward cost-effective investments in long-term conservation shown to advance regional water supply reliability.

METHODS TO EVALUATE EFFECTIVENESS: The Agency will verify water savings achieved by each Agency-assisted BMP.

4.11 BMP 11 – Conservation Pricing

IMPLEMENTATION DESCRIPTION: Two of IEUA's seven local retail water agencies have an inclining multi-block rate structure. A billing unit is one hundred cubic feet (748 gallons), commonly abbreviated HCF or CCF. In addition, IEUA established a new rate for recycled water to provide an economic incentive for the use of the supply.

IMPLEMENTATION SCHEDULE: During the next five years, IEUA shall work with and encourage their local agencies to establish individualized customer water budgets, and establish price incentives for efficient water use.

METHODS TO EVALUATE EFFECTIVENESS: With the establishment of water budgets, the Agency will compare historical data to determine the increase in water use efficiency.

4.12 BMP 12 – Conservation Coordinator

IMPLEMENTATION DESCRIPTION: The Agency has a designated water conservation coordinator for the coordination and administration of conservation programs and BMP implementation.

IMPLEMENTATION SCHEDULE: The Agency will continue to implement this BMP.

METHODS TO EVALUATE EFFECTIVENESS: The Agency will survey its local agencies on the use and effectiveness of IEUA's programs, number of programs, materials, and participation in water conservation activities.

4.13 BMP 13 – Water Waste Prohibition

IMPLEMENTATION DESCRIPTION: IEUA supports the "No Waste" ordinances adopted by the local agencies. The local agencies actively enforce their ordinances. Enforcement includes educating customers, and if necessary, issuing warnings and citations for violations.

IMPLEMENTATION SCHEDULE: The local agencies have permanently incorporated this BMP into their ordinances

METHODS TO EVALUATE EFFECTIVENESS: The citations and violations are reported and compared annually to determine if there is a reduction in the number of violations.

4.14 BMP 14 – Residential ULFT Replacement Program

IMPLEMENTATION DESCRIPTION: The Agency's ultra-low flush toilet replacement program was initiated in 1993. This conservation effort includes direct installation, rebate, and high school distribution programs. In all cases, MWD co-sponsored the programs with the member agency, each paying an equal portion of the $120 per toilet cost. The high schools earned $15 for each toilet successfully distributed.

Some of the local agencies have restricted funding in the ULF toilet program to provide for one ULF toilet per household. The rationale is to replace the primary use toilet in the household and thereby achieve the greatest conservation savings. The Agency then receives the maximum benefit of water saved for each dollar spent.

IMPLEMENTATION SCHEDULE: The Agency will continue to implement this BMP until the local agency's goals are met.

METHODS TO EVALUATE EFFECTIVENESS: The Agency will calculate annual ULFT replacement program water savings using the CUWCC MOU Exhibit 6

methodology and water savings estimates. Exhibit 6 has become an industry standard for evaluation of ULFT replacement programs.

4.15 Recommended Water Conservation Program (Year 2000-2005)

Water Conservation, along with recycling, will be used to meet a substantial portion of increases in IEUA's service area water demands created by population growth. This goal will reduce IEUA's demand on imported water sources, and will provide a drought proof resource that is not subject to environmental restrictions and weather conditions.

IEUA is committed to conservation as a means to provide a sustainable source of water supply to its service area, and plans to expand its conservation program during the next five years.

As a means to encourage participation by its retail agencies, IEUA intends to divide its conservation program into five categories; support, residential, commercial/industrial/institutional, landscape, and school education. Specific programs associated with these categories and the intended years of implementation are shown in Table 4-1.

Support Measures

IEUA will provide technical assistance to develop water supplier billing records by customer class, and encourage its local agencies to implement conservation based rate structures. In an effort to harness community involvement and develop water-use awareness within the users, IEUA will distribute a wide range of information through brochures, advertising, community presentations, and establish a Water Use Efficient Steering Committee.

Within IEUA's service area, over $1.5 million has been invested in water conservation over the past nine years. IEUA plans to invest $100,000 - $300,000 annually for the next five years. This commitment is proposed to be financed through a modest increase on the surcharge on imported water sales. Outside sources for funding will be sought to complement the Agency's resources, e.g., MWD Conservation Credits Program, Outside Agency Co-Funding, and grants and loans from a variety of sources such as the Environmental Protection Agency, the U.S. Bureau of Reclamation; CalFed, and State Water Bond (Proposition 13).

Residential

The ULF Toilet Distribution Program began in 1991, and has blossomed over the past nine years. Water savings associated with the 13,000 ULFT's installed to date is equal to an estimated 521 acre-feet annually, and $181,829 in avoided water purchases. IEUA plans to continue this program and retrofit an additional 15,000 toilets over the next five years.

In cooperation with its local agencies, IEUA plans to promote a two-year rebate program for the purchase and installation of High Efficiency Clothes Washers (HECW) that save water and energy. This commitment is subject to funding available through regional or municipal energy providers, and would include two different tiers of rebates based on different levels of energy savings per HECW.

Over the next five years, IEUA plans to work with its local agencies and annually perform 500 Home Water Surveys to promote residential water conservation measures. The surveys will focus on single-family residential residences and multi-family units constructed prior to 1992.

Commercial/Industrial/Institutional

Within the IEUA service area, this category represents approximately 20% of the total water demand. In cooperation with its local agencies, IEUA plans to expand its efforts through technical assistance, water audits, plumbing retrofits, and financial incentives to make it cost-effective for business and industry to participate in programs that reduce water use. IEUA will also be participating in MWD's regional commercial/industrial/institutional (CII) water conservation rebate program.

Landscape

Recognizing that outdoor irrigation is the single largest water use, IEUA plans to introduce new programs to encourage landscape irrigation efficiency. In cooperation with its local agencies, it is IEUA's goal over the next five years to reduce consumption by 10 percent from 1997 levels. With a CalFed grant, IEUA will lead a collaborative landscape planning process within the Chino Basin process to demonstrate how water use efficiencies beyond Best Management Practices and multiple environmental economic benefits can be achieved. In addition, IEUA will implement a Landscape Performance Certification Program, sponsor landscape irrigation education programs, provide financial incentives to encourage water efficient landscapes, and conduct a 2-year evapotranspiration-based irrigation controller pilot program.

School Education

In cooperation with its local agencies, IEUA plans to expand its efforts in promoting conservation-related educational programs to grades K – 12 by encouraging more schoolteachers to adopt the highly regarded water education programs developed and supported by the MWD.

Elements of IEUA's Long-Term Water Conservation Program

1) Participate (IEUA and the retail member agencies) in regional conservation efforts developed by MWD, including the established Conservation Credits Program (for co-funding of specific projects), and conservation pilot projects;

2) Promote conservation based rate structures among the retail agencies;

3) Increase the involvement of legislators, city councils, business interests and others to help ensure a coordinated approach to regional and statewide water issues;

4) Develop and implement regional and local conservation programs that meet BMP goals on a cost effective pooled basis.

5) Establish a Water Use Efficiency Steering Committee to help emphasize the multiple benefits efforts in the IEUA service area.

6) Acquire grant funding from a variety of sources including the MWD , Environmental Protection Agency, US Bureau of Reclamation and others to offset local funding requirements for local and regional BMP programs.

7) Assist in the development and implementation of local retail agency BMP based water use efficiency programs including program design, acquisition of grant funding and implementation reporting to grant funding sources.

8) Develop and implement region-wide BMP based water use efficiency programs including requests for proposals, contract management, implementation reporting to retail agencies and grant funding sources.

9) Implement the Landscape Performance Certification program to develop Landscape Irrigation Budgets (LIBs) to accurately quantify landscape water savings.

10) Report IEUA BMP implementation to the California Urban Water Conservation Council and assist member agencies to do the same.

11) Monitor and conduct studies of programs regarding water savings, water recycling and new technologies.

12) Respond to member agency requests for presentations to their Boards and customers to advance water use efficiency-related activities. Encourage member agencies to adopt BMPs for urban water use efficiency.

13) Focus significant attention on developing programs to cost effectively achieve quantifiable water savings and other measurable benefits and comply with BMP goals, including Commercial, Industrial and Institutional (CII) Customer Incentive Programs, Large Landscape Irrigation Budgets, Residential ET Irrigation Controller Pilot Program, and High-Efficiency Washing Machine Rebate Programs.

Table 4-1: Conservation Program Categories

	Calendar Year				
	2001	2002	2003	2004	2005
Conservation Programs					
Pricing					
Technical assistance to develop water supplier billing records by customer class	X	X	X		
Conservation based rate structures		X	X	X	X
Public Information					
Water Use Efficiency Committee		X	X	X	X
Speakers Bureau	X	X	X	X	X
Advertising		X	X	X	X
Brochures			X		X
Community Involvement	X	X	X	X	X
Funding					
Grants and loans from a variety of sources, such as MWD , Environmental Protection Agency, US Bureau of Reclamation, CalFed, and Prop 13.	X	X	X	X	X
Surcharge on imported water sales	X	X	X	X	X
RESIDENTIAL					
High efficiency washing machine rebate program		X	X		
Home Water Surveys	X	X	X	X	X
Ultra Low Flush Toilet (ULFT) Program	X	X	X	X	X
Showerhead Installation Program		X	X		
COMMERCIAL/INDUSTRIAL/INSTITUTIONAL					
Commercial ULFT Program		X	X	X	X
Interior and exterior water audits		X	X	X	X
Technical Assistance Program	X	X	X	X	X
Targeted Literature Mailing		X	X	X	X
Financial incentives to encourage water efficiency		X	X	X	X
LANDSCAPE					
Landscape Performance Certification Program		X	X	X	X
Protector del Agua – English and Spanish Language Workshops	X	X	X	X	X
Large Turf Audit Training		X		X	
Financial incentives to encourage water efficient landscapes			X	X	X
Evapotranspiration-based Irrigation Controller Program – Pilot		X	X		
SCHOOL EDUCATION					
Water Education Water Awareness Committee	X	X	X	X	X
Education programs developed by MWD Water District	X	X	X	X	X
Tours of water and wastewater treatment facilities	X	X	X	X	X
Learning to be Waterwise® Grades 4 – 8		X	X		

Table 4-2: Conservation Programs within IEUA

1995-2000

Local Retail Agency	Program Name or Description
City of Chino	Ultra Low Flush Toilet Retrofit
	School Education
	Commercial/Industrial/Institutional Water Survey
City of Chino Hills	Ultra Low Flush Toilet Retrofit
	Protector del Aqua
	School Education
	Public Education
Cucamonga County Water District	Ultra Low Flush Toilet Retrofit
	Residential Indoor/Outdoor Water Survey
	School Education
	Commercial/Industrial/Institutional Water Survey
	Public Education
Fontana Water Company	Primary School Education
	Residential Indoor/Outdoor Water Survey
	Public Information Program
Monte Vista Water District	Ultra Low Flush Toilet Retrofit
	Landscape Water Audit
	Commercial/Industrial/Institutional Water Survey
	School Education
	Public Education
City of Ontario	Ultra Low Flush Toilet Retrofit
	Commercial/Industrial/Institutional Water Survey
City of Upland	Ultra Low Flush Toilet Retrofit
	School Education
	Residential Indoor/Outdoor Water Survey
San Antonio Water Company	Public Education

CHAPTER 5
RECYCLED WATER PROGRAM

This chapter provides a summary of Inland Empire Utility Agency's regional program for recycled water. It describes a plan for optimizing the use of recycled water within IEUA's service area.

Water recycling is a critical component of the water resources management strategy for the region. Reuse of highly treated tertiary water is the only new source of water available to the meet the service area's growing water demand. Recycled water is a proven technology, and will provide a more dependable local supply of water as well as reduce the likelihood of water rationing during droughts. In addition, use of recycled water for groundwater recharge is an integral part of the "Peace Agreement" of the Chino Basin Optimum Basin Management Program. Region-wide implementation of recycled water projects is vital to the protection and enhancement of the safe yield and water quality of the Chino Groundwater Basin.

IEUA plans to significantly expand recycled water distribution infrastructure so that recycled water can be delivered to all local retail agencies. By 2020, over 70,000 acre-feet of recycled water is expected to be available within the region. IEUA's goal is to fully utilize this recycled water supply for local beneficial uses. When blended with storm water and imported water during wet years, this water will help replenish groundwater supplies within the Chino Basin. In addition, maximum use of recycled water could reduce dependency on imported water within the Chino Basin by 50,000 acre-feet at the present rate of flow and, by more than 70,000 acre-feet within twenty years.

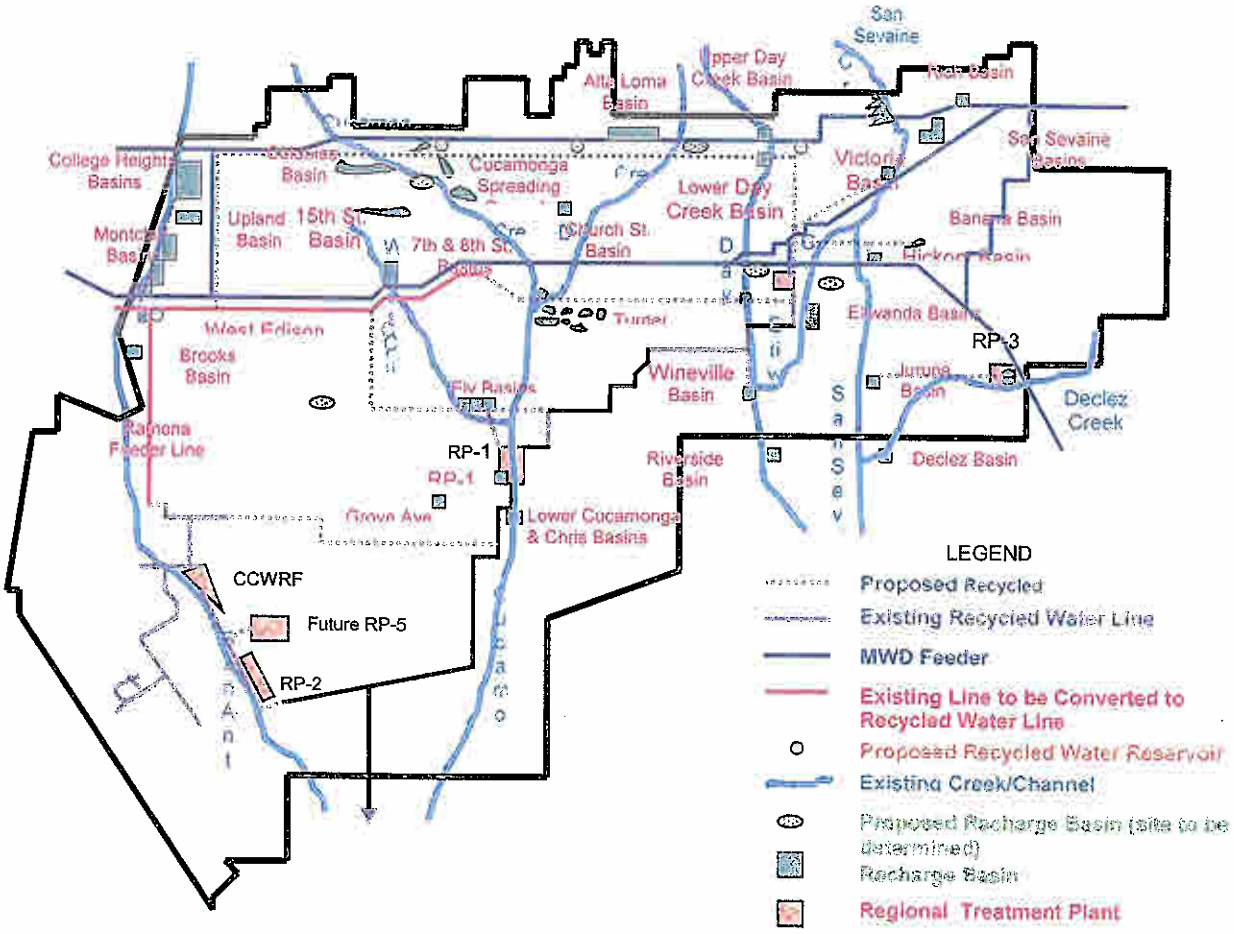
5.1 WASTEWATER COLLECTION AND TREATMENT WITHIN IEUA'S SERVICE AREA

IEUA manages the Regional Sewage Service System within its 242-square miles service area to collect, treat and dispose of wastewater delivered by contracting local agencies. IEUA's facilities serve seven contracting agencies: the cities of Chino, Chino Hills, Fontana, Montclair, Ontario, Ranch Cucamonga and Upland. A system of regional trunk and interceptor sewers convey sewage to regional wastewater treatment plants which are all owned and operated by IEUA. Local sewer systems are owned and operated by local agencies.

IEUA runs four regional wastewater treatment plants: (Regional Plant No. 1 (RP-1), Regional Plan No. 2 (RP-2), Regional Plant No. 4 (RP-4), and the Carbon Canyon Water Reclamation Facility (CCWRF). Construction of a fifth water treatment facility, designated Regional Plant No. 5 (RP-5), started in 2000

and is expected to be completed within two years. Figure 5-1 shows the location of regional wastewater treatment plants.

Figure 5-1: Recycled Water Distribution Lines and Regional Plants



REGIONAL RECYCLED WATER DISTRIBUTION SYSTEM FLEXIBILITY AND RELIABILITY

The configuration for the Regional Recycled Water Distribution System is planned as a looped, interconnected system to ensure supply reliability to customers and to maximize the delivery flexibility to recharge facilities.

As shown in Table 5.1, the combined production of the current wastewater treatment plants is 64,800 acre-feet of water per year (57.9 million gallons per day (mgd)). By 2020, the plants are expected to produce 88,700 acre-feet of water (79.2 mgd),

Table 5-1: Potential Recycled Water Supply

Regional Plants	Year 2000		Year 2010		Year 2020	
	Plant Capacity (mgd)	Plant Flow (AFY)	Plant Capacity (mgd)	Plant Flow (AFY)	Plant Capacity (mgd)	Plant Flow (AFY)
CCWRF	10.0	11,200	10.5	11,424	10.2	11,424
RP-1	40.0	44,800	44.0	49,279	44.0	49,278
RP-2*	4.4	4,920	0.0	0	0.0	0
RP-4	3.5	3,920	7.0	7,840	7.0	7,840
RP-5	0.0	0	15.0	8,944	18.0	20,160
Total	**57.9**	**64,840**	**76.52**	**77,487**	**79.2**	**88,702**

*RP-2 due for phase-out when RP-5 comes on line 2001/2002

All of IEUA's wastewater treatment plants produce water that meets or exceeds the State of California Department of Health Services (DHS) Title 22 requirements for the use of recycled water. Schematic diagrams showing wastewater treatment process for each of the regional plants are included in the Appendix F. All wastewater goes through the following treatment process before being discharged or reused:

1. Preliminary Treatment (bar screens and grit removal);
2. Primary Treatment (Primary Settling Tank)
3. Secondary Treatment (Aeration Basin, Coagulation, and Secondary Clarifying Tank)
4. Tertiary Treatment and Disinfection (Sand Filters and Chlorine Contact Tanks or Ultraviolet Disinfection).

In addition, IEUA maintains an EPA/State of California approved industrial pre-treatment program for industrial discharges to the sewage system that requires dischargers to comply with water quality objectives and to submit periodic monitoring reports to the Agency. The result of IEUA's treatment process is a supply of highly polished tertiary-treated water suitable for irrigation, industrial water supply, groundwater recharge, environmental enhancement and unrestricted recreation use such as boating and fishing.

IEUA's Regional Wastewater Treatment Plants

RP-1

Regional Treatment Plant No. 1 began operation in 1948 as a joint powers agreement between the cities of Ontario and Upland. IEUA, then known as Chino Basin Municipal Water District, purchased RP-1 in January 1973. Several major expansions have been made, bringing the facility to its current capacity of 44 MGD. The facility serves all or part of the cities of Ontario, Rancho Cucamonga, Upland, Montclair, Fontana and an unincorporated area of San Bernardino County.

RP-2

Regional Treatment Plant No. 2 began operation in 1960. It has been expanded to meet the increasingly stringent requirements for water quality. This facility treats 5 MGD and serves the cities of Chino and Chino Hills.

CCWRF

The Carbon Canyon Wastewater Reclamation Facility, in operation since 1992, works in tandem with RP-2. The liquid portion of the effluent is treated at the CCWRF, while solids are treated at RP-2. CCWRF serves the cities of Chino, Chino Hills, Montclair and Upland.

RP-4

Regional Treatment Plant No. 4 was completed in 1997. This facility has a 7 MGD capacity and serves Rancho Cucamonga and unincorporated areas in San Bernardino County.

RP-5

Regional Treatment Plant No. 5 is under construction. It will be completed by the year 2002 and will treat 15 MGD.

California Water Recycling Policy

Commencing with Chapter 7, Article 1, (Subsection 13500 et seq.) of Porter-Cologne, is known as the "Water Recycling Law," and is stated, in part, as follows (Subsection 13511):

"The legislature finds and declares that a substantial portion of the future water requirements of this state may be economically met by beneficial use of recycled water.

The legislature further finds and declares that the utilization of recycling water by local communities for domestic, agricultural, industrial, recreational, and fish and wildlife purposes will contribute to the peace, health, safety, and welfare of the people of the state. Use of recycled water constitutes the development of "new basic water supplies".....

5.2 EXISTING RECYCLED WATER PROGRAM

Currently, IEUA produces about 67,000 acre-feet (60 MGD) of excellent quality tertiary treated recycled water annually. In 2000, recycled water use totaled 5,800 acre-feet, of which 5,300 acre-feet was used for outdoor irrigation and 500 acre-feet for groundwater recharge (the Ely Basin project). The remaining supply of treated water, over 60,000 acre-feet, was discharged to the Santa Ana River.

As shown in Table 5-2, the recycled water used in 2000 came from RP-1/RP-4 and the Carbon Canon Wastewater Reclamation Facility. A transmission line connects RP-1 and RP-4 and serves as part of the backbone system for recycled water use in the northern portion of IEUA's service area. This system provides water for irrigation of parks and golf courses. CCWRF's distribution system delivers water through 21,400 linear feet of pipe, to the cities of Chino and Chino Hills. Currently, 37 users are connected to the recycled water distribution system and are taking deliveries of recycled water. Table 5-3 identifies the current users of recycled water.

Table 5-2: Effluent vs. Recycled Water Usage

Year	RP-1/RP-4		RP-2		CCWRF	
	Effluent Flow	Recycled Water Usage	Effluent Flow	Recycled Water Usage	Effluent Flow	Recycled Water Usage
1982-1983	20,790	1,550	4,290			
1983-1984	20,950	1,080	3,950			
1984-1985	25,160	1,267	4,280			
1985-1986	28,240	1,222	2,660			
1986-1987	27,160	1,306	5,000			
1987-1988	31,290	2,110	5,500			
1988-1989	35,510	2,038	6,180			
1989-1990	34,760	1,961	5,730			
1990-1991	36,840	1,792	6,100			
1991-1992	40,360	1,909	5,780		1,550	
1992-1993	41,510	1,205	5,640		4,720	
1993-1994	37,310	1,978	5,430		7,010	
1994-1995	39,680	3,794	5,360		8,690	
1995-1996	39,590	2,292	4,810		9,060	
1996-1997	39,940	2,075	4,790		9,750	
1997-1998	44,940	1,260	4,969		9,264	
1998-1999	43,354	2,444	5,345		9,534	100
1999-2000	47,269	3,089	4,737		9,310	2,211
Unit of Measure: Acre-Feet						

STATEMENT OF REUSE

"Recycled water can be used or a number of applications including Irrigation, Industrial Processes, Groundwater Recharge, and Environmental Enhancement. The goal of the IEUA is to achieve maximum reuse of all available recycled water."

5.3 FUTURE RECYCLED WATER PROGRAM

Available recycled water supplies are projected to exceed 100,000 acre-feet per year by 2020. In conformance with the 1969 Orange County Judgement, 17,000 acre-feet per year of water will be discharged to the Santa Ana River. This means that more than 75,000 acre-feet of water will be available for beneficial use within the IEUA service area in twenty years.

IEUA's overall goal is to achieve maximum reuse of all available recycled water. In the short term, the primary focus of IEUA's recycled water program will be the connection of industrial and landscape customers and development of facilities to ensure cost-effective delivery of recycled water to groundwater recharge spreading sites. In the long term, IEUA seeks to construct a "looped" distribution system that will interconnect the IEUA water reclamation plants, ensure direct supply reliability to customers and maximize the flexibility to recharge all surplus recycled water in flood control spreading grounds.

The current distribution system is comprised of two separate pipelines that have been constructed to serve IEUA's wastewater treatment plants. Recognizing that separate pumping stations, independent pressure zones, and multiple control interfaces would ultimately lead to overly complex and costly operations, the concept of a large, fully integrated (regional) distribution system was developed. As shown in Figure 5.2, the existing and proposed facilities will provide the ability to provide recycled water to major industrial and municipal users while delivering recycled water, storm water and imported water to groundwater recharge basins throughout IEUA's service area.

Potential recycled water uses and customers have been identified through a series of studies, including a 1993 report by Montgomery-Watson Consulting Engineers, a 1998 study update by the consulting firm of Black and Veatch, and surveys performed by IEUA staff. As shown in Table 5-4, landscape and industrial customer demand exceeds 28,000 acre-feet per year by 2010 and 42,000 acre-feet by 2020.

Table 5-3: Current Recycled Water Users

Agencies	Recycled Water User	Type
IEUA	Ely Basin	Groundwater Recharge
	Construction Sites	Dust Control
San Bernardino County	El Prado Golf Course	Landscape Irrigation
	Prado Regional Park Lake	Landscape Irrigation
City of Ontario	Westwind Park	Landscape Irrigation
	Whispering Lakes Golf Course	Landscape Irrigation
	60 Freeway Landscaping North of RP-1	Landscape Irrigation
City of Chino	All Coast Forest	Process
	Bandag	Landscape Irrigation
	Bevles Company Inc	Landscape Irrigation
	California Engineering	Landscape Irrigation
	City of Chino	Landscape Irrigation
	City of Chino, Ayala Park	Landscape Irrigation
	Colonial Electric	Landscape Irrigation
	Commerce Construction	Landscape Irrigation
	Edison Avenue Partners	Landscape Irrigation
	Edison Avenue Properties	Landscape Irrigation
	Farrand Enterprises	Landscape Irrigation
	Fifth Day Chino Industrial Commons	Construction
	Garcia Farms	Agricultural Irrigation
	Garrett Concrete (2 connections)	Landscape Irrigation
	Gro-Power Inc.	Landscape Irrigation
	Hayward Industries	Industrial
	Majestic Spectrum	Construction
	National Confectionary Brands	Landscape Irrigation
	Norco Injection Molding	Landscape Irrigation
	Rapid Industrial Plastics	Landscape Irrigation
	San Bernardino County Fairground	Construction
	STC Plastics	Landscape Irrigation
	Trus-Joist Corporation	Landscape Irrigation
	Yorba Industrial Center	Landscape Irrigation
City of Chino Hills	Higgins Ranch Community	Landscape Irrigation
	Los Serranos Golf Course	Landscape Irrigation
	Butterfield Fire Station	Landscape Irrigation
	Chino Retail, LLC	Landscape Irrigation
	Sundance HOA	Landscape Irrigation
	City of Chino Hills	Landscape Irrigation
	Fairfield Housing Development	Landscape Irrigation

Table 5-4: Regional Recycled Water Program through 2020

Category	***Total Use***
Groundwater Recharge	28,000
Industrial	12,500
Landscape	29,400
Agricultural	100
Total	70,000
Units: Acre-feet per year	

Recycled water used for groundwater recharge will be blended with MWD's imported State Water Project supplies and local storm water, consistent with the water quality requirements of the Chino Basin Watermaster's Optimum Basin Management Plan, Santa Ana Regional Water Quality Control Board's Basin Plan and the State of California Department of Health Services (DHS). Depending upon modeling of aquifer retention time, the distance to the nearest well, and up-gradient groundwater migration data, the blending ratio will be calculated to achieve the 20% target set by DHS. Current estimates are that up to 40,000 acre-feet per year of recycled water could be recharged at spreading grounds throughout the Chino Basin. Additional facilities, including the construction of new transmission lines for imported water from the MWD Rialto Pipeline, the development of new groundwater recharge basins, and the installation of additional pumping capacity, will be needed to achieve water recycling goals for the region. As shown in Table 5-5, projected recharge by the year 2020 is conservatively estimated at 28,000 acre-feet per year.

Table 5-5: Regional Recycled Water Program Goals by 2020

	Recycled Water
Projected Production	100,000
Prado Requirement	17,000
Net Projected Available	***83,000***
Projected 2020 Recycling	42,000
Projected 2020 Recharge	28,000
Total Projected Utilization	***70,000***
Units: Acre-feet per year	

All future direct use (landscape and industrial customers) of recycled water will be given priority service over recharge deliveries. Recharge will be credited based upon the annual flow contributions for all contracting agencies; it will not matter which reclamation plant supplies the recycled water for recharge.

Figure 5-1and Table 5-4 provide projections for total regional recycled water usage between 2000 and 2020.

Figure 5-2: Projected Recycled Water Usage

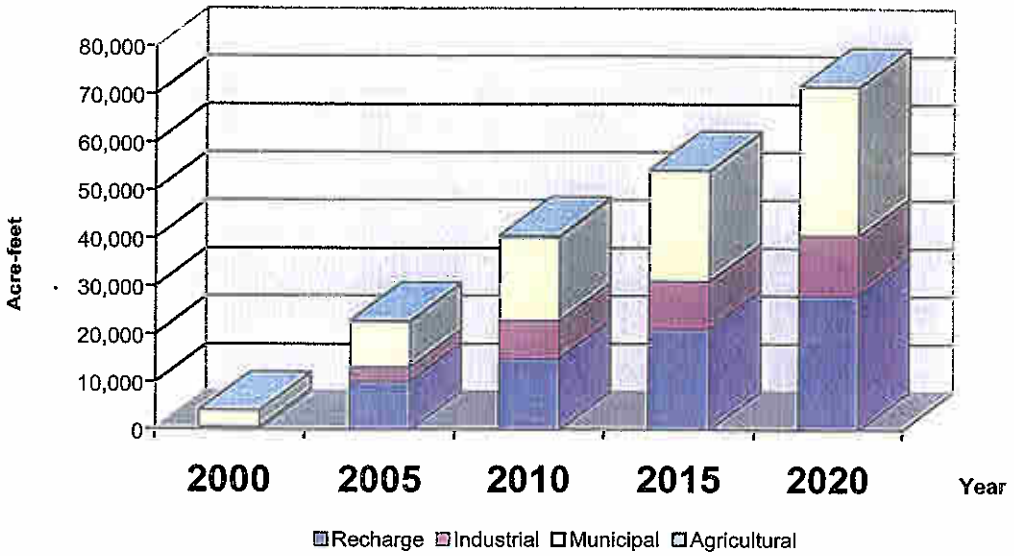


Table 5-6: Current and Projected Recycled Water Municipal Demand*

Agencies	2000	2005	2010	2015	2020
Chino	600	1,000	3,400	5,200	9,050
Chino Hills	215	2,100	3,100	3,600	4,450
Ontario	700	6,000	11,000	11,500	12,000
Upland	735	800	900	1,000	1,200
County of San Bernardino	1,350	2,000	3,000	3,000	3,000
Cucamonga County	0	1,800	4,000	7,000	9,000
Monte Vista Water District	0	100	500	800	1,000
Fontana	0	1,000	2,600	3,400	4,000
Total	**3,600**	**14,800**	**28,500**	**35,500**	**42,500**
Units of Measure: Acre-feet/Year					

*Municipal demand does not include groundwater recharge using recycled water

5.4 TECHNICAL AND ECONOMIC FEASIBILITY OF SERVING RECYCLED WATER

Excellent quality tertiary treated water is currently available to IEUA's service area from existing wastewater treatment plants. The technical and economic feasibility of serving this recycled water depends upon the identification of end users and the construction of additional distribution facilities, recharge basins, and groundwater pumps and desalters to provide water deliveries.

Implementing the IEUA Regional Recycled Water Distribution System is currently anticipated to involve a phased approach that will optimize the amount of recycled water use. Table 5-7 summarizes the projects that will need to be constructed. The projects listed in the top portion of the summary are considered to be the "backbone" of the Regional System. Listed in the center section of the summary are the groundwater recharge projects. The center section also lists the groundwater monitoring wells that will likely be required for the ongoing operation of the percolation basins.

Capital funding needs for the Regional Recycled Water Distribution System are estimated at $80 to $100 million over the next ten years. This capital improvement budget will be presented to the IEUA Board of Directors as part of the Capital Project Budget cycle for 2001 and will be included in IEUA's Ten Year Capital Improvement Plan. Regional Connection Fees (and potentially IEUA revenue bonds) are primary sources for capital funding. However, supplemental funding is being sought. This includes grant funding from California's Proposition 13--Santa Ana River Watershed Funds ($19 million awarded in 2000 for Phase I, additional funds will be sought for Phase II), California's Proposition 13—State Water Resources Control Board water recycling grant program ($15-$20 million, applications pending), and the U.S. Bureau of Reclamation Title XVI Grants ($20 million for water recycling and $50 million for construction of desalters, Congressional authorization pending).

As more supplemental funding becomes available, the recycled water infrastructure becomes more cost-effective to construct. IEUA staff evaluated the capital funding needs for the Recycled Water Distribution System and determined that it can be funded through the Regional Program without an additional increase in the Regional Capacity Reimbursement Amount (connection fee). This provides a significant opportunity for local retail agencies to implement the OBMP (capital costs) without impacting IEUA's water and sewer rates and charges.

In fact, recycled water sales could potentially lower water and sewer rates by 20% to 30% with the full implementation of the Regional Recycled Water System. Recycled water sales revenue, combined with the MWD Local Projects Program

(LPP/LRP) rebate, could generate sufficient revenue to offset projected water and sewer rate increases for the regional program.

Key Recycled Water Studies and Reports

- *1981 – Metcalf & Eddie / L.D. King*
- *1991 – J.M. Montgomery*
- *1995 – Camp, Dresser, and Mckee*
- *1996 – Black & Veatch*
- *2000 – Optimum Basin Management Plan*
- *2000 – OBMP Program EIR*
- *2000 – Peace Agreement*

Table 5-7: Proposed Recycled Water Projects

PHASE I

Regional Recycled Water Recharge System (2000-2002) - SAWPA

Priority		Total Project Cost
1	RP-1/RP-4 Recycled Water Pump Station	$ 6,055,000
1	Fourth Street Regional Pipeline	8,658,000
1	West Edison Regional Pipeline	2,000,000
2	North Etiwanda Basin Regional Pipeline	5,544,000
1	Whittram Avenue Regional Pipeline	2,201,000
1	Wineville Avenue Regional Pipeline	2,307,000
1	Interim Groundwater Recharge Project at Etiwanda Conservation Basins	300,000
		$ 27,065,000

Groundwater Recharge Basin Projects (2000-2002) - SAWPA

Priority		Zone	Refurbishing	RW Piping	IW Piping	SW Piping	Total project Cost
3	Ely Basin No. 3	2	$ -	$ 9,136	$ 227,107	$ 97,891	$ 334,000
1	College Heights Basins	1	$ 3,414,429	$ 276,705	$ 1,914,743	$ 1,587,135	$ 7,193,000
1	Brooks Street Basins	1	161,469	71,787	946,277	1,152,500	$ 2,332,000
3	Montclair Basins	1	1,108,597	850,997	1,914,743	798,789	$ 4,673,000
2	7th & 8th Street Basins	1	267,568	315,861	2,465,542	280,620	$ 3,330,000
1	Upland Basin	1	545,241	733,528	1,914,743	663,047	$ 3,856,000
1	Turner Basin No.1	2	1,420,068	71,787	335,439	288,451	$ 2,115,000
1	Turner Basins No. 2, 3/4	2	742,664	224,496	353,712	32,630	$ 1,354,000
3	Hickory Basin	2	195,782	71,787	1,969,562	745,275	$ 2,982,000
2	Victoria Basin	2	195,782	71,787	227,107	941,056	$ 1,436,000
1	Banana Basin	3	195,782	71,787	1,876,892	745,275	$ 2,889,000
1	Wineville Basin	3	261,042	163,151	1,914,743	937,141	$ 3,277,000
1	Etiwanda Conservation Basins	3	97,891	-	625,196	288,451	$ 1,012,000
2	Jurupa Basin	3	195,782	619,975	172,288	937,141	$ 1,925,000
2	RP-1 Basin	2	261,042	71,787	227,107	717,866	$ 1,278,000
1	RP-3 Basin (storm/imported water)	3	1,174,689	-	3,774,667	595,176	$ 5,543,000
	Sub-Total						$ 45,529,000
1	Groundwater Monitoring Wells (18 wells)						3,150,000
	Feasibility Study (including CEQA documents)						
1	Zone 1						$ 250,000
1	Zone 2 (Excluding Ely Basin No. 3)						$ 250,000
1	Zone 3 (Excluding Etiwanda & Jurupa Basin)						$ 175,000
							$ 49,354,000

Water Supply, Reliability, and Infrastructure (2000-2002) - SWRCB

Priority		Total Project Cost
1	Pine Avenue Intertie Pipeline	$ 1,066,000
1	Purchase Romana Feeder Line & Connections	$ 5,296,000
1	TP-1 Outfall Extension Valve Replacements (3 valves)	$ 117,000
2	Recycled Water System Fire Hydrans & Meters (20 F.H.'s & 10 meters)	$ 181,000
1	RP-1 Chlorine Contact Basin Expansion	6,400,000
1	CCWRF - Recycled Water Distribution System Expansion	878,000
1	Fourth Street Recycled Water Storage Reservoir (2 MG) & Pump Station	3,200,000
1	Recycled Water System for Etiwanda Power Plant	880,000
		$ 18,018,000
	PHASE I TOTAL	**$ 94,437,000**

5.5 ENCOURAGING RECYCLED WATER USE

At a regional level, recent studies of water recycling opportunities within Southern California provide a context for promoting the development of water recycling plans. The establishment of new supplemental funding sources through federal, state and regional programs now provide significant financial incentives for local agencies to develop and make use of recycled water. Finally, IEUA is organizing a regional program to encourage water reuse within its service area. The following sections describe in greater detail the activities that are helping to promote the development of recycled water in the Southland.

Regional Planning for Optimal Recycling

In 1993, the United States Bureau of Reclamation, in conjunction with MWD, California Department of Water Resources, Central Basin MWD and West Basin MWD, City of Los Angeles, City of San Diego, San Diego County Water Authority, Santa Ana Watershed Project Authority, and the South Orange County Reclamation Authority initiated a study to evaluate the feasibility of regional water reclamation in Southern California. The Southern California Comprehensive Water Recycling and Reuse Study (SCCWRRS) planning effort is designed to take advantage of potential surpluses in recycled water that could serve needs in areas throughout the region.

The study consisted of a 3-part, 6-year comprehensive effort to identify a regional reclamation opportunities and constraints within Southern California. The ultimate goal of the SCCWRRS project was to promote efficient use of total water resources by increasing the use of recycled water. SCCWRRS generated baseline information on total water supply and demand, potential recycled water supply and demand, environmental enhancement opportunities, and groundwater recharge opportunities. An allocation and distribution model was developed to evaluate various regional recycled water alternatives.

The preliminary results of the SCCWRRS study is that a regional water recycling system that spans the entire study area does not appear practical at this time. However, sub-regional systems warrant further evaluation. The study recommended combining sub-regions into geographic regions, to facilitate the development of reclamation systems that meet regional recycling goals while preserving the benefits of sub-regional analysis, which include the following:

- Maximize the opportunities for area-wide water recycling systems.
- Encompass areas with similar regulatory requirements for basin plans and water quality.
- Avoid conveyance and water quality improvement costs of connecting coastal supplies with inland demands.

The SCCWRRS study will continue and will focus on the examination of regional water recycling systems on three levels: (1) Reclamation conveyance system that lies within the boundaries of one agency; (2) Inter-jurisdictional projects that typically combine Level 1 projects with additional reclamation demands and supplies; and, (3) A combination of multiple Level 2 projects to establish a more comprehensive water recycling system that may encompass one or more counties. The study area has been divided into four geographic regions with boundaries that approximate county lines and hydrologic basin definitions:

- Inland Empire: Portions of San Bernardino and Riverside Counties and the Upper Santa Ana River Watershed.
- Los Angeles Basin: Los Angeles County and the Los Angeles River Watershed.
- San Diego County:
- Orange County: Orange County and the Lower Santa Ana River Watershed

Supplemental Funding Sources

The implementation of a recycled water project involves a substantial up-front capital investment for planning studies, environmental impact reports, engineering design and construction before there is any product to sell. Most recycled projects require the issuance of revenue bonds or other long-term debt instruments such as certificates of participation to spread the up-front capital costs over a 20-30 year period. For some water agencies, these capital costs exceed the short term expense of purchasing additional imported water supplies from MWD even though a regional analysis shows that net benefits are far greater than direct costs, as shown in Table 5-8.

Table 5-8: Costs and Benefits by Economic Perspective

Direct Costs and Benefits	Perspective (x $1,000)		
	Total Society	Southern California Region	All Agencies
Capital O&M Costs	377,200	394,100	372,400
Revenue Cost	-	-	1,900,100
Avoided Capital O&M; Salvage	944,900	1,062,200	1,062,200
Revenue Benefit	-	-	1,834,500
Net Benefit	**567,700**	**668,100**	**624,200**

*Source: table 14-6, Short Term Implementation Plan – Southern California Comprehensive Water Reclamation and Reuse study

The availability of outside supplemental funding provides a critical incentive for the development of recycled water projects. Potential sources of funding include the following:

State of California Proposition 13 Water Bond. Approved in March 2000, the proceeds from Proposition 13 will support projects that foster safe drinking water systems, improved water quality, flood protection, and water reliability infrastructure. IEUA service area can access three separate grant programs. First, is $235 million in funding to be distributed through the Santa Ana Watershed Project Authority, of which $87 million has been committed to projects within the Chino Basin Groundwater Basin area. Second, is $45 million in funding to be distributed through MWD for water supply reliability/conjunctive management programs within Southern California. This funding will be available on a competitive grant basis. Finally, the State Water Resources Control Board will have nearly $70 million available in grants and loans for qualifying water recycling projects. In addition, the California Department of Water Resources will have approximately $200 million available for grants and loans for additional qualifying projects. State funding is typically limited to 25% of the project construction cost.

Federal Agency Funding. The U.S. Bureau of Reclamation administers Title XVI of the Water Reclamation Act. As much as $70 million may become available to fund projects within the IEUA service area if legislation pending in Congress is approved. Grant funding includes $20 million for recycled water projects (up to a 25% cost share) and up to $50 million for groundwater desalinization facilities located in the lower Chino Basin (up to a 50% cost share). In addition federal funding for watershed management projects and flood control are pending through the budgets for the U.S. Department of Agriculture, including $11 million for lower Chino Basin drainage projects and the Army Corps of Engineers.

Regional Funding. The Metropolitan Water District of Southern California provides rebates for the development of cost-effective water recycling and groundwater recovery projects that reduce the demand for imported water supply and improve regional water supply reliability. The Local Resources Program uses a competitive Request for Proposal process to select qualifying projects. MWD'S current goal is to generate up to 53,000 acre-feet of local resources production by 2010. Incentive payments are provided on a contractual basis for yield developed by local agencies and applied to beneficial uses. The contribution for a project ranges up to a maximum of $250 per acre-feet, based upon the difference between the project's unit cost and MWD's treated water rate.

NEED FOR REGIONAL RECYCLED WATER DISTRIBUTION SYSTEM

- *More dependable local supplies*
- *Reduced imported water dependence*
- *Drought-proofing the Basin*
- *Reduce likelihood of water rationing*
- *Lower cost of water*
- *Lower sewer rates*
- *Provide economic incentives to attract new jobs and industry*

IEUA Actions to Encourage Recycled Water Use

IEUA is working closely with its local retail agencies to develop a regional recycled water distribution program that will maximize water reuse for the entire service area. Staff of all the agencies meet monthly to coordinate the master planning of the recycled water system to ensure that optimal capital investments are prioritized and that all potential customers are contacted regarding connections to the recycled water supply. IEUA is also working with local retail agencies to ensure that all new residential, commercial and industrial developments have dual plumbing so that recycled water (when available) can be used for outdoor irrigation and other non-potable water uses

IEUA has modified its wholesale rate for recycled water in order to provide a powerful incentive for potential users to convert their systems for reuse. The previous recycled rate was set at 80% of the cost of imported water. The new rate is set at 20% of the cost of imported water, or $57.83 per acre-foot. The development of the new wholesale recycled water rate was based on the components shown in Table 5-9. The new rate was unanimously supported by IEUA's local retail agencies and has generated significant interest by potential customers in using recycled water.

Table 5-9: Summary of Recycled Water Base Rate

25% OF REGIONAL TERTIARY O&M COST FY 1999/00	=	*$22.55 per Acre-Foot*
REGIONAL RECYCLED WATER O&M COST (excluding power cost for pumping)	=	*$14.80 per Acre-Foot*
REGIONAL PUMPING COST	=	*$20.48 per Acre-Foot*
TOTAL O&M BASE COST		*$57.83 per Acre-Foot*
SURCHARGE COST FOR ZONE 1 = $29.33 per Acre-Foot If Zone 1 needs RP-1 supply		

In addition, IEUA has proposed the following incentives to encourage the use of recycled water. These include the following:

- A discount for Non-Reclaimable Water service users (to promote removal of salts from the groundwater basin);
- Shared costs for service connections, water meters, and signage;
- Loans to help finance local (non-regional) infrastructure and retrofit projects that contribute to use of recycled water;
- Technical assistance with engineering, regulatory and institutional issues and with preparation of funding applications;
- Guarantee of recycled water supply reliability, especially during droughts.

IEUA is now working with local retail agencies to develop a marketing program for recycled water. A customer database is being developed to identify current and prospective recycled water users. This database will also track monthly recycled water use as well as the construction, over time, of the component parts of the Regional Recycled Water System.

RECYCLED WATER PROGRAM IS CONSISTENT WITH:

- *Chino Basin Watermaster OBMP/Peace Agreement*
- *Legislative Policy (Water Code Section 13550)*
- *State Water Plan (Bulletin 160-1998)*
- *California Water Resources Control Board*
- *CALFED Bay-Delta Program*
- *Colorado River 4.4 Plan*
- *MWD's Integrated Water Resources Plan*
- *SAWPA's Integrated Watershed Plan*
- *United States Bureau Reclamation's Southern California Comprehensive Water Reclamation and Reuse Study*

CHAPTER 6
GROUNDWATER MANAGEMENT PROGRAMS

This chapter provides a summary of the Inland Empire Utility Agency's service area activities for groundwater management. It describes a plan for optimizing the protection and development of groundwater and conjunctive use projects within IEUA's service area.

Groundwater storage and management within the IEUA service area is the foundation of the water management strategy for the region. In order to ensure adequate water supplies in times of severe drought, sufficient water storage must be developed. One of the most effective forms of storage, especially in the arid climate of Southern California, is conjunctive use where water is stored under ground during wet periods and pumped out during dry or drought years. Management of the Chino Groundwater Basin is also an integral part of the "Peace Agreement" of the Chino Basin Optimum Basin Management Program. Region-wide implementation of recharge and conjunctive use projects is vital to the protection and enhancement of the safe yield and water quality of the Chino Basin. This program is projected to provide major benefits not just to local agencies but to Southern California and to the State as well.

IEUA's goal is to maximize groundwater storage and conjunctive use management within the service area.

6.1 DESCRIPTION OF THE BASIN

The Chino Basin consists of about 235 square miles in the upper Santa Ana River Watershed. Chino Basin is an alluvial valley that is relatively flat from east to west and slopes from north to south at a one to two percent grade. Valley elevation ranges from about 2,000 feet in the foothills below the San Gabriel Mountains to about 500 feet near Prado Dam. The principal drainage course for the Basin is the Santa Ana River. While still considered to be a single basin, the Chino Groundwater Basin has been divided into five management zones, based upon similar hydrologic conditions, and into three sub-basins, as defined in the Chino Basin Watermaster Optimum Basin Management Program, June 2000, (OBMP) and 1995 Water Quality Control Plan (WQCP) for the Santa Ana Watershed (Region 8) respectively.

The Basin is one of the largest groundwater basins in Southern California, containing about 5,000,000 AF of water in storage, with an additional, unused storage capacity of about 1,000,000 AF. Cities and other water supply entities produce groundwater for all or part of their municipal and industrial supplies from the Basin. In addition, 300 to 400 agricultural users pump from the Chino Basin. The average safe-yield of the Basin is approximately 140,000 AF.

6.2 OPTIMUM BASIN MANAGEMENT PROGRAM

The overseeing body for guidance in the development and implementation of the OBMP is the Chino Basin Watermaster (Watermaster). The Watermaster was effectively established on July 1, 1977.

Judgment

The Chino Basin Judgment enables all the parties to adjudicate their Basin Water Rights. The primary issues leading to the adjudication in the 1970's were groundwater levels and storage, both of which had been declining at alarming rates. The technical focus of the Judgment was on definition of "safe yield" of the groundwater basin and allocation of that yield, declared to be 140,000 AFY, among three "pools" of groundwater users: the Overlying Agricultural Pool, which was allocated 82,800 AFY (59.1%) of the safe yield; the Overlying Non-Agricultural Pool, which was allocated 7,366 AFY (5.3%) of the safe yield; and the Appropriative Pool, which was allocated the balance of safe yield, 49,834 AFY (35.6%). By limiting production to safe yield, and by providing for the acquisition of replacement water in the event of overproduction, the Judgment intended to stop the decline in groundwater levels and storage. Subsequent analysis of that physical solution shows it to have been generally successful in stabilizing or recovering groundwater levels and storage.

Unfortunately, degraded groundwater quality is a problem that was not solved by the Judgment. The OBMP directly addresses water quality problems and identifies other groundwater management opportunities to be pursued for the benefit of the basin resources.

In February 1998, the Court appointed the current nine-member Board as Interim Watermaster and directed the Watermaster to prepare the OBMP required by the Judgment. 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 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.

Optimum Basin Management Program

The effort to complete the OBMP for the Chino Basin is well underway. The OBMP has been divided into two phases. The first phase culminated in submittal of the draft Phase I Report to the Court (September 1999) with continuing

jurisdiction over the Chino Basin groundwater resources. The second phase, including a programmatic EIR was completed and adopted in July, 2000.

In order to administer water-usage for the long-term beneficial use of all component members of Watermaster, the OBMP consisting of two phases has been developed. Phase I of the OBMP consists of defining the state of the Chino Groundwater Basin, establishing goals concerning major issues identified by stakeholders, and affirming a management plan for the achievement of said goals. Phase 2 of the OBMP is intended to be the physical implementation plan for the installation and operation of OBMP facilities. The major OBMP facilities consist of monitoring wells, extensometers, pipelines, desalters, possibly an ion exchange facility, recharge basins (both existing and new), pump stations, production wells and production monitoring devices.

OBMP Plan Recommendations

The OBMP for the Chino Basin is comprised of several components (called Program Elements) that collectively will enhance basin water supplies, protect and enhance water quality, and enhance management of the basin. The OBMP components include:

Implementing an expanded, comprehensive monitoring program to increase the quantity and accuracy of information collected regarding surface and groundwater quality, groundwater levels, water use, land subsidence, and other pertinent parameters related to water resources in the basin. These monitoring data will be combined with historic data for ongoing evaluation of basin conditions, assessment of the effectiveness of the various other components of the OBMP, and future update of the OBMP as appropriate.

Maximizing the capture of high-quality storm flows for recharge of the groundwater basin to sustain, and possibly increase, the yield of the basin while also improving the quality (dissolved minerals, etc.) of groundwater stored in the basin.

Increasing the use of recycled water both directly and for groundwater recharge to sustain, and potentially increase, the yield of the basin while maximizing the use of all available water resources in the basin.

Maintaining production in the lower (southern) end of the basin where, despite historical degradation of groundwater quality, groundwater has remained usable for agricultural purposes, including dairy operation; however, as urbanization supplants agricultural land use, the same groundwater will not be usable for municipal domestic safe yield of the basin, and the need to improve the quality of pumped water for the future beneficial use are both incorporated in the OBMP.

Locating groundwater production and recharge throughout the basin to maximize basin yield. The distribution of pumpage and recharge will also consider minimizing the potential for land subsidence, which has been observed or suspected in some parts of the basin.

Implementing a basin-wide water supply plan which integrates the use of groundwater and imported supplemental water with continued pumping from the impaired areas of the basin; the latter will include the treatment (desalting) of degraded groundwater for future municipal water supply or other beneficial use as appropriate.

Contributing to salt management activities and developing a salt management assessment methodology. The latter will be used to assess, in part, the ongoing effectiveness of the various OBMP components in improving and preserving groundwater quality for long-term beneficial use.

Developing and implementing a groundwater storage management and conjunctive use program for the basin. Storage management will address and protect space in the groundwater basin for storage by all the overlying interests in the basin, while a conjunctive use program will provide opportunities for both in-basin and outside interests to utilize the large storage space in the groundwater basin toward maximizing local (in-basin) and regional water supplies.

Goals

Four primary management goals for the OBMP were developed during a series of meetings to address the issues, needs and interests of the producers. The set of goals are listed below:

Goal No. 1 - Enhance Basin Water Supplies
Goal No. 2 - Protect and Enhance Water Quality
Goal No. 3 - Enhance Management of the Basin
Goal No. 4 - Equitably Finance the OBMP

Goal No. 1 applies not only to local groundwater, but also to all sources of water available for the enhancement of the Chino Groundwater Basin. Fourteen actions were identified in Section 3 of the OBMP Phase I Report that will assist in the satisfaction of Goal No. 1. The activities are as follows:

1. Maintenance or increase of groundwater production in the southern portion of the Basin with treatment and service of contaminated groundwater in the southern third of the Basin.
2. Location of new recharge facilities in the upper half of the Basin.
3. Location of new recharge facilities in the lower half of the Basin when recovery of recharged water can be ensured.

4. Development and implementation of a comprehensive basin-wide ground level, groundwater level, quality, and production monitoring program.
5. Development and implementation of a comprehensive plan of storm water recharge.
6. Development of a comprehensive storm water flow and quality monitoring program in partnership with other agencies charged with flow and quality monitoring.
7. Development of new storm water recharge projects at existing and future flood control facilities.
8. Maximization of recharge capacity at existing recharge facilities through improved maintenance.
9. Development of methods to account for losses from storage accounts; and the setting of limits on storage if necessary.
10. Development of a comprehensive ground level, groundwater level, and quality monitoring program in Management Zone 1.
11. Development of an immediate groundwater management program for Management Zone 1, followed by management programs for Management Zones 2, 3, 4, & 5.
12. Creation of new assimilative capacity through the development of offset programs and through other mitigation programs.
13. Maximization of the direct use of recycled water.
14. Development of new sources of supplemental water from the Bunker Hill Basin, the Santa Ana River and other outside Basin sources.

Goal No. 2, to protect and enhance water quality, will be accomplished by implementing activities that capture and dispose of contaminated groundwater, treat contaminated groundwater for direct high-priority beneficial uses, and encourage better management of waste discharges that impact groundwater. The following seventeen activities are envisioned to protect and enhance water quality (OBMP Phase I Report, Section 3).

1. Development and implementation of a comprehensive groundwater quality monitoring program.
2. Coordination with regulatory agencies to share monitoring and other information to detect and define water quality problems.
3. Coordination of action regarding the Watermaster priorities of mutual interest.
4. Participation in projects of mutual interest including the RWQCB watershed management efforts within the Chino Basin.
5. Development and implementation of programs to address problems posed by specific contaminants.
6. Exportation of manure, enhanced manure management, or facilitation or support of salt removal efforts.
7. Treatment of dairy sewage and the elimination of discharge to groundwater, or exportation of dairy sewage via surface drainages.

8. Development of programs to pump and treat degraded groundwater and to put the treated water to direct beneficial uses.
9. Development and implementation of a comprehensive storm water recharge plan.
10. Development of a comprehensive storm water flow and quality monitoring program in partnership with other agencies charged with flow and quality monitoring.
11. Development of new storm water recharge projects at existing and future flood control facilities.
12. Maximization of recharge capacity at existing recharge facilities through improved maintenance or operational and/or structural improvements.
13. Periodic assessment of the salt balance of the Basin.
14. Development of new TDS export facilities and/or finding means of using the Non-Reclaimable Wastewater System and the Santa Ana Regional Interceptor with less cost.
15. Establishment of financial incentives to ensure that when existing groundwater is pumped, it is replaced with high quality water to replenish the Basin over time.
16. Increasing the groundwater recharge volume in excess of production to cause an increase in the storage volume without an increase in rising water discharge from the Basin.
17. Promote public education.

Goal No. 3, to enhance management of the Basin, will be achieved by implementing activities that will lead to optimal management of the Chino Basin. Five activities have been identified to assist in accomplishing this goal (OBMP Phase I Report, Section 3).

1. Development of methods to account for losses from storage accounts; and setting of limits on storage if necessary.
2. Development and implementation of a comprehensive Basin-wide ground level, groundwater level, water quality, and production monitoring program (Same as with Goal No. 1).
3. Development of new production patterns that optimize yield and beneficial use; and the development of incentive programs and policies that encourage (or rules that enforce) new production patterns.
4. Development of programs to pump and treat degraded groundwater and to put the treated water to direct beneficial uses (Same as with Goal No. 2).
5. Development of conjunctive-use policies and programs that take into account water quantity and quality.

Goal No. 4 is to equitable finance the OBMP. Three actions items have been identified to accomplish this goal (OBMP Phase I Report, Section 3). They are the following:

1. Identification of an equitable approach to spread the cost of OBMP implementation either on a per acre-foot basis or by some other equitable means.
2. Identification of ways to recover value from utilizing Basin assets including storage and rising water leaving the Basin.
3. Evaluation of the project and management components and a ranking of the components with equal consideration given to water quantity, water quality and cost and based on their ability to meet the goals of the OBMP.

6.3 TIN/TDS STUDY

A study has been initiated to evaluate the impact of Total Inorganic Nitrogen (TIN) and Total Dissolved Solids (TDS) on water resources in the Santa Ana Watershed. The scope of work includes:

1. Develop Surface Water Translator for meeting groundwater objectives that accounts for nitrogen losses during percolation.

2. Develop new compliance metric and monitoring plan to replace current *August-Only Below* Prado metric.

3. Develop updated boundary maps for groundwater sub-basins and new management zones.

4. Estimate regional TDS and Nitrogen concentration in groundwater.

5. Compute TDS and Nitrogen objectives for new groundwater basins and management areas.

Chino Basin groundwater quality has been adversely impacted in a number of basin areas as a result of point and non-point source activities; locations of impacted and degraded groundwater quality are shown on Figure 6-1. Point source dischargers of organic solvents and other contaminants are closely regulated, and remediation of those kinds of groundwater quality plumes is underway. However, the ongoing concentration of dissolved minerals (TDS and nitrate) continues in the southern part of the basin due to pumping for overlying agricultural land use, the addition of TDS and nitrogen on the overlying land, and the lack of subsurface outflow from the basin.

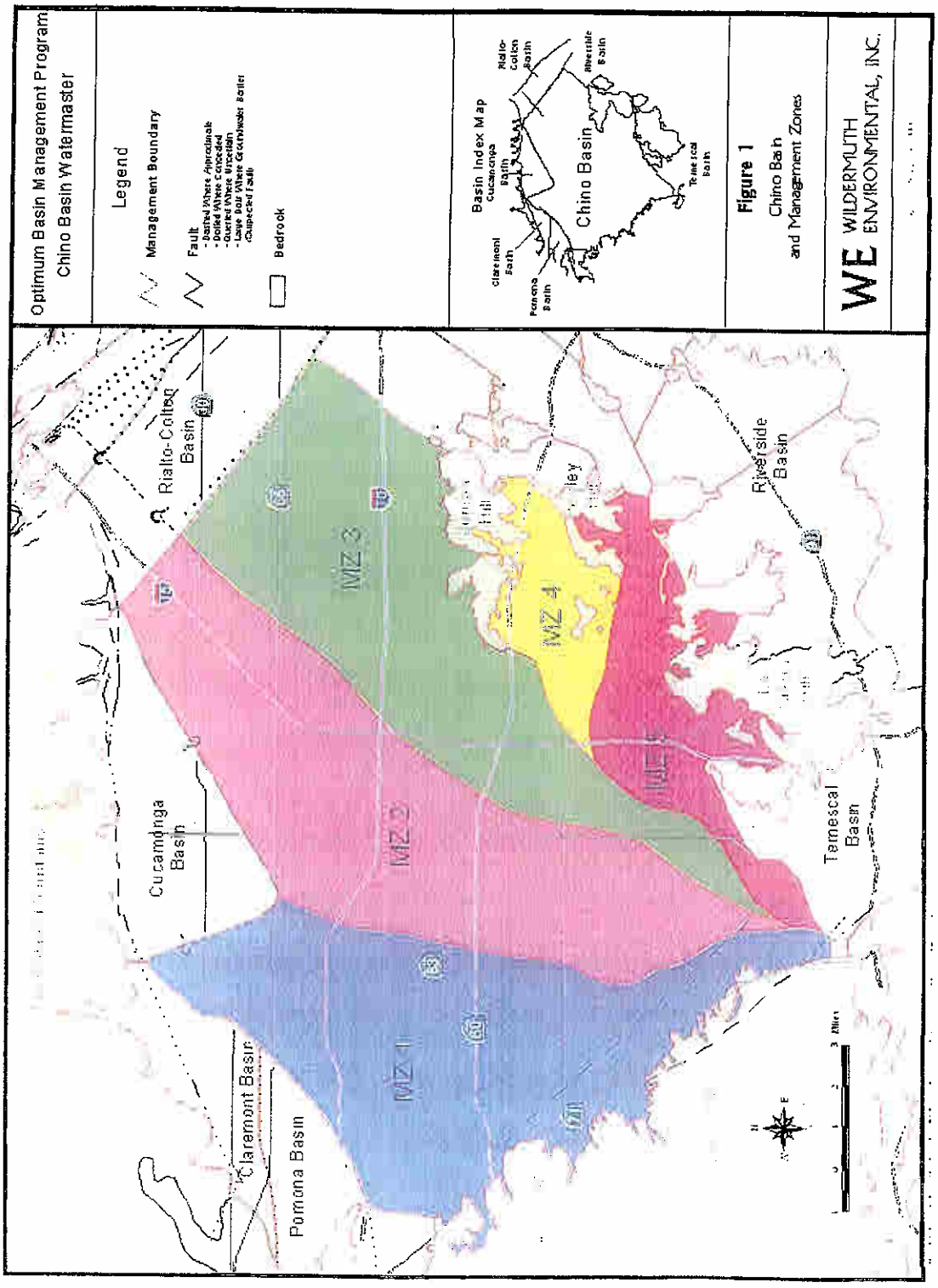
This ongoing problem is the primary challenge facing the basin. The problem will worsen with decreasing agricultural land use, and association decreasing pumpage from the basin, which will result in rising groundwater in the south, decreased safe yield, and adverse impacts on Santa Ana River quality. Several OBMP program elements address these problems: groundwater level

and quality monitoring, maximizing recharge of high quality water, maintenance of southern basin production with appropriate treatment to produce beneficially usable water, and salt management to reduce loading associated with agricultural practices on lands overlying the southern part of the basin.

6.4 CONJUCTIVE USE

The Agency along with Western Municipal Water District, Three Valleys Municipal Water District, and Chino Basin Watermaster is working towards a mutual agreement with MWD for groundwater storage program, including construction of facilities to store water in, and later to withdraw it from the Basin for conjunctive use. The program will: (1) reduce summertime peaking on MWD's Rialto Pipeline, (2) deliver SWP supplies to Chino Basin area via East Branch/Rialto Pipeline to meet Basin Plan Salinity objectives, (3) minimize (or eliminate) MWD surface water deliveries during future droughts/emergencies, and (4) allow MWD to export stored water into Upper Feeder (or Rialto Pipeline) for other member agencies. The program will create improved regional reliability by establishing an initial 150,000 AF storage account for MWD for Phase I and by providing a financial incentive for shifting demand on MWD surface deliveries to the winter months. Under the OBMP, Watermaster has identified the potential storage and recovery of up to 500,000 AF.

Figure 6-1: Chino Basin Management Zones



CHAPTER 7
APPENDICES

Appendix A: References

Appendix B: Water Pricing and Rate Structures

Appendix C: MWD – Main Model

Appendix D: Urban Water Management Planning Act

Appendix E: 2000 Urban Water Management Plan Checklist

Appendix F: Retail Utilities Standard Water Rates

Appendix G: Schematics for the Water Reclamation Treatment Plants

APPENDIX A

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APPENDIX B

WATER PRICING AND RATE STRUCTURES

IMPORTED WATER RATES

MWD is in the process of working with its member agencies on a strategic plan that would revise its rate structure. However at this time, it is unclear what changes may be incorporated into the existing rates and charges.

Retail water agencies in Chino Basin purchase imported water indirectly from IEUA that is delivered by MWD. MWD sets imported classes and rates. The Agency adds on a $5 per AF surcharge to the MWD rate to cover the administrative costs incurred by the Agency in serving its retail agencies (this generates about $300,000 in revenue). The rates and charges, classes of water service and associated rates (Table 7-1) adopted by MWD. Below is a description of these MWD rates and charges.

Service Charges

Connection Maintenance Charge

The Connection Maintenance Charge was adopted by MWD's Board of Directors in 1994, to cover directly the costs of operating and maintaining each member agency delivery connection. The Connection Maintenance Charge is $50 per cubic feet per second of capacity per month per connection, not to exceed a maximum charge per connection of $5,000 per month. IEUA passes through this charge to each retail agency (or Chino Basin Watermaster) that uses the connection.

New Demand Charge

The New Demand Charge has not been imposed. MWD's Board of Directors has deferred implementation of the New Demand Charge.

Readiness-to-Serve Charge

The Readiness-to-Serve (RTS) charge is designed to generate sufficient fixed monthly revenues to meet debt service requirements not paid from taxes for financing of facilities necessary to meet reliability and quality needs of existing demands. MWD also collects a portion of the RTS charge through a per parcel water standby charge. Within the IEUA service area, MWD collects about $1.7 million annually. MWD RTS charges above this amount are invoiced monthly by MWD. IEUA, in turn, invoices on a monthly basis, to its retail utilities this RTS charge.

Water Rate Commodity Charges

Non-Interruptible of Firm Supply

The non-interruptible class of water is generally for municipal and industrial purposes (domestic).

Emergency

Emergency service is water delivered to an agency that is not able to sustain an interruption under MWD's Incremental Interruptible and Conservation Plan. The Agency's General Manager upon determination that serious hardship would result to a member agency or any of its sub-agencies must authorize the delivery of this type of water. This extra water is priced at a rate three times the non-interruptible rate.

Interim Agricultural Water Rates

This program provides a discount on water for agricultural purposes. However, agricultural users are subject to delivery interruptions of up to 30 percent prior to any mandatory delivery reductions to municipal and industrial users.

Seasonal Storage

The seasonal storage program, first implemented in 1989 as a groundwater and local surface storage program to provide economic incentives to its member agencies that take delivery of imported water during the of peak periods. This economic incentive encourages local agencies to invest in new water production, storage, treatment and transmission facilities. These facilities are needed to add to local agencies' capability to produce local water during shortages of MWD supplies, as well as store MWD's water during periods of abundant availability.

The Seasonal Storage Service program is a "pay-for-performance" program for the year being certified. For Seasonal Shift Storage, this means that the participating agency must "shift" MWD deliveries from summer to winter. For Long-Term Storage this means that the participating agency must take additional MWD deliveries, above its normal annual demand, during the winter and leave the same amount of groundwater attributable to new supply in its basin beyond the 12-month period.

MWD Adopted Water Rates for Calendar Year 2001

Type of Service	$/AF
	Non-Interruptible
Untreated	349
Treated	431
	Seasonal Storage
Long-term – Untreated	233
Long-term – Treated	290
Shift- Untreated	266
Shift – Treated	323
	Interim Agricultural
Untreated	236
Treated	294

GROUNDWATER RATES

Three groups represent the majority of producer interests in Chino Basin. The groups became known as the following:

- Overlying (Agricultural) Pool representing dairymen and farmers (including minimal producers) and the State of California;
- Overlying (Non-Agricultural) Pool representing industries; and
- Appropriative Pool, representing cities, water districts, and water companies.

Each of the three groups has separate and distinct replenishment assessment formulas:

Overlying (Agricultural) Pool

The Overlying Agricultural Pool pays assessments on a gross basis, such that the total cost of the replenishment water plus the estimated associated spreading costs are divided equally on each acre-foot of water produced during the previous production year.

Overlying (Non-Agricultural) Pool

Assessments for the Overlying Non-Agricultural Pool are based on a net replenishment formula. This formula applies the current cost of replenishment water plus the estimated spreading costs to each acre-foot water produced in excess of a producer's share of safe yield.

Appropriative Pool

This pool pays replenishment assessments on a net basis, which includes the current cost of replenishment water plus the estimated cost of spreading.

RECYCLED WATER RATES

The Agency's Board approved an ordinance to lower the wholesale recycled water rate to $57.83. The new water rate was based on the following three components:

- 25% of regional tertiary O&M cost - $22.55
- Regional recycled water O&M cost – $14.88
- Recycled water pumping cost - $20.48

Development of this new wholesale recycled water rate was established by IEUA to encourage and give enough incentives to the retail Agencies to set a reasonable rate to promote recycled water to a point that will be economically viable for the users. Without this kind of incentives, most of the potential recycled water users would be deterred away from the costly construction of necessary pipelines and retrofits.

APPENDIX C

MWD – MAIN Model

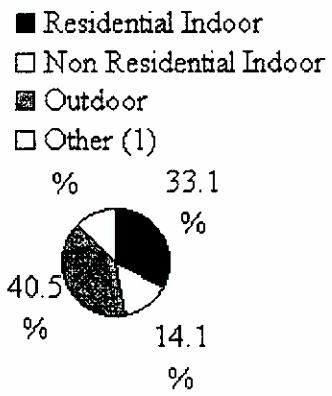
(MWD RUMP Draft October 2000)

MWD Main-Model

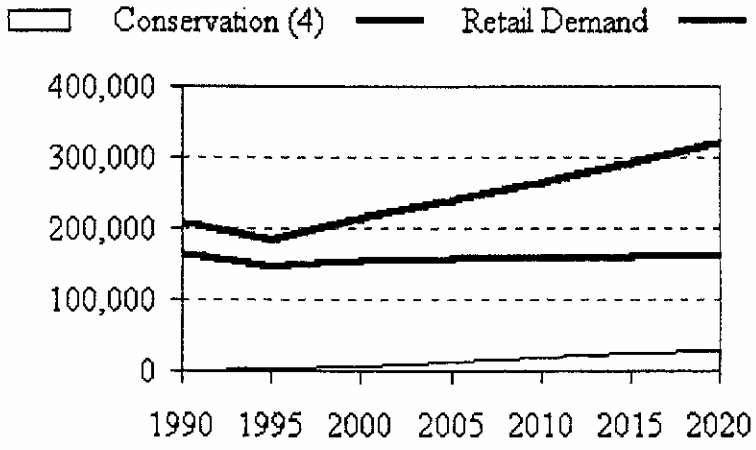
Inland Empire Utilities Agency
Average Year

Water Demands	1990	1995	2000	2005	2010	2015	2020
Retail Demand	**209,700**	**184,300**	**214,100**	**239,400**	**265,900**	**292,900**	**322,500**
Retail Agricultural Demand	37,200	32,200	27,800	25,000	22,200	19,400	16,700
Retail M&I Demand	172,500	152,100	186,300	214,400	243,700	273,500	305,800
Single Family			*99,700*	*112,100*	*124,800*	*137,300*	*149,200*
Multi Family			*25,800*	*30,700*	*36,500*	*42,100*	*49,700*
Non Residential			*37,900*	*45,200*	*52,500*	*60,400*	*69,300*
Other (1)			*22,900*	*26,400*	*30,000*	*33,600*	*37,600*
Local Supply	**165,200**	**146,400**	**155,900**	**158,100**	**160,000**	**162,000**	**163,900**
Ground Water and Surface Supplies (2)	160,700	144,400	152,100	152,500	152,500	152,600	152,600
Recycling (3)	4,500	2,000	3,700	5,600	7,500	9,400	11,300
Conservation (4)	**0**	**3,300**	**7,400**	**13,600**	**19,300**	**24,400**	**29,400**
Active (5)	0	600	1,100	1,600	2,000	2,200	2,300
Passive (6)	0	2,700	6,300	12,000	17,300	22,200	27,100
Per Capita Water Use (gallons/person/day) (4)	**271**	**265**	**249**	**250**	**252**	**256**	**261**
Single Family (gallons/household/day)			634	624	622	624	627
Multi-family (gallons/household/day)			397	389	387	389	391
Non Residential (gallons/emp/day)			128	124	122	122	122
Other (gallons/person/day)			31	31	31	31	32

2000 End Use (estimated)



Water Demand



Demographics (7)	1990	1995	2000	2005	2010	2015	2020
Population	**548,200**	**613,800**	**667,000**	**764,800**	**862,600**	**955,000**	**1,045,900**
Occupied Housing Units	**174,400**	**186,900**	**198,200**	**230,700**	**263,400**	**293,400**	**325,900**
Single Family	125,900	134,400	140,300	160,300	179,200	196,600	212,500
Multi Family	48,500	52,500	57,900	70,400	84,200	96,800	113,400
Persons Per Household (8)	**3.1**	**3.2**	**3.3**	**3.2**	**3.2**	**3.2**	**3.1**
Employment	**190,000**	**221,400**	**265,300**	**324,900**	**384,500**	**442,200**	**506,900**

APPENDIX D

Urban Water Management Planning Act

Established: AB 797, Klehs, 1983
Amended: AB 2661, Klehs, 1990
AB 11X, Filante, 1991
AB 1869, Speier, 1991
AB 892, Frazee, 1993
SB 1017, McCorquodale, 1994
AB 2853, Cortese, 1994
AB 1845, Cortese, 1995
SB 1011, Polanco, 1995
SB 553, Kelley, 2000

CALIFORNIA WATER CODE DIVISION 6
PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. The Legislature finds and declares as follows:

(a) The waters of the state are a limited and renewable resource subject to ever increasing demands.

(b) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.

(c) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.

(d) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.

(e) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet the needs of both existing customers and future demands for water.

10610.4. The Legislature finds and declares that it is the policy of the state as follows:

(a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.

(b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.

10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.

10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.

10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.

10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.

10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.

10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.

10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 7 (commencing with Section 4010) of Part 1 of Division 5 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS

Article 1. General Provisions

10620.

(a) Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

(b) Every person that becomes an urban water supplier after December 31, 1984, shall adopt an urban water management plan within one year after it has become an urban water supplier.

c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

(1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.

(2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies,to the extent practicable.

(e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.

10621.

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

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

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

(a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

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

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

(1) An average water year.
(2) A single dry water year.
(3) Multiple dry water years.

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

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

(e)

(1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential.
(B) Multifamily.
(C) Commercial.
(D) Industrial.
(E) Institutional and governmental.
(F) Landscape.
(G) Sales to other agencies.
(H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
(I) Agricultural.

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

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

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:

(A) Water survey programs for single-family residential and multifamily residential customers.
(B) Residential plumbing retrofit.
(C) System water audits, leak detection, and repair.
(D) Metering with commodity rates for all new connections and retrofit of existing connections.
(E) Large landscape conservation programs and incentives.
(F) High-efficiency washing machine rebate programs.
(G) Public information programs.
(H) School education programs.
(I) Conservation programs for commercial, industrial, and institutional accounts.
(J) Wholesale agency programs.
(K) Conservation pricing.
(L) Water conservation coordinator.
(M) Water waste prohibition.
(N) Residential ultra-low-flush toilet replacement programs.

(2) A schedule of implementation for all water demand management measures proposed or described in the plan.

(3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

(4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of such savings on the supplier's ability to further reduce demand.

(g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, which offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:

(1) Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors.

(2) Include a cost-benefit analysis, identifying total benefits and total costs.

(3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.

(4) Include a description of the water supplier's legal authority to implement

the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.

(h) Urban water suppliers that are members of the California Urban Water Conservation Council and submit annual reports to the council in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

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

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

(c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

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

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

(f) Penalties or charges for excessive use, where applicable.

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

(h) A draft water shortage contingency resolution or ordinance.

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

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:

(a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

(b) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

(c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

(d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.

(e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

(f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems and to promote recirculating uses.

Article 2.5 Water Service Reliability

10635.

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

(b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies within 60 days of the submission of its urban water management plan.

(c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.

(d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any future, potential customers.

Article 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644.

(a) An urban water supplier shall file with the department a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the plans shall be filed with the department within 30 days after adoption.

(b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4. MISCELLANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

(a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.

(b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive drought assistance from the state until the urban water management plan is submitted pursuant to Article 3 (commencing with Section 10640) of Chapter 3.

SEC. 2. No appropriation is made and no reimbursement is required by this act pursuant to Section 6 of Article XIII B of the California Constitution or Section 2231 or 2234 of the Revenue and Taxation Code because the local agency or school district has the authority to levy service charges, fees, or assessments sufficient to pay for the program or level of service mandated by this act.

uwmp act of 1995.doc -- revised 10/96

APPENDIX E

2000 Urban Water Management Plan Checklist

2000 Urban Water Management Plan Checklist

Page # In Plan	Section of Law	Items to address
1-2	10620 (d) (2)	Coordinate the preparation of its plan with other appropriate agencies, including direct and indirect suppliers, wastewater, groundwater, and planning agencies (refer to Section 10633).
3-1	10631 (a)	Provide current and projected population in 5-year increments to 20 years.
1-9		Describe the climate and other demographic factors.
3-11	10631 (b)	Identify and quantify the existing and planned sources of water available in 5-year increments to 20 years.
3-13	10631 (c)	Describe the reliability of the water supply.
3-13...3-18		Describe the vulnerability of water supply to seasonal or climatic shortage.
3-14 ...3-15		Describe average, single dry and multiple dry water year data.
3-15...3-16		Describe any plans to replace inconsistent water sources.
6-4, 6-10	10631 (d)	Describe opportunities for exchanges or transfers of water on short-term or long-term basis.
2-9...2-10	10631 (e) (1)	Quantify past and current water use in 5-year increments to 20 years.
3-6...3-9, 3-13	10631 (e) (2)	Identify projected water uses among water use sectors in 5-year increments to 20 years.
3-14...3-15	10632 (a)	Provide water shortage stages of action, including up to a 50 percent reduction, outlining specific water supply conditions at each stage.
3-14	10632 (b)	Provide minimum water supply estimates based on driest three-year historic sequence.
3-18	10632 (c)	Provide actions a water supplier will take to prepare for a catastrophe.
3-16... 3-17	10632 (d)	Provide mandatory prohibitions.
3-17	10632 (e)	Provide consumption reduction methods.
3-17	10632 (f)	Provide penalties or charges.
3-18	10632 (g)	Provide an analysis of the impacts on the water supplier revenues and expenditures.
3-18	10632 (g)	Provide measures to overcome revenue and expenditure impacts.
3-15... 3-19	10632 (h)	Provide a copy of a draft water shortage contingency resolution or ordinance.
3-16... 3-17	10632 (i)	Provide a mechanism for determining actual reductions in water use.

Page # In Plan	Section of Law	Items to address
5-1... 5-4	10633 (a)	Describe the wastewater collection and treatment systems in the supplier's service area.
5-3		Quantify the amount of wastewater collected and treated in the supplier's service area.
5-3		Describe the methods of wastewater disposal in the supplier's service area.
5-5, 5-7	10633 (b)	Describe the type, place, and quantity of recycled water currently used in the supplier's service area.
5-9...5-10	10633 (c) (d)	Describe and quantify potential uses of recycled water in 5-year increments to 20 years.
5-10...5-11		Describe the technical and economic feasibility of serving potential recycled water users.
5-16...5-18	10633 (e)	Describe the actions that may be taken to encourage recycled water use.
5-8...5-10		Provide the projected acre-feet results of recycled water used per year.
5-13...5-14	10633 (f)	Provide a plan for optimizing the use of recycled water in the supplier's service area.
5-16...5-18		Provide actions to facilitate the installation of dual distribution systems and to promote recirculating uses.
3-13...3-15	10635 (a)	Provide an assessment of the reliability of the water supplier's water service to its customers during normal, single dry, and multiple dry water years.
3-10...3-12		Compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in 5-year increments (refer to 10631 (c)).
3-14...3-15		Compare normal, single dry, and multiple dry water year projected water supply sources available to the water supplier with the normal, single dry, multiple dry water year projected water uses (refer to 10631 (c)).
Appendix H	10642	Make plan available for public inspection before its adoption.
Appendix I		Adopt plan as prepared or as modified after the public hearing

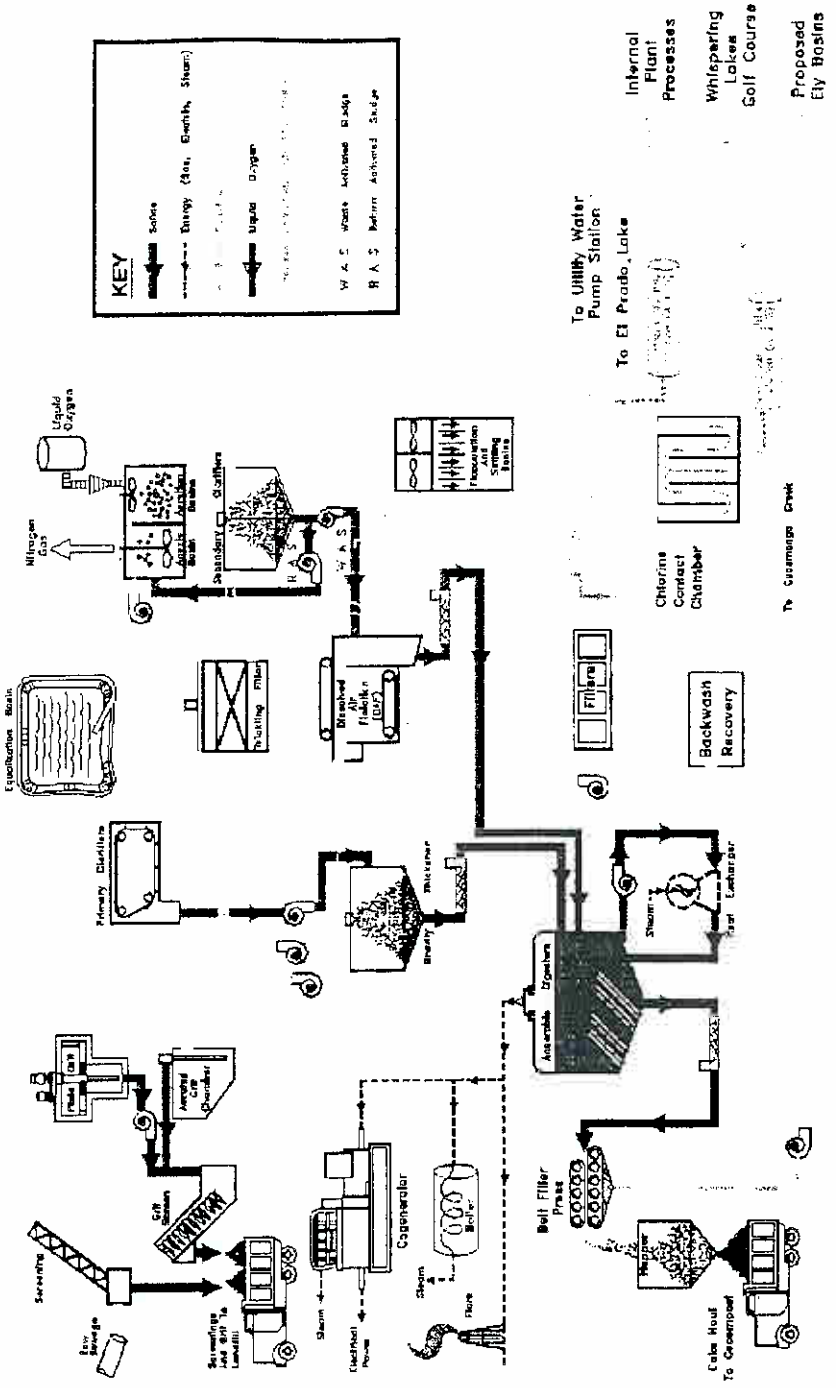
APPENDIX F

Retail Utilities Standard Water Rates

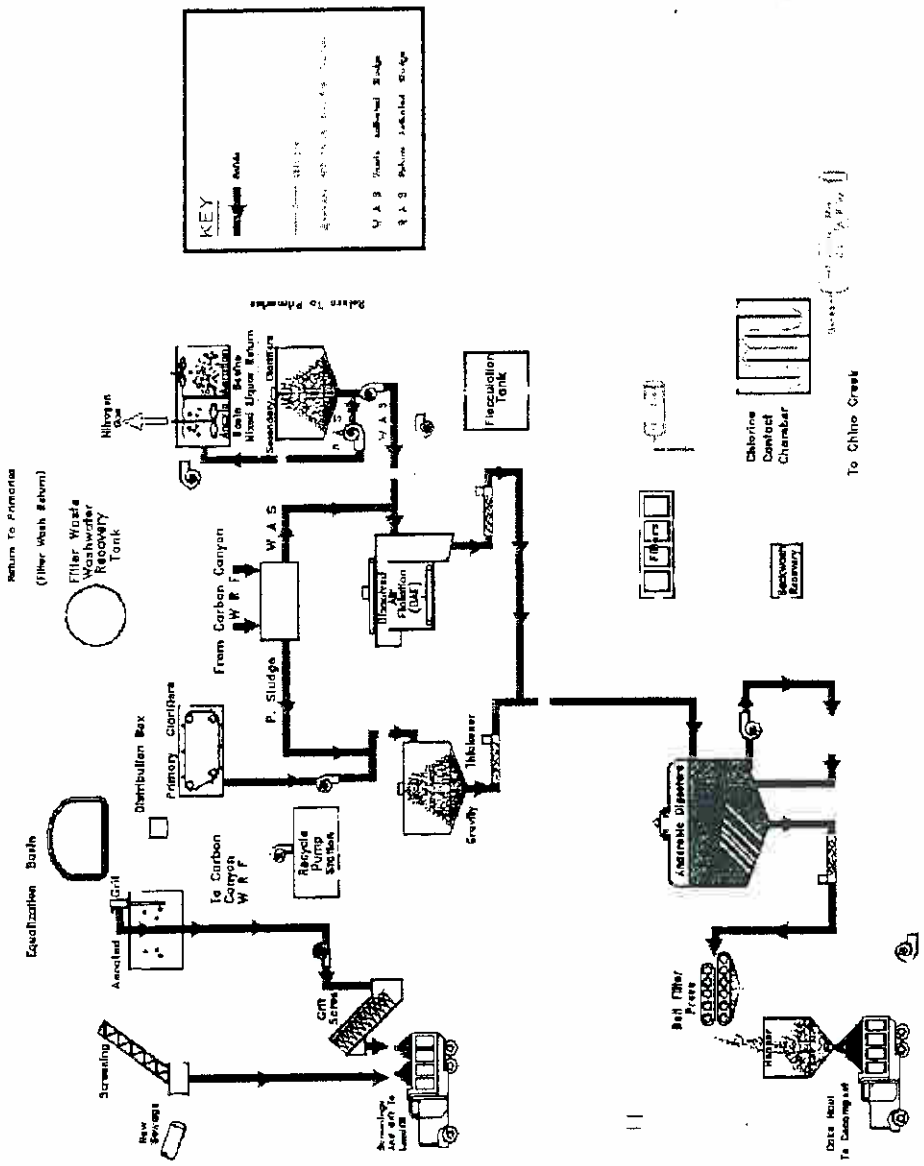
Agency	Billing Period	Meter Size (Inches)	Monthly Minimum Meter Charge	Cost per HCF
City of Chino	Monthly	5/8	$14.05	$0.8456
		3/4	$14.05	
		1	$24.98	
		1 1/2	$56.20	
		2	$99.91	
		3	$224.79	
		4	$399.63	
		6	$899.17	
		8	$1,598.53	
City of Chino Hills	Monthly	5/8	$9.15	Low zone:
		3/4	$13.30	Non-exp $0.90
		1	$22.84	Export $1.08
		1 1/2	$45.68	Intermediat Zone:
		2	$73.07	Non-exp $0.90
		3	$136.94	Export $1.08
		4	$228.30	High Zone
		6	$456.55	Non-exp $1.01
		8	$730.48	Export $1.11
Cucamonga County Water District	bi-monthly	5/8 x 3/4	$9.25	$0.920
		3/4	$9.25	
		1	$13.50	
		1 1/2	$23.50	
		2	$36.50	
		3	$69.00	
		4	$107.50	
		6	$255.00	
		8	$340.00	
		10	$507.50	
Fontana Water Company	Monthly	5/8 x 3/4	$10.36	$1.077
		3/4	$15.53	
		1	$25.90	
		1 1/2	$51.74	
		2	$82.76	
		3	$154.94	
		4	$259.97	
		6	$516.41	
		8	$826.26	
		10	$1,187.78	
		12	$1,643.20	
Monte Vista Water District	Monthly	3/4	$5.10	$0.999
		1	$8.35	
		1 1/2	$20.40	
		2	$31.50	
		3	$77.97	
		4	$140.47	
		6	$318.61	
		8	$504.00	
		10	$787.50	
City of Ontario	Monthly	5/8	$4.50	$0.880
		1	$7.70	
		1.5	$9.90	
		2	$15.90	
		3	$60.50	
		4	$77.00	
		6	$115.50	
		8	$159.50	
City of Upland	bi-monthly	5/8	$8.00	0 -69 ccf $0.72
		1	$14.00	70-99 ccf $0.86
		1.5	$25.00	100+ ccf $0.99
		2	$42.00	
		3	$88.00	
		4	$145.00	
		6	$300.00	
		8	$500.00	

APPENDIX G

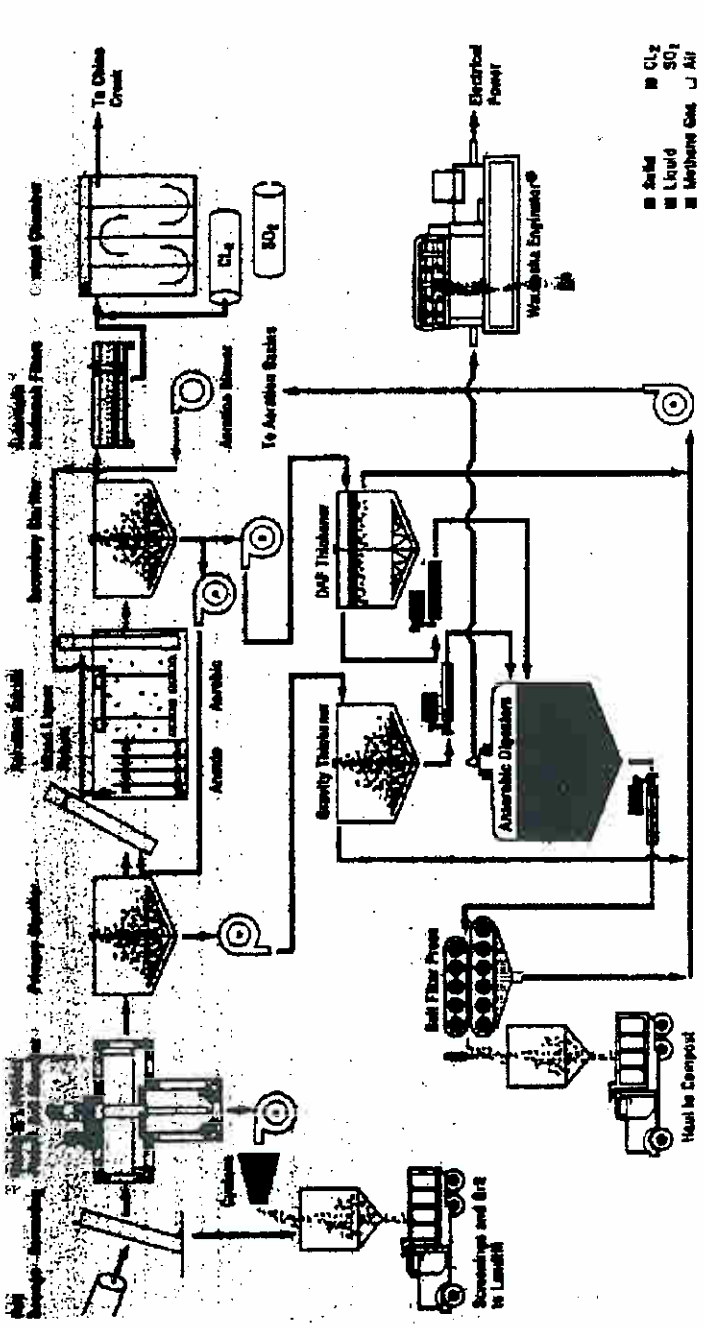
Schematics for the Water Reclamation Treatment Plants



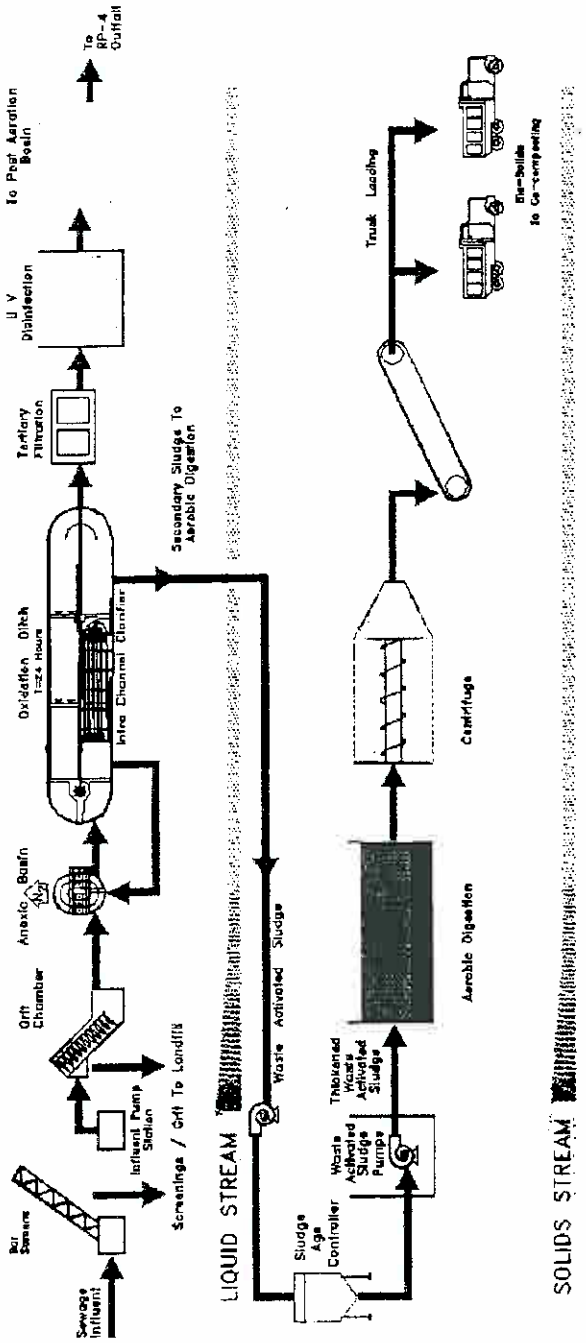
RP-1 PROCESS FLOW SCHEMATIC



RP-2 PROCESS FLOW SCHEMATIC



CARBON CANYON PROCESS
FLOW SCHEMATIC



RP-4 PROCESS FLOW SCHEMATIC

APPENDIX H

Notice of Public Workshop and Public Hearing

Daily Bulletin, Sunday, October 15, 2000

Around the Valley

Inland Empire
UTILITIES AGENCY

PUBLIC WORKSHOP ON OUR WATER FUTURE

The Inland Empire Utilities Agency* has prepared its **Draft Year 2000 Regional Urban Water Management Plan.** The draft Plan recommends implementation of voluntary water conservation measures, increased use of local recycled water for irrigation and other non-potable uses like industrial plant cooling towers, and development of local groundwater storage projects within the IEUA service area to provide a drought proof water reserve.

A Public Workshop to discuss the draft Plan will be held at the location and time listed below:

Thursday, October 19, 2000

5:30 p.m.

Cucamonga County Water District
10440 Ashford Street
Rancho Cucamonga

Your participation is important and needed to ensure a reliable water supply for the IEUA service area.

The draft Plan can be found on IEUA's web page (www.ieua.org). For more information, contact Sondra Elrod at (909) 357-0241

BOARD OF DIRECTORS

John L. Anderson, President
Terry Catlin, Vice President
Anne W. Dunihue, Secretary/Treasurer
Wyatt Troxel, Director
Gene Koopman, Director

*formerly Chino Basin Municipal Water District

Rancho Cucamonga

Water agency to hold public workshop

The Inland Empire Utilities Agency will hold a public workshop on its regional urban water management plan Thursday at 5:30 p.m. at the Cucamonga County Water District, 10440 Ashford Street.

The workshop will solicit public input on the water plan, which California law requires to be updated every five years. The plan recommends voluntary water conservation measures, increased use of local recycled water and projects such as local groundwater programs.

The plan's goal is to prevent water supply problems in case of a California drought in the 242-square-mile area in western San Bernardino County served by the agency.

The agency's board of directors is expected to adopt the plan by December and will then submit it to the California Department of Water Resources.

For information, call Sondra Elrod at (909) 357-0241, ext. 208.

Joe Florkowski
(909) 483-9545

(Space below for use of County Clerk only)

INLAND VALLEY
DAILY BULLETIN
(formerly The Daily Report)

2041 E. 4th Street
Ontario, CA 91764

PROOF OF PUBLICATION
(2015.5 C.C.P.)

STATE OF CALIFORNIA

County of San Bernardino

I am a citizen of the United States, I am over the age of eighteen years, and not a party to or interested in the above-entitled matter. I am the principal clerk of the printer of INLAND VALLEY DAILY BULLETIN, a newspaper of general circulation printed and published daily in the City of Ontario, County of San Bernardino, and which newspaper has been adjudged a newspaper of general circulation by the Superior Court of the County of San Bernardino, State of California, on the date of August 24, 1951, Case Number 70663. The notice, of which the annexed is a true printed copy, has been published in each regular and entire issue of said newspaper and not in any supplement thereof on the following dates, to wit:

11/1,8/00

I declare under penalty of perjury that the foregoing is true and correct.

Executed at Ontario, San Bernardino Co. California
this 8 day of NOVEMBER 20 00

signature

15

Proof of Publication of

CNS1806608
NOTICE OF PUBLIC HEARING BY THE BOARD OF DIRECTORS OF THE INLAND EMPIRE UTILITIES AGENCY, A MUNICIPAL WATER DISTRICT, TO RECEIVE PUBLIC INPUT ON THE DRAFT YEAR 2000 REGIONAL URBAN WATER MANAGEMENT PLAN

NOTICE IS HEREBY GIVEN that the Board of Directors of the Inland Empire Utilities Agency, A Municipal Water District, has scheduled a public hearing to receive input on the Draft Year 2000 Regional Urban Water Management Plan, at its meeting on November 15, 2000, at 9:00 a.m. at the Agency's Administrative Office, 9400 Cherry Avenue, Building A, Fontana.

NOTICE IS FURTHER GIVEN that all interested persons are invited to attend the public hearing and provide comments regarding the Regional Urban Water Management Plan. Oral statements will be heard, but for the accuracy of the record, all important testimony should be submitted in writing.

NOTICE IS FURTHER GIVEN that a copy of the Draft Year 2000 Regional Urban Water Management Plan can be reviewed Monday through Friday from 8:00 a.m. to 5:00 p.m. at the Agency's Administrative Office located at 9400 Cherry Avenue, Fontana. For additional information regarding the Regional Urban Water Management Plan please contact Dr. Sarah Kerger, at the Agency, (909) 357-0241, ext. 401.

Pub: Nov 1, 8 2000 #1300

APPENDIX I

IEUA Board Motion Approving the 2000 UWMP

RESOLUTION NO. 2000-12-5

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE INLAND EMPIRE UTILITIES AGENCY* ADOPTING THE YEAR 2000 REGIONAL URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797, (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan; and

WHEREAS, the Inland Empire Utilities Agency* is a wholesale supplier of water for a 242-square mile area in the western portion of San Bernardino County; and

WHEREAS, the Plan shall be periodically reviewed at least once every five years, and the Agency shall make any amendments or changes to its plan which are indicated by the review.

NOW, THEREFORE, the Board of Directors of the Inland Empire Utilities Agency* does hereby RESOLVE, DETERMINE, AND ORDER as follows:

Section 1. The Year 2000 Regional Urban Water Management Plan is hereby adopted.

Section 2. The Board Secretary is hereby authorized to file three copies of the Plan with the State Department of Water Resources by December 31, 2000.

Section 3. The Chief Executive Officer/General Manager is hereby authorized and directed to implement the Water Programs as detailed in the adopted Year 2000 Regional Urban Water Management Plan, including recommendations to the Board of Directors regarding necessary procedures, rules, and regulations in an effort to carry out effective and equitable water programs.

Section 4. This Resolution shall take effect upon adoption.

Resolution No. 2000-12-5
Page 2

ADOPTED this 7th day of December, 2000.

John L. Anderson
President of the Inland Empire Utilities Agency* and of the Board of Directors thereof

ATTEST:

Secretary of the Inland Empire Utilities Agency* and of the Board of Directors thereof

(SEAL)

* A Municipal Water District

STATE OF CALIFORNIA)
) SS
COUNTY OF SAN BERNARDINO)

I, Anne Dunihue, Secretary of the Inland Empire Utilities Agency*, DO HEREBY CERTIFY that the foregoing Resolution being No. 2000-12-5 was adopted at an Adjourned Regular Board Meeting on December 7, 2000, of said Agency by the following vote:

AYES:	Dunihue, Troxel, Catlin, Anderson
NOES:	None
ABSTAIN:	None
ABSENT:	Koopman

Anne Dunihue
Secretary

(seal)

* A Municipal Water District

APPENDIX B

CITY OF ONTARIO'S
RESOLUTION 2001-1005
DATED NOVEMBER 20, 2001
ADOPTING THE
URBAN WATER MANAGEMENT PLAN

CITY OF ONTARIO

Agenda Report
November 20, 2001

SECTION:
CONSENT CALENDAR

SUBJECT: ADOPTION OF A RESOLUTION FOR THE YEAR 2000 REGIONAL URBAN WATER MANAGEMENT PLAN

RECOMMENDATION: Recommend that the City Council adopt the attached resolution authorizing the City Manager to implement the Water Programs as detailed in the Year 2000 Regional Urban Water Management Plan.

COUNCIL GOALS: **Invest in the City's Infrastructure**

FISCAL IMPACT: No fiscal impact to the City. The water programs described in the Plan are consistent with the City's Water Master Plan and existing water recycling, conservation programs.

BACKGROUND: As a municipal water supplier, the City is required by the Urban Water Management Planning Act of 1990, to develop and adopt a plan that describes and evaluates reasonable and practical efficient water uses, recycling and conservation activities. To complete this unfunded State mandate with minimum cost, the report was prepared in cooperation with other local water agencies. The Inland Empire Utilities Agencies, the water wholesaler in the Chino Basin, managed this project, and provided the funding from its water sales proceeds and charges paid by the local retail agencies.

The Plan is consistent with the City Of Ontario Watermaster Plan which was completed in September 2000. The major components of the Plan include the following:

- Water use trends for local water supplies, recycled water and imported water.
- Planning for future water demands.
- Water conservation programs.
- Recycled water programs.
- Groundwater management programs.

These programs are designed to maximize beneficial use of recycled water and local water supplies, minimize future dependence on costly imported water, and develop a "drought-proofing" strategy for the region. A copy of the plan is on file with the Records Management Department.

STAFF MEMBER PRESENTING: Kenneth L. Jeske, Director of Public Works

Prepared by: Mohamed El-Amamy
Department: Utilities

City Manager Approval:

Submitted to (Council) O.R.A./O.H.A. 11-20-01
Approved: 11-20-01
Continued to:
Denied:

7

RESOLUTION NO. 2001-105

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ONTARIO ADOPTING THE YEAR 2000 REGIONAL URBAN WATER MANAGEMENT PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare an Urban Water Management Plan; and

WHEREAS, the City Of Ontario is a water supplier of more than 3,000 acre-feet annually; and

WHEREAS, the Inland Empire Utilities Agency who is the major water supplier to the City, has prepared the Inland Empire Utilities Agency Urban Water Management Plan of 2000; and

WHEREAS, the Plan is periodically reviewed at least once every five years; and

WHEREAS, the Inland Empire Utilities Agency Urban Water Management Plan describes a regional approach to the management of imported and local water supplies in the Chino Basin Service Area.

NOW, THEREFORE, IT IS HEREBY RESOLVED as follows:

SECTION 1. The Year 2000 Regional Urban Water Management Plan is hereby adopted.

SECTION 2. The Public Works Director is hereby authorized to file three copies of the Plan with the State Department of Water Resources.

SECTION 3. The City Manager is hereby authorized and directed to implement the Water Programs as detailed in the adopted Year 2000 Regional Urban Water Management Plan, including recommendations to the City Council regarding necessary procedures, rules, and regulations in an effort to carry out effective and equitable water programs.

SECTION 4. This Resolution shall take effect upon adoption.

I HEREBY CERTIFY, that the foregoing resolution was duly and regularly passed and adopted by the City Council of the City of Ontario, California, at a regular meeting thereof held on the 20th day of November, 2001.

ATTEST:

City Clerk
City of Ontario

APPENDIX C

"LOCAL AGENCY AGREEMENT"
DATED APRIL 15, 2003
BY AND AMONG
INLAND EMPIRE UTILITIES AGENCY
AND
THE CITY OF ONTARIO

LOCAL AGENCY AGREEMENT

Dated as of April 15, 2003

By and Among

INLAND EMPIRE UTILITIES AGENCY,

And

THE CITY OF ONTARIO

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Page

LOCAL AGENCY AGREEMENT

This Agreement is entered into as of April 15th, 2003, by and among the Inland Empire Utilities Agency ("IEUA"), a municipal water district duly organized and existing under the laws of the State of California, and the City of Ontario, ("Local Agency"), a general law city, duly organized and validly existing under the laws of the State of California.

WITNESSETH:

WHEREAS, in March 2000, California voters approved Proposition 13 ("Prop. 13") authorizing the State of California to sell $1.97 billion in general obligation bonds for water related projects throughout the State. The Governor's Budget Act for 2000, Chapter 52, Statutes of 2000, appropriated to the California Department of Water Resources ("DWR") local assistance grants for groundwater storage and supply reliability projects in the amount of $161,544,000 by budget item 3860-01-6027, payable from the Interim Reliable Water Supply and Water Quality Infrastructure and Managed Subaccount; and

WHEREAS, Metropolitan was subsequently selected by DWR as a grant recipient for $45 million (the "Prop. 13 Funds") to be used for groundwater storage projects within its service area. In a letter dated October 13, 2000, DWR set forth the specific terms and conditions of the grant to Metropolitan; and

WHEREAS, on September 20, 2000, Metropolitan sent a letter to its twenty-six member public agencies (consisting of cities, municipal water districts and a county water authority within its 5,155 square-mile service area covering portions of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura Counties), requesting a list of groundwater storage projects to be considered for Prop.13 Funding. On November 1, 2000, Metropolitan delivered to those member public agencies that indicated an interest in the Prop. 13 groundwater storage programs, a Request for Proposals for Participation in Groundwater Storage Programs Using Proposition 13 Funds, RFP No. WRM-2 (the "RFP"); and

WHEREAS, Metropolitan anticipated that programs funded by the Prop. 13 Funds would store water (by various methods) that Metropolitan imports from the State Water Project and the Colorado River. This stored water would be pumped by the member agency (or a sub-agency) with a corresponding reduction in surface water deliveries from Metropolitan. As a result, Metropolitan would have a greater amount of water to distribute within its service area. In addition, such groundwater storage programs are part of a larger effort to meet water supply demands in Southern California, as specifically set forth in the Integrated Water Resources Plan approved by Metropolitan's Board of Directors in 1996, and the Groundwater Storage Principles adopted in connection therewith by Metropolitan's Board of Directors in January 2000; and

WHEREAS, IEUA has entered into a Groundwater Storage Project Funding Agreement (the "Metropolitan Agreement") with Metropolitan, Three Valleys Municipal Water District and Chino Basin Watermaster whereby, among other things, funding will be provided to finance the City of Ontario's facilities listed on Exhibit A hereto (the "Local Agency Facilities") which are necessary to enhance a groundwater storage program in the Chino Basin; and

WHEREAS, IEUA desires to pass through to the Local Agency funding received by IEUA under the Metropolitan Agreement which are allocable to the Local Agency Facilities for use by the Local Agency to construct the Local Agency Facilities; and

WHEREAS, in exchange for such funding, the parties hereto intend that the Local Agency assume all obligations of IEUA under the Metropolitan Agreement and all obligations relating to the Local Agency Facilities, whether such obligations are imposed by Metropolitan, DWR or another entity, such obligations including but not limited to the obligations recited in Sections III, IV, V, VII, X, XI and XII of the Metropolitan Agreement;

NOW THEREFORE, the parties hereto do agree as follows:

Section 1. Definitions. All capitalized terms used herein and not otherwise defined shall have the meanings given in the Metropolitan Agreement.

Section 2. Effective Date; Termination Date. This Agreement shall become effective upon the Effective Date of the Metropolitan Agreement and shall terminate 25 years following the effective date.

Section 3. IEUA Duties. In exchange for the Local Agency duties and obligations established under the provisions of this Agreement, IEUA shall reimburse the Local Agency an amount equal to $5,674,168 for project related expenditures associated with the construction of one or more of the Local Agency Facilities listed on Exhibit A. IEUA acknowledges and agrees that the Local Agency Facilities shall be comprised of one or more of the facilities listed in Exhibit A. Payment by IEUA to the Local Agency shall be in accordance with the provisions of the Metropolitan Agreement.

Section 4. Local Agency Duties Generally. Local Agency hereby accepts and agrees to perform all of IEUA's duties under the Metropolitan Agreement relating to the Local Agency Facilities, it being the intention of IEUA and Local Agency that Local Agency will be directly responsible for all aspects of constructing, operating and maintaining the Local Agency Facilities in accordance with the Metropolitan Agreement. Local Agency shall only be required to increase its overall local groundwater production capacity in an amount equal to that percentage of 8,076 acre feet that equals the percentage of IEUA payment to the Local Agency of the $5,674,168.

Section 5. Illustrative List of Local Agency Duties. Among the duties Local Agency shall perform are those set forth below in this Section. Such duties are merely illustrative of the duties Local Agency shall perform and do not limit Local Agency's responsibilities hereunder.

(a) Construction Duties. Local Agency shall perform all of IEUA's duties with respect to the construction of the Local Agency Facilities which are set forth in the Metropolitan Agreement. Such duties include but are not limited to (i) obtaining the Required Approvals applicable to the Local Agency Facilities pursuant to Section III(C) of the Metropolitan Agreement, (ii) providing for the planning and preconstruction requirements of Section IV(A) of the Metropolitan Agreement which relate to the Local Agency Facilities, (iii) providing for the construction of the Local Agency Facilities in accordance with Section IV(B) of the Metropolitan Agreement, and (iv) completing construction of the Local Agency Facilities in accordance with the timeline set forth in Section IV(B) of the Metropolitan Agreement including retaining and supervising qualified contractors.

(b) Cost Overruns. Local Agency agrees to pay for any cost overruns allocable to the Local Agency Facilities pursuant to Section V(B). In addition, Local Agency shall pay any amounts due to Metropolitan pursuant to Section V(B)(2) which is allocable to the Local Agency Facilities. Should bids for construction of the Local Agency Facilities exceed the Approved Budget by more than five percent (5%), IEUA will review such cost increase with the Local Agency to determine the appropriate way to proceed with the program and the Local Agency may authorize a cost share, to change the scope of the project, or to discontinue the project, all in accordance with Section V(B)(2) of the Metropolitan Agreement.

(c) Operation and Maintenance Duties. With respect to the Local Agency Facilities, Local Agency agrees to perform those certain duties listed in the Metropolitan Agreement, namely:

(i) Cause the Local Agency Facilities to be operated and maintained in as good and efficient condition as upon their construction, ordinary and reasonable wear and depreciation excepted, and otherwise in accordance with industry standards (and DWR standards and requirements, if any);

(ii) Provide for all repairs, renewals, and replacements necessary to the efficient operation of the Local Agency Facilities;

(iii) To the extent existing facilities are utilized for the Program, provide for all repairs, renewals, and replacements necessary to the efficient operation of such existing facilities; and

(iv) Upon call by Metropolitan for Stored Water Delivery, operate Facilities, combined with the existing infrastructure, at Operational Capacity Thresholds necessary to meet performance targets as outlined in Exhibit G of the Metropolitan Agreement.

(d) Delivery of Metropolitan Water. Watermaster and IEUA will allocate Metropolitan water supplied by Metropolitan's Storage Account (replenishment, injection or in lieu) through an annual operating plan to be approved by IEUA and Watermaster. To the extent that Local Agency is allocated Metropolitan in lieu water, rate and charges paid by the Local Agency for such in lieu deliveries shall be based upon IEUA rates and charges adopted its Board of Directors for the Metropolitan Dry Year Storage Program from time-to-time.

(e) Groundwater and Pumping Responsibilities. Local Agency acknowledges and agrees that Metropolitan has the right to demand the pumping of stored water in the Chino groundwater basin in the maximum amount indicated herein. Local Agency shall reduce its imported water and provide for the pumping of stored water upon Metropolitan's request of a Stored Water Delivery, all in accordance with Section VII(C) of the Metropolitan Agreement, and consistent with Exhibit B hereto; provided, that the maximum amount in any given year shall not exceed that percentage of the amount in Exhibit B that equals the percentage of IEUA payment to the Local Agency of the $5,674,168. Local Agency shall be reimbursed by Metropolitan for operation and maintenance expenses incurred when pumping stored water upon Metropolitan's demand, all in accordance with Section VII(D) of the Metropolitan Agreement.

(f) Recordkeeping, Reporting, Inspection and Audit Duties. Local Agency shall perform all of IEUA's recordkeeping, reporting, inspection and audit duties which relate to the Local Agency Facilities, all in accordance under Section X of the Metropolitan Agreement.

(g) Indemnity. Local Agency shall immediately reimburse IEUA for any amounts expended for compliance with Section XI of the Metropolitan Agreement which are allocable or which in any way relate to the Local Agency Facilities.

(h) Insurance. Local Agency shall be responsible for providing and paying for all insurance with respect to the Local Agency Facilities required by Section XII of the Metropolitan Agreement.

Section 6. Representations, Warranties and Covenants. Local Agency represents, warrants and covenants as follows:

(a) Power and Authority. That it is a general law city, duly organized and validly existing under the laws of the State of California; that it has all necessary power and authority to enter into this Agreement and to perform its obligations hereunder on the terms set forth in this Agreement, and that the execution and delivery hereof by it and the performance of its obligations hereunder will not violate or constitute an event of default under the terms or provisions of any agreement, document or instrument to which it is a party or by which it is a party or by which it is bound.

(b) Authorization; Valid Obligation. That all proceedings required to be taken by or on behalf of Local Agency to authorize it to make, deliver and carry out the terms of this Agreement have been duly and properly taken, and that this Agreement is its valid and binding obligation enforceable in accordance with its terms, except as the same may be affected by bankruptcy, insolvency, moratorium or similar laws or by legal or equitable principles relating to or limiting the rights of contracting parties generally.

(c) No Litigation. To the best of Local Agency's knowledge, there is no litigation, proceeding or investigation pending or threatened, to which it is or would be a party, or which does or would bind or relate to the Chino Basin, directly or indirectly, which, individually or in the aggregate, if adversely determined, might materially and adversely affect its ability to perform its obligations under this Agreement, or which raises a question as to the validity of this Agreement, or any action to be taken hereunder.

(d) Compliance with Laws. In the performance of its obligations hereunder, Local Agency and its contractors and subcontractors will comply with all applicable laws, regulations and ordinances, including, without limitation, those listed in Section IX of the Metropolitan Agreement.

Local Agency and its contractors and subcontractors will give written notice of its obligations under this clause to labor organizations with which they have a collective bargaining or other agreement. Local Agency and its contractors will include the nondiscrimination and compliance provisions of this clause in all contracts and subcontracts let for the construction of the Local Agency Facilities.

(e) Compliance with DWR Requirements. The Plans will comply with any DWR requirements, including any requirements set forth in the DWR Funding Letter. During the performance of its obligations herein, Local Agency will comply with any DWR requirements, including any requirements set forth in the DWR Funding Letter.

(f) No Construction. That construction of the Local Agency Facilities and related work (including planning activities) did not commence prior to the Effective Date.

(g) Capacity. Local Agency and its contractors, subcontractors and its respective agents will at all times act in an independent capacity and not purport to act as, or represent to others that they are, officers, employees, representatives or agents of Metropolitan, DWR or the State of California.

(h) Oversight and Supervision of Construction. Local Agency will oversee and supervise all contractors and keep control of all work and provisions of services and materials in connection with the Program.

(i) Maintain Ownership of Program Property. Local Agency will not sell, abandon, lease, transfer, exchange, mortgage, hypothecate or encumber in any manner whatsoever all or any portion of any real or other property necessarily connected or used in conjunction with the Program without the written consent of IEUA, which consent shall not unreasonably be withheld. IEUA shall have the burden of persuasion with respect to the unreasonableness of any proposed Local Agency action regarding the property. Local Agency shall use reasonable efforts to avoid material legal injury to third parties and to comply with lawful regulatory agency requirements in the construction and operation of Local Agency Facilities.

Section 7. Miscellaneous.

(a) Headings. The headings of the sections hereof are inserted for convenience only and shall not be deemed a part of this Agreement.

(b) Partial Invalidity. If any one or more of the covenants or agreements provided in this Agreement to be performed should be determined to be invalid or contrary to law, such covenant or agreement shall be deemed and construed to be severable from the remaining covenants and agreements herein contained and shall in no way affect the validity of the remaining provisions of this Agreement.

(c) Counterparts. This Agreement may be executed in several counterparts, all or any of which shall be regarded for all purposes as one original and shall constitute and be but one and the same instrument.

(d) Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

(e) Notices. Any notices required or permitted to be given hereunder shall be given in writing and shall be delivered (a) in person, (b) by certified mail, postage prepaid, return receipt requested, (c) by Federal Express or another reputable commercial overnight courier that guarantees next day delivery and provides a receipt, or (d) by telefacsimile or telecopy, and such notices shall be addressed as follows:

If to IEUA: Inland Empire Utilities Agency
9400 Cherry Avenue, Bldg. A
Fontana, California 92335
Attention: Treasurer

With a copy to:	Stradling Yocca Carlson & Rauth 660 Newport Center Drive, Suite 1600 Newport Beach, California 92660 Attention: Douglas Brown
If to Watermaster:	Chino Basin Watermaster 8632 Archibald Avenue, Suite 109 Rancho Cucamonga, California 91730 Attention: _____
If to Local Agency:	City Of Ontario 303 B Street Ontario, California 91763 Attention: Gregory Devereaux, City Manager

or to such other address as either party may from time to time specify in writing to the other party. Any notice shall be deemed delivered when actually delivered, if such delivery is in person, upon deposit with the U.S. Postal Service, if such delivery is by certified mail, upon deposit with the overnight courier service, if such delivery is by an overnight courier service, and upon transmission, if such delivery is by telefacsimile or telecopy.

(f) Merger of Prior Agreements. This Agreement and the Exhibits hereto constitute the entire agreement between the parties and supersede all prior agreements and understandings between the parties relating to the subject matter hereof.

(g) Time of the Essence. Time is of the essence in the performance of this Agreement.

IN WITNESS WHEREOF, IEUA has executed this Agreement with the approval of its governing body, Watermaster has executed this Agreement with the approval of its governing body, and Local Agency has executed this Agreement in accordance with the authorization of its governing body.

INLAND EMPIRE UTILITIES AGENCY

By: _____
~~President~~ GENERAL MANAGER

CITY OF ONTARIO

By: _____
Gregory C. Devereaux
City Manager

EXHIBIT A

CITY OF ONTARIO

LOCAL AGENCY FACILITIES

1. Ion-Exchange Facility located at John Galvin Park, south side of Forth Street between Cucamonga Avenue and Grove Avenue.

2. Three Aquifer Storage and Recovery Wells located at three of the five following locations:

   2.1 North side of Concours Avenue, wesst of Milliken Avenue.

   2.2 Southeast corner of Grove Avenue and 7th Street.

   2.3 Memorial Grove Park near the intersection of Grove Avenue and "G" Street.

   2.4 Northeast corner of Jurupa Street and Dupont Street.

   2.5 Northeast corner of Belmont Street and Grove Avenue.

EXHIBIT B

PERFORMANCE TARGETS

CITY OF ONTARIO

Dry Year Shift obligation of 8,076 AF over 12-month period

8,076 AF reduced imported water reduction
8,076 AF pumped from Metropolitan Water District storage account
8,076 AF increase in City of Ontario's overall local supply production
all three criteria must be met plus or minus 10 percent

Failure to perform would result in City of Ontario being charged a rate equal to two times the Metropolitan Tier 2 rates in effect at such time for each acre-foot of the Dry Year Shift obligation not met.

CITY OF ONTARIO

Agenda Report
April 15, 2003

SECTION:
ADMINISTRATIVE REPORTS/ DISCUSSION/ACTION

SUBJECT: AUTHORIZE THE CITY MANAGER TO EXECUTE AN AGREEMENT WITH INLAND EMPIRE UTILITIES AGENCY TO FUND WATER CAPITAL FACILITIES IN CONJUNCTION WITH THE METROPOLITAN WATER DISTRICT CHINO BASIN DRY-YEAR-YIELD PROJECT.

RECOMMENDATION: That the City Council authorize the City Manager to execute an agreement with the Inland Empire Utilities Agency (IEUA) to fund water capital facilities in conjunction with a Metropolitan Water District Chino Basin Dry-Year-Yield Project.

COUNCIL GOALS: **Invest in the City's Infrastructure**

FISCAL IMPACT: Ontario will receive up to $5,674,168 in grant funds to build three new groundwater wells and a wellhead treatment facility.

- The anticipated total production of the funded facilities is 9,000 acre-feet per year, which is greater than the total dry-year shift obligation.
- Use of these facilities during non-shift periods allows for more efficient operation of the water system through increased water production capacity, which provides for greater local control and less reliance on imported water.
- MWD reimburses the City for all costs associated with the operation and maintenance, including pumping and treatment costs, of the funded facilities to produce the water from the MWD storage account.
- In exchange, during a dry year Ontario shifts up to 8,076 acre-feet per year of its imported water use supplied by the Metropolitan Water District of Southern California (MWD) to water produced from the facilities funded through the Dry-Year Yield Program.

BACKGROUND: In March 2000, California voters approved Proposition 13 authorizing the State of California to sell $1.97 billion in general obligation bonds for water related projects throughout the State. Of these funds, $161,544,000 was appropriated to the California Department of Water Resources ("DWR") local assistance grants for groundwater storage and supply reliability projects. MWD was subsequently selected by DWR as a grant recipient for $45 million to be used for groundwater storage

STAFF MEMBER PRESENTING: Ken Jeske, Director of Public Works \ Community Services

Prepared by: Mohamed El-Amamy
Department: Utilities Department

City Manager Approval: Gregory C. Devereaux

Submitted to: (Council)/O.R.A./O.H.A. 04/15/03
Approved: 04/15/03
Continued to:
Denied:

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projects within its service area. Such groundwater storage programs are part of a larger effort to meet water supply demands in Southern California. MWD is the wholesale water agency supplying imported water to southern California from the Colorado River and the State Water Project from northern California.

In January 2002, Inland Empire Utilities Agency (IEUA) and the Chino Basin Watermaster jointly submitted a proposal to MWD for a Groundwater Conjunctive Use Storage Program in conjunction with local water agencies such as Ontario. This program allows MWD to maintain a maximum of 100,000 acre-feet of groundwater in its Chino Basin storage account, and call on up to 33,000 acre-feet per year, but no more than the amount remaining in the storage account. In April 2002, MWD approved the program and agreed to contribute up to $27.5 million to participating local water agencies to build wells and wellhead treatment facilities.

The Inland Empire Utilities Agency is the lead agency for compliance with the California Environmental Quality Act (CEQA). The Programmatic Environmental Impact Report (PEIR) for the Optimum Basin Management Program was approved and certified in July 2000. According to the procedures outlined in the PEIR, a second tier environmental document is required for the Dry-Year Yield project to verify findings of consistency with the PEIR. The Findings of Consistency report was approved and certified in December 2002.

IEUA has entered into an agreement with MWD, Three Valleys Municipal Water District and Chino Basin Watermaster whereby funding will be provided to local agencies to build water production and treatment facilities. Each participating local water agency will receive a portion of these funds consistent with the agency's ability to use delivered MWD water during normal years and use groundwater from the MWD storage account during dry years (shift obligation). Ontario's shift obligation is 8,076 acre-feet, and its share of the funding is $5,674,168. These funds will be used to build three new groundwater wells and a wellhead treatment facility to remove nitrates from several existing wells. The City agrees to complete the construction of the funded facilities no later than March 8, 2008. Upon call by MWD for stored water delivery, the City will operate these facilities, combined with the existing infrastructure to meet its shift obligation. As a result, the City is less reliant on imported water supply.

The City's responsibilities include the following:

1. Construction of the facilities: Including but are not limited to, obtaining the required approvals, providing for the design and completing construction of the facilities no later than March 2008.
2. Cost Overruns. Should bids for construction of the facilities exceed the approved budget by more than five percent (5%), IEUA will review such cost increase with the City to determine the appropriate way to proceed with the program. The City may authorize a cost share to change the scope of the project, or to discontinue the project.
3. Operation and Maintenance Duties. The City is responsible for the efficient operation and proper maintenance of the funded facilities in accordance with industry standards. Operation and maintenance costs are to be reimbursed by MWD.

APPENDIX D

"INSTALLMENT PURCHASE AGREEMENT RELATING TO WATER FACILITIES AUTHORITY WATER TREATMENT PLANT"
BY AND BETWEEN
WATER FACILITIES AUTHORITY, AS SELLER
AND
THE CITY OF ONTARIO, AS PURCHASER
DATED AS OF OCTOBER 1, 1985

INSTALLMENT PURCHASE AGREEMENT RELATING TO
WATER FACILITIES AUTHORITY WATER TREATMENT PLANT

by and between

WATER FACILITIES AUTHORITY, as Seller

and

CITY OF ONTARIO, as Purchaser

Dated as of October 1, 1985

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ARTICLE VII

ADMINISTRATIVE PROVISIONS

INSTALLMENT PURCHASE AGREEMENT
RELATING TO WATER FACILITIES AUTHORITY
WATER TREATMENT PLANT

THIS INSTALLMENT PURCHASE AGREEMENT RELATING TO WATER TREATMENT PLANT, made and entered into as of October 1, 1985, by and between the City of Ontario (herein called the "Purchaser"), a municipal corporation organized and existing under the laws of the State of California, and the Water Facilities Authority, a joint exercise of powers authority (herein called "Seller"):

W I T N E S S E T H :

In consideration of the mutual covenants hereinafter contained and for other valuable consideration, the parties hereto do agree as follows:

ARTICLE I

RECITALS

101. Status and Powers of Authority. Seller is a California joint exercise of powers authority organized and existing under the joint exercise of powers law, Chapter 5, Division 7, Title 1 (commencing at Section 6500) of the Government Code of the State of California, and is authorized to acquire and construct the Project, to sell capacity therein to the Purchaser and perform the actions and duties more particularly described herein. The member entities comprising Seller are the Cities of Chino, Ontario and Upland, San Bernardino County Waterworks District No. 8, the Monte Vista Water District, and the Cucamonga County Water District. The Cities of Chino, Ontario and Upland, San Bernardino County Waterworks District No. 8, and the Monte Vista Water District have formed Project Committee No. 1 of Seller (collectively, the "Purchasers"), each of which will purchase certain capacity rights in the Project to be constructed by Seller. Following completion of construction of the Project, the Project is to be owned, operated and maintained by Seller for the benefit of the Purchasers.

102. Status and Powers of Purchaser. Purchaser is a municipal corporation organized and existing under the laws of the State of California.

Purchaser is desirous of purchasing capacity in the Project in order to provide treated water to its customers and thereby to further its public purpose. Purchaser is authorized to purchase real and personal property for the common benefit in order to achieve its public purposes.

Pursuant to Resolution No. _____ of the City Council of Purchaser adopted on _____, 1985, Purchaser is authorized to enter into this Agreement.

103. Purpose of Agreement. Purchaser desires to purchase certain capacity in the Project from Seller and Seller desires to sell such capacity in the Project to Purchaser in consideration of the payment by Purchaser of installments of principal and interest on the unpaid purchase price therefor. The capacity to be acquired by the Purchaser in each portion of the Project, together with the capacities to be acquired by the other Purchasers, and a description of the Project, is set forth in Exhibit A attached hereto and by this reference incorporated herein. The purpose of this Agreement is to effectuate said transaction by setting forth the terms and conditions relating thereto.

104. Financing the Project. To provide Seller with the funds to finance the construction of the project, Seller will assign its right to secure the Installment Payments from the Purchasers to the Bank of America National Trust and Savings Association as Trustee and the Trustee will issue Certificates of Participation secured by the Installment Payments and the proceeds from the sale of the Certificates of Participation will be deposited with the Trustee for the payment of Costs. The Letter of Credit Bank will pay an amount equal to the Installment Payments due on any Interest Payment Date to the Trustee by draws on the Letter of Credit. The Purchaser agrees to pay the Installment Payments and other amounts due hereunder to Seller and the Seller agrees to pay the Installment Payments to the Letter of Credit Bank in satisfaction of the reimbursement obligations of Seller under the Reimbursement Agreement.

105. Acknowledgement of Assignment Agreement. Seller and Purchaser acknowledge that Seller on the date hereof is entering into an Assignment Agreement Relating to Water Facilities Authority Water Treatment Plant with the Letter of Credit Bank and with Bank of America National Trust and Savings Association, as Trustee (the "Trustee"); that pursuant to said Assignment Agreement, Seller is assigning and transferring to the Letter of Credit Bank and to the Trustee all of its rights under this Agreement, including, among others, its rights to exercise its remedies to enforce the receipt of such Installment Payments, as such rights and remedies are provided

by this Agreement; and that the Letter of Credit Bank and the Trustee as their interests appear constitute the assignees of Seller as described herein.

106. Acknowledgement of Status of Project. Seller and Purchaser acknowledge that Seller is the owner of the Property more particularly described in Exhibit B attached hereto and by this reference incorporated herein and will be the owner of the Project, which includes the Property, and will retain title to the Project and the Purchaser will hereunder acquire only capacity in the Project.

ARTICLE II

DEFINITIONS AND GENERAL PROVISIONS

201. Definitions in General. The terms defined in this Section shall, for all purposes of this Agreement and the Trust Agreement, have the meanings ascribed to them, unless the context clearly requires some other meaning.

Acceptance Certificate shall mean a certificate of an Authorized Representative of the Seller to the effect that the Project has been completed substantially in conformity with the plans and specifications therefor.

Adjusted Interest Rate shall mean the interest rate on the Certificates determined and established pursuant to Section 317 of the Trust Agreement.

Agreements shall mean, collectively, the Installment Purchase Agreements Relating to Water Facilities Authority Water Treatment Plant, each dated as of October 1, 1985, between the Seller and each of the Purchasers, and any and all modifications, alterations, amendments and supplements thereto made in accordance with the provisions of each Installment Purchase Agreement and the Trust Agreement, as assigned to the Trustee under the Assignment Agreement. The term Agreement shall individually refer to the Chino Installment Purchase Agreement, the Ontario Installment Purchase Agreement, the Upland Installment Purchase Agreement, the County Installment Purchase Agreement, or the Monte Vista Installment Purchase Agreement, depending on how the term is used in context.

Agreements Term shall mean the period during which the Agreements are in effect as specified in the Agreements.

Alternate Security means any guaranty agreement, surety agreement or letter of credit substituted for the Letter of Credit and securing the payment of the principal of, interest on and all other amounts with respect to the Certificates, issued by a financial institution, insurance company or banking institution which has been assigned by a major nationally recognized rating agency a credit rating equal to or higher than the then-current credit rating assigned to the Letter of Credit Bank, which must (or a commitment therefor must) be delivered to the Trustee at least ten (10) days prior to the beginning of the final 35 days of the term of the Letter of Credit, provided that the Alternate Security will not, by itself, result in reduction in the rating of the Certificates.

Assignment Agreement shall mean that certain Assignment Agreement by and among the Seller the Letter of Credit Bank and the Trustee dated as of October 1, 1985, pursuant to which the Seller assigns its rights under all the Agreements to the Letter of Credit Bank and to the Trustee on behalf of the holders of the Certificates.

Authorized Newspaper shall mean a newspaper customarily published at least once a day for at least five days (other than legal holidays) in each calendar week, printed in the English language, and of general circulation in Los Angeles, California and New York, New York.

Authorized Representative of the City of Chino shall mean the City Manager or Assistant City Manager or any person or persons designated by the City Council of the City of Chino to act on behalf of the City by a written certificate signed on behalf of the City by the Mayor and containing the specimen signature of each such person.

Authorized Representative of San Bernardino County Waterworks District No. 8 shall mean any person or persons designated by the Board of Supervisors of the County of San Bernardino acting as the Board of Directors of the San Bernardino County Waterworks District No. 8 and authorized to act on behalf of said Purchaser by a written certificate signed on behalf of said Purchaser by the Chairman of the Board and containing the specimen signature of each such person.

Authorized Representative of Monte Vista shall mean the General Manager or Assistant General Manager or any person or persons designated by the Board of Directors of the Purchaser to act on behalf of the Purchaser by a written certificate signed on behalf of the Purchaser by the President and containing the specimen signature of each such person.

Authorized Representative of the City of Ontario shall mean the City Manager or Assistant City Manager or any person or persons designated by the City Council of the City of Ontario to act on behalf of the City by a written certificate signed on behalf of the City by the Mayor and containing the specimen signature of each such person.

Authorized Representative of the Seller shall mean the Chairman of the Seller or any person or persons designated by the City Council of the Seller and authorized to act on behalf of the Seller as certified by a written certificate signed on behalf of the Seller by the Chairman of the Seller and containing the specimen signature of each such person.

Authorized Representative of the City of Upland shall mean the City Manager or Assistant City Manager or any person or persons designated by the City Council of the City of Upland to act on behalf of the City by a written certificate signed on behalf of the City by the Mayor and containing the specimen signature of each such person.

Available Moneys shall mean moneys (i) that have been on deposit with the Trustee for at least 124 days, during which period no petition by or against any Purchaser or the Seller has been filed in respect of bankruptcy, insolvency or the reorganization of such person (or has been filed but dismissed); (ii) that represent any proceeds of a draw under the Letter of Credit; (iii) that represent any proceeds of the sale of the Certificates; or (iv) Net Proceeds.

Bond Counsel shall mean a nationally recognized law firm specializing in the area of tax-exempt municipal finance.

Business Day shall mean any day other than (i) a Saturday or Sunday or legal holiday or a day on which banking institutions in any of the cities in which the principal office of the Paying Agent, the Trustee or the Letter of Credit Bank is located and authorized or required by law or regulation to close, or (ii) a day on which the New York Stock Exchange is closed.

Certificate or Certificates shall mean any certificate or certificates of participation executed and delivered by the Trustee pursuant to the Trust Agreement, each such certificate representing a proportionate interest in the principal portion of the Installment Payments payable on each Installment Payment Date and in the interest portion of the Installment Payment due and payable monthly (or payable semiannually on and after the Conversion Date), to and including such maturity date at the Adjusted Interest Rate.

Certificate holder or Holder of Certificates shall mean the registered owner of any Certificate or Certificates.

Certificate Year shall mean the twelve-month period which commences on October 1 in every year and ends on September 30 of the succeeding year.

Construction Fund shall mean the Construction Fund established in Section 501 of the Trust Agreement.

Conversion Date shall mean the date upon which the Certificates begin to bear interest at the Fixed Interest Rate as provided in Section 320 of the Trust Agreement.

Cost shall mean and be deemed to include, with respect to the Project, but on a pro-rata basis with respect thereto together with any other proper item of cost not specifically mentioned in the Agreements, whether incurred prior to or after the date of the Agreements, (a) costs of payment of, or reimbursement for, acquisition, design, construction, installation and financing of the Project, including, but not limited to, administrative costs and capital expenditures relating to acquisition, construction, installation and financing payments, inspection costs, filing and recording costs, printing costs, reproduction and binding costs, fees and charges of the Trustee pursuant to this Trust Agreement, financing documents, legal fees and charges, financial, accounting and other professional consultant fees, the cost of obtaining the Letter of Credit, fees of rating agencies or costs of obtaining credit ratings, fees for the execution, transportation and safekeeping of Certificates, and charges and expenses in connection with the foregoing; (b) all other costs which the Seller shall be required to pay under the terms of any contract or contracts for the acquisition, construction and installation of the Project, including, but not limited to the cost of any insurance required under the Agreements; (c) any sums required to reimburse the Purchasers for advances made for either of the above items, or for any other costs incurred and for work done, or property conveyed, which is properly chargeable to the Project; and (d) such other expenses not specified herein as may be necessary or incidental to the acquisition, construction, rehabilitation and installation of the Project, the financing thereof and the placing of the same in use and operation, including the Remarketing Agent's fee, the Paying Agent's fee, and the first annual fee for the Letter of Credit. Cost as defined herein shall be deemed to include the cost and expenses incurred by any agent of the Seller for any of the above-mentioned items.

Earliest Optional Payment Date shall mean the first Interest Payment Date which occurs at least seven years after the Conversion Date.

Enterprise shall mean the entire water system of each Purchaser and in the case of San Bernardino Waterworks District No. 8 its sewer system, including without limitation all improvements, works or facilities owned, controlled or operated by the Purchaser to provide water service as such improvements, works or facilities now exist, together with all additions to be acquired, constructed and financed with funds derived from the sale of the Certificates, together with all improvements and extensions to said water system later constructed or organized.

Fiscal Year shall mean the twelve-month fiscal period of the Seller which commences on July 1 in every year and ends on June 30 of the following year.

Fixed Interest Rate shall mean the fixed annual interest rate on the Certificates established in accordance with Section 320 of the Trust Agreement.

Gross Revenues of the Enterprise or Gross Revenues means all revenues, and all money secured or collected from or arising out of the use or operation of the Enterprise or arising from the Enterprise, including, without limitation, all charges, rentals, and fees required to be paid for services as permitted or required by law, resolution or order, to the Purchaser for operation of the Enterprise, excepting only all customer deposits.

Installment Payment Dates shall mean the respective dates on which Installment Payments are scheduled to be made, as set forth in Exhibit C to each Agreement.

Installment Payments shall mean the aggregate of amounts set forth in the respective Agreements corresponding to the Installment Payment Dates set forth therein and designated the principal components of such Installment Payments, plus the interest components of such Installment Payments, as such amounts may be adjusted from time to time pursuant to Sections 305 of the Agreements and all other amounts payable by the Purchasers pursuant to the terms of the respective Agreements.

Interest Payment Date shall mean (a) prior to the Conversion Date, the first Wednesday of each month or the following Business Day if said Wednesday is not a Business Day, and (b) after the Conversion Date, April 1 and October 1 of each year.

Interest Payment Fund shall mean the Interest Payment Fund of the Installment Payment Account established in Section 501 of the Trust Agreement.

Interest Period shall mean (a) prior to the Conversion Date, the period from and including Wednesday of one week through Tuesday of the following week, except that the interest period commencing on the Wednesday next preceding a Record Date shall be extended through the day immediately preceding the next Interest Payment Date, and the interest rate which would have commenced on the Wednesday on or next following the Record Date will commence on the next Interest Payment Date, and (b) on or after the Conversion Date, the period from and including the Conversion Date until the succeeding April 1st or October 1st and thereafter from said April 1st or October 1st to the following March 31st or October 30th, respectively.

Investment Securities shall mean and include any of the following securities, if and to the extent the same are at the time legal for investment of Authority funds: (1) direct obligations of the United States of America (including obligations issued or held in book-entry form on the books of the Department of the Treasury of the United States of America) or obligations the timely payment of the principal of and interest on which are fully guaranteed by the United States of America; (2) obligations, debentures, notes or other evidence of indebtedness issued or guaranteed by any of the following: Banks for Cooperatives, Federal Intermediate Credit Banks, Federal Home Loan Bank System, Export-Import Bank of the United States, Federal Financing Bank, Federal Land Banks, Government National Mortgage Association, Farmer's Home Administration, Federal Home Loan Mortgage Corporation or Federal Housing Administration; (3) interest-bearing demand or time deposits (including certificates of deposit) in banks (including the Trustee) and savings and loan associations, having combined capital and surplus of at least Seventy Five Million Dollars ($75,000,000); (4) repurchase agreements with financial institutions of the types described in (3), provided that the investments which are the subject of such agreements are permitted investments described in (1), (2) or (3) of this definition; and (5) the Local Agency Investment Fund.

Notwithstanding anything herein to the contrary, "Investment Securities" with respect to the investment of amounts representing draws under the Letter of Credit shall mean only direct obligations of the United States maturing not more than 30 days after the date on which they are acquired, and entry into a repurchase agreement with respect to such securities shall not be an allowable investment of such amounts.

Letter of Credit shall mean the irrevocable direct draw letter of credit issued by The Mitsubishi Bank, Ltd., Los Angeles Agency, in the stated amount of $_____.

Letter of Credit Bank shall mean The Mitsubishi Bank, Ltd., Los Angeles Agency, the issuer of the Letter of Credit.

Maximum Annual Debt Service shall mean as of any date of calculation the sum of (a) the interest coming due on the Outstanding Certificates at an assumed rate of 10% per annum, and (b) the amount of all sinking fund installments and principal maturities, all as computed for the Certificate Year in which such sum shall be largest; provided that on the Conversion Date the amount of the Maximum Annual Debt Service shall be reduced to reflect the actual Fixed Interest Rate.

Maximum Interest Rate shall mean 12% per annum.

Moody's shall mean Moody's Investors Service, a bond rating service with offices in New York, New York.

Maintenance and Operation Costs of the Enterprise includes the reasonable expenses of management and other expenses necessary to operate, maintain and preserve each respective Enterprise in good repair and working order, excluding depreciation.

Net Proceeds shall mean any insurance or condemnation proceeds paid with respect to the Project, remaining after payment therefrom of all expenses incurred in the collection thereof.

Net Revenues of the Enterprise shall mean the amounts of Gross Revenues of the Enterprise remaining after payment therefrom the Maintenance and Operation Costs of the Enterprise.

Outstanding, when used with reference to Certificates, shall mean, as of any date, Certificates theretofore or thereupon being authenticated and delivered under the Trust Agreement except:

(i) Certificates cancelled by the Paying Agent on or prior to such date;

(ii) Certificates (or portions of Certificates) for the payment or redemption of which moneys, equal to the principal amount or Redemption Price thereof, as the case may be, with interest to the date of maturity or redemption date, shall be held in trust under

the Trust Agreement and set aside for such payment or redemption, (whether at or prior to the maturity or redemption date), provided that if such Certificates (or portions of Certificates) are to be redeemed, notice of such redemption shall have been given as in Article III provided or provision satisfactory to the Trustee shall have been made for the giving of such notice; and

(iii) Certificates in lieu of or in substitution for which other Certificates shall have been executed and delivered pursuant to Article III of the Trust Agreement.

Participants Security Agreement shall mean the Agreement dated as of October 1, 1985 by and among the Letter of Credit Bank, the Trustee and each Purchaser.

Paying Agent shall mean BankAmerica Trust Company of New York or its successor or successors or any other corporation which may at anytime be substituted in its place pursuant to the provisions of this Trust Agreement, provided that any such successor's or substitute corporation's unsecured senior debt obligations must be rated "Baa-3" or higher by a nationally recognized rating agency, if such successor or substitute corporation is not a commercial bank or trust company.

Permitted Encumbrances shall mean as of any particular time:

(i) Liens for ad valorem taxes and assessments, if any, not delinquent or which Purchasers may, pursuant to Section 415 of the Agreements, permit to remain unpaid;

(ii) The Agreements;

(iii) The Assignment Agreement;

(iv) The Trust Agreement;

(v) Participants Security Agreement; and

(vi) Easements, rights of way and other rights, reservations, covenants, conditions or restrictions which do not impair or impede construction or operation of the Project as evidenced by the certificate of an Authorized Representative of Seller filed with the Trustee and the Letter of Credit Bank.

Prime Rate shall mean the rate of interest publicly announced by the Letter of Credit Bank in Los Angeles, California from time to time as its prime rate for unsecured

commercial borrowings, said rate to change effective on and as of any change in said Prime Rate.

Principal Payment Date shall mean the date on which a principal amount of the Certificates is paid as provided in Section 303(7) of the Trust Agreement.

Principal Payment Fund shall mean the Principal Payment Fund established in Section 501 of the Trust Agreement.

Project shall mean the the Water Treatment Plant and water transmission lines and energy recovery stations to be acquired and constructed more particularly described in Exhibit "A" hereof.

Purchase Date shall mean any Business Day upon which a Certificate, after receipt by the Remarketing Agent of a Tender Notice submitted in accordance with Section 401 of the Trust Agreement is purchased from the Holder thereof on behalf of a new Holder procured by the Remarketing Agent.

Purchase Payment Price shall mean as of each Installment Payment Date, the amount set forth in Exhibit C to each Agreement, minus amounts available in the Construction Fund, Principal Payment Fund, the Interest Payment Fund, and Reserve Fund, plus an amount equal to any other amounts then due and owing under that Agreement with respect to the Project or regarding that Agreement the amount due and owing under the Reimbursement Agreement with respect to the Letter of Credit.

Purchase Price shall mean as to each Purchaser, such Purchaser's share of the Cost to acquire its capacity in the Project, as set forth in Exhibit A to its Agreement.

Record Date shall mean (a) prior to the Conversion Date the second Business Day preceding the first Wednesday of each month and (b) on or after the Conversion Date the fifteeth day of the month immediately preceding an Interest Payment Date.

Redemption Fund shall mean the Redemption Fund established in Section 501 of the Trust Agreement.

Redemption Price shall mean, with respect to any Certificate, the principal amount thereof payable upon redemption thereof pursuant to such Certificate or the Trust Agreement, and following the Conversion Date, any premium payable in connection therewith.

Reimbursement Agreement shall mean the Reimbursement Agreement relating to the Letter of Credit, dated as of October 1, 1985 between the Seller and the Letter of Credit Bank.

Remarketing Agent shall mean Merrill Lynch Capital Markets, Merrill Lynch, Pierce, Fenner & Smith Incorporated, and its successor or successors and any corporation which may be substituted in its place pursuant to that certain Remarketing Agreement dated as of October 1, 1985, by and among the Seller, the Trustee, the Remarketing Agent and the Paying Agent, provided that any such successor's or substitute corporation's debt obligations must be rated "Baa" or higher by a nationally recognized rating agency if such successor or substitute corporation is not a commercial bank or trust company and is not a bond dealer then listed.

Reserve Fund shall mean the Reserve Fund established in Section 501 of the Trust Agreement.

Reserve Requirement shall mean the amount set aside in the Reserve Fund pursuant to Section 504.1 of the Trust Agreement.

Standard & Poor's shall mean Standard & Poor's Corporation, a bond rating service with offices in New York, New York.

State shall mean the State of California.

Supplemental Trust Agreement shall mean any agreement supplemental or amendatory of the Trust Agreement.

Tender Interest shall mean, for any period of time in which there is an unreimbursed drawing under the Letter of Credit, that amount which, when added to the interest component of any Installment Payment payable to the Letter of Credit Bank during such period, will result in the Letter of Credit Bank's receiving for the first 180 days after the draw a yield equivalent to the yield of 1/2% over the average interest charged for each day on reserves traded for overnight use by member banks of the Federal Reserve System as determined by the Letter of Credit Bank, and thereafter at a yield equal the Prime Rate for a similar advance for a similar period on such unreimbursed draw under the Letter of Credit.

Tender Notice shall mean the notice required to be submitted by an owner of a Certificate for receipt by the Paying Agent on the Business Day at least seven (7) days prior to a Purchase Date as provided in Section 318 of the Trust Agreement, demanding that such Certificate be purchased.

Trust Agreement shall mean the Trust Agreement entered into by and among, the Purchasers, the Trustee, the Seller and the Paying Agent dated as of October 1, 1985 Relating to the Water Facilities Authority Water Treatment

Plant and any and all amendments and supplements thereto made in accordance with the provisions of the Trust Agreement.

Trust Estate shall mean (i) all right, title and interest of the Trustee in and to the Installment Payments and the Agreements including, without limitation: (ii) all amounts from time to time deposited in the accounts and subaccounts created pursuant to the Trust Agreement in accordance with the provisions of Article III of the Agreements, including all investments and investment earnings thereon and (iii) amounts drawn under the Letter of Credit or under any Alternate Security.

Trustee shall mean Bank of America National Trust and Savings Association, or its successor or successors or any other corporation which may at any time be substituted in its place pursuant to the provisions of the Trust Agreement.

202. Rules of Construction. Words of the masculine gender shall be deemed and construed to include correlative words of the feminine and neuter genders. Unless the context otherwise indicates, words importing the singular number shall include the plural number and vice versa, and words importing persons shall include corporations and associations, including public bodies, as well as natural persons.

The terms "hereby," "hereof," "hereto," "herein," "hereunder" and any similar terms, as used in this Agreement, refer to this Agreement.

ARTICLE III

SALE OF CAPACITY IN THE PROJECT; PURCHASE PRICE

301. Deposit of Moneys. In order to induce Purchaser to purchase the stated capacity in the Project from Seller and to assure Purchaser that the moneys needed to pay the Project Cost will be available for this purpose without delay, Seller, immediately following recordation of this Agreement and the other Agreements with other Purchasers by Seller, shall deposit with the Trustee or cause to be deposited with the Trustee, the sum of $_____. Of this amount, $_____ is required to be deposited in the Construction Fund held by the Trustee pursuant to the Trust Agreement; $_____ is required to be deposited in the Reserve Fund, of which $_____ will be held in the Ontario Reserve Account held by the Trustee pursuant to the Trust Agreement for Purchaser; and $_____ is required to be deposited in the Ontario Interest Payment Account held by the Trustee pursuant to the Trust Agreement for Purchaser.

302. Construction of Project. Seller agrees to acquire and construct or cause the acquisition and construction of the Project pursuant to the plans and specifications on file in the office of the Seller. Seller shall cause contractors under any construction contracts to comply with workers' compensation insurance laws and to pay prevailing wages in accordance with the requirements of Article 2 (commencing with Section 1770) of Chapter 1, Part 7, Division 2 of the California Labor Code. Seller shall provide for supervision of construction of the Project until completion of construction of the Project. Seller shall cause the construction to be performed diligently to the end and covenants that the Project will be substantially completed by October 8, 1988. Purchaser and Seller agree that upon substantial completion of the Project, Seller will maintain and operate the Project under the terms and provisions of this Agreement and such other agreements to be made between the Seller and the Purchasers. No changes shall be made in such plans and specifications which increase the pro rata portion of Project Cost attributable to the Purchaser's capacity in the Project in excess of the funds available in the Construction Fund unless the Purchaser deposits or causes to be deposited in the Construction Fund monies in an amount deemed by the Seller and Purchaser to be sufficient to pay such increase.

Upon completion of construction of the Project, Seller shall deliver or cause to be delivered to the Trustee an Acceptance Certificate thereof executed by an Authorized Officer of the Seller.

Prior to the date of the filing of the Acceptance Certificate or prior to October 8, 1988, whichever is earlier, the Seller shall notify Purchaser of its pro rata share of excess funds then on deposit in the Construction Fund. All such excess funds shall be transferred to the Redemption Fund for the redemption of Certificates in the principal amount of $100,000 or intregal multiples thereof unless the Purchaser instructs the Seller to have its pro rata share transferred to the Purchasers Installment Payment Account as a credit against the principal portion of its Installment Payment on the next occurring Installment Payment Date. Seller (prior to the filing of the Acceptance Certificate or October 1, 1988), whichever is earlier.

303. Payment of Project Cost. Payment for the construction of the Project, as well as all other Project Cost, up to the total amount in the Construction Fund, shall be made from the monies held by the Trustee in the Construction Fund. The Purchaser may at any time during construction contribute cash or its equivalent (as agreed upon between Seller and the

Purchaser, with the consent of the Letter of Credit Bank) to the Project which amount will be credited against the Purchase Price to be paid by the Purchaser. As an alternative, if Seller, Purchaser and the Letter of Credit Bank agree, Purchaser may be reimbursed from the Construction Fund any Project Cost heretofore or hereafter advanced by Purchaser.

304. Sale of Capacity in the Project; Term.

(a) Sale of Capacity in the Project. In consideration of the payment, or the causing of the payment, of Installment Payments provided for in Section 305 of the Trust Agreement by Purchaser to Seller or its assignee, Seller hereby grants, conveys, bargains and sells to Purchaser, effective upon the date of the Trust Agreement, the capacity in the Project described in Exhibit A, upon the terms and conditions set forth in this Agreement and Purchaser hereby accepts said grant, conveyance, bargain and sale upon said terms and conditions.

(b) Term of Agreement. The term of this Agreement shall commence upon the date of the Trust Agreement and shall terminate upon the occurrence of either of the following events: (a) payment in full of the Installment Payments by Purchaser pursuant to the provisions of this Agreement; or (b) a default by Purchaser and termination pursuant to Article VI of the Trust Agreement.

305. Installment Payments. For the purchase of the stated capacity in the Project, Purchaser shall pay to Seller, its successors and assigns, the Installment Payments set forth in Exhibit B attached hereto and by this reference incorporated herein from, but only from, the Gross Revenues of the Purchaser's Enterprise. Installment Payments shall be made to the Seller, which Installment Payments shall be held by Seller in segregated principal and interest payment accounts to be established by Seller in the name of each Purchaser until paid to the Letter of Credit Bank as provided in the Reimbursement Agreement on each Interest Payment Date and/or Principal Payment Date, as the case may be. Installment Payments received by the Seller shall be invested in Investment Securities and any earnings thereon shall be credited pro rata to each Purchaser's Principal Payment Account.

Each Installment Payment shall constitute payment in part for the title to the stated capacity in the Project as described in Exhibit A. For each Certificate Year commencing with the date of the Trust Agreement, Purchaser shall make Installment Payments on Installment Payment Dates during said Certificate Years as more particularly set forth in Exhibit B. The Purchaser shall pay from the proceeds of the sale of the

Certificates advance Installment Payments in the aggregate amount of $_____, consisting of interest only for the period from the date of the delivery of the Certificates through and including January 1, 1986, on the Purchaser's portion of the principal amount of the Certificates calculated at an assumed interest rate of 10% per annum.

Installment Payments for each Installment Payment Date during the term of this Agreement shall constitute the total amount due for said payment period, and shall be paid by Purchaser for and in consideration of the Seller selling to the Purchaser the right to receive the capacity in the Project.

In determining the amount of each Installment Payment, the Seller shall give the Purchasers a credit against the amount due from and payable by the Purchaser specified in said Exhibit B by (i) an amount equal to the amounts on deposit in the Purchaser's Principal and Interest Payment Accounts held by Seller and similar accounts established pursuant to the Trust Agreement and held by the Trustee; (ii) the investment earnings received by the Trustee from the investment of money in the Purchaser's Reserve Account as reported to Purchaser pursuant to Section 508 of the Trust Agreement; and (iii) the amount in the Reserve Account equal to the amount paid to the Letter of Credit Bank for the last Installment Payments remaining prior to the expiration of the term of this Agreement and paid by the Letter of Credit Bank, as provided in Section 504 of the Trust Agreement.

(a) Prior to the Conversion Date, the interest portion of each Installment Payment shall be calculated and paid at a rate per annum of 8% per annum, unless the Adjusted Interest Rate of the Certificates is then greater than 8% in which event the interest rate on each Installment Payment shall be at a rate per annum equal to the Adjusted Interest Rate (which shall be determined as provided in Section 317 of the Trust Agreement). In no event shall the interest portion of Installment Payments be paid at less than 8% per annum.

(b) Purchaser agrees to deposit such amounts necessary to pay the interest and principal due on the Certificates on the next Interest Payment Date and Principal Payment Date.

(c) Prior to the Conversion Date the interest portion of each Installment Payment shall be adjusted upward or downward as provided in Exhibit B of the Trust Agreement. On the 25th day of each month the Trustee shall notify the Seller by telephone of the actual interest portion of the Installment Payments due on the next Installment Payment Date.

(d) At its election, the Seller may convert the interest rate component of the Installment Payments applicable to the Certificates from the Adjustable Interest Rate to the Fixed Interest Rate as provided for in Section 320 of the Trust Agreement.

(e) As additional consideration for the purchaser of Purchasers Capacity, the Purchaser agrees to pay Tender Interest applicable to the Purchaser on each Installment Payment Date in the event of an unreimbursed draw under the Letter of Credit in addition to the Installment Payments required hereinabove.

(f) In addition to the Installment Payments, the Purchaser agrees to pay 38.29976% (which percentage will change following completion of construction evidenced by a certificate of the Authority delivered to the Purchasers, the Trustee and the Letter of Credit Bank) of: (i) all fees and expenses of the Trustee incurred in connection with the performance of its duties under the Trust Agreement and (ii) all unremimbursed draws under the Letter of Credit and the fees of the Letter of Credit Bank.

306. Interest Component. Except for the Installment Payment due through and including January 1, 1986, which are to be comprised of interest only, a portion of each Installment Payment shall be paid as, and represents, the payment of a portion of the unpaid Purchase Price and interest on the unpaid Purchase Price. The interest component of each Installment Payment is set forth in Exhibit B.

307. Payment in Lawful Money; No Set-Off. Each Installment Payment shall be paid or caused to be paid by the Purchaser in lawful money of the United States of America, which at the time of payment is legal tender for the payment of public and private debts, to the Seller or its assignee at the Office of the Seller in Montclair, California, or such other place as Seller or its assignee shall designate. Any such Installment Payments accruing hereunder which shall not be paid on or prior to each Installment Payment Date shall bear interest at the rate of twelve percent (12%) per annum from the Installment Payment Date until the same shall be paid. Notwithstanding any dispute between Purchaser and Seller, Purchaser shall make or cause to be made each and all Installment Payments when due, whether or not Seller shall deliver to Purchasers any capacity in the Project and shall not withhold any Installment Payments pending the final resolution of such dispute nor shall Purchaser assert any right of set-off or counter-claim against its obligation to make Installment Payments as set forth herein.

308. Pledge of Revenues. Except for the payment of the Purchaser's 1976 Water Revenue Bonds which constitute a first lien on said Gross Revenues, the Installment Payments shall be equally secured by a pledge, charge and lien upon the Gross Revenues of the Enterprise, and all of the Gross Revenues of the Enterprise are hereby pledged, charged and assigned for the security of said Installment Payments and any obligations of the City on a parity with the Installment Payments, and such Gross Revenues and any interest earned on the Gross Revenues shall constitute a trust fund for the security and payment of the interest on and principal of said Installment Payments and so long as any of the Installment Payments thereon are unpaid said Gross Revenues and interest thereon shall not be used for any other purpose, and except as permitted by this Agreement, and shall be held in trust for the benefit of the Seller and shall be applied pursuant to this Agreement, or to this Agreement as modified pursuant to provisions herein. The Gross Revenues of the respective Enterprises of the other Purchasers are not pledged hereunder.

309. Title. From and after the date of the Trust Agreement, title to the Purchaser's stated capacity in the Project, and each and every portion thereof, shall vest in Purchaser, provided, however, that title to the Purchaser's stated capacity in the Project and each and every portion thereof shall be subject to the subsequent payment of Installment Payments as described in Section 305 of the Trust Agreement and to the remedies of Seller and its assignee in the event of default as provided in Article VI of the Trust Agreement and to Permitted Encumbrances.

310. Disclaimer of Warranties. THE SELLER MAKES NO WARRANTY OR REPRESENTATION, EITHER EXPRESS OR IMPLIED, AS TO THE VALUE, DESIGN, CONDITION, MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE OR FITNESS FOR USE OF THE PROJECT, OR WARRANTY WITH RESPECT THERETO. In no event shall Seller be liable for any incidental, indirect, special or consequential damage in connection with or arising out of this Agreement or the existence, furnishing, functioning or Purchaser's use of any item, product or service provided for in this Agreement.

311. Manufacturers' Warranties. The Seller appoints Purchaser its agent and attorney-in-fact during the Agreement Term, so long as Purchaser shall not be in default hereunder, to assert from time to time whatever claims and rights, including warranties concerning the Project, which Seller may have against the manufacturer or supplier of such portion of the Project. As between the Seller and the Purchaser, Purchaser's sole remedy for the breach of such warranty, indemnification or representation shall be against the manufacturer of or supplier for the Project, and not against

the Seller, nor shall such matter have any effect whatsoever on the rights of the Seller with respect to this Agreement, including the right to receive full and timely payments hereunder. Purchaser expressly acknowledges that neither Seller nor the Trustee makes, or has made, any representation or warranty whatsoever as to the existence or availability of such warranties of the manufacturer of or supplier for any part of the Project.

312. Purchaser's Option to Prepay the Installment Payments. Except as provided herein, Purchaser shall not have the option to prepay all remaining Installment Payments.

(a) The Purchaser, at its option, may prepay the principal component of Installment Payments, in whole or in part, on any Installment Payment Date prior to the Conversion Date, in any integral multiple of $100,000, at the principal amount thereof, together with accrued interest to the date on which Certificates will be redeemed with such payment.

(b) The Purchaser may also, at its option, prepay the principal component of Installment Payments, in whole or in part, on the first Interest Payment Date which occurs at least seven years after the Conversion Date and on any Interest Payment Date thereafter, with a redemption premium of three percent (3%) of the principal amount of Certificates redeemed on such date, such premimum to be reduced by one percent (1%) on each anniversary of the initial redemption date until it reaches zero together with accrued interest to the date on which Certificates will be redeemed with such payment.

The principal and interest on any Certificates to be redeemed due to option prepayments shall be paid by the Letter of Credit Bank from draws on the Letter of Credit. The premium to be paid on any Certificates called for redemption shall be deposited by the Purchaser with the Trustee at least 124 days prior to the date set for redemption of related Certificates.

313. Arbitrage Covenant. The Purchaser and the Seller hereby covenant with the Certificateholders that, notwithstanding any other provision of this Agreement, they will make no use of the proceeds of the Certificates which, if such use were made on the date of delivery of the Certificates to the Certificateholders, would have caused the obligations of the Purchaser under this Agreement to be "arbitrage bonds" subject to federal income taxation by reason of Section 103(c) of the Internal Revenue Code of 1954, as amended.

ARTICLE IV

COVENANTS RELATING TO THE PROJECT

401. Maintenance and Operation of the Project. Seller shall maintain the Project or cause the Project to be maintained and operated on behalf of Purchaser and the other Purchasers of capacity in the Project. Notwithstanding the covenants hereunder made by Seller, it is understood that the Purchasers shall pay their proportionate shares of the cost of the maintenance and operation of the Project. The obligations of the Purchasers may be more fully set forth in further agreements among the Purchasers and Seller.

402. Utilities. Seller shall pay for, or otherwise arrange for the payment of, all utility services supplied to the Project (which services shall include power, gas, telphone and all other utility services), all cost of operation of the Project and all cost of repair and replacement of the Project resulting from ordinary wear and tear or want of care.

403. Public Liability Insurance. On or before the award of any construction contract Seller shall maintain or cause to be maintained public liability insurance against claims for bodily injury or death, or damage to property occurring upon, in or about the Project, such insurance to afford protection to a limit of not less than $5,000,000 combined single limit bodily injury and property damage. Such insurance may be maintained in conjunction with or separate from any other similar insurance carried by Purchaser.

404. Workers' Compensation Insurance. On or before the award of any construction contract Seller shall be responsible for the compliance, including all financial payments, with the State of California laws as regards Workers' Compensation and employee safety.

405. Fire and Special Extended Coverage Endorsement. Seller shall maintain or cause to be maintained, throughout the term of this Agreement, fire and lightning insurance, earthquake insurance, subject to deductible conditions not to exceed 10% of the full insurable value of the above ground structures, and special extended coverage endorsement which includes vandalism and malicious mischief endorsement, on all above-ground structures constituting any part of the Project in an amount equal to at least one hundred percent (100%) of the replacement cost of such structures (less a deductible amount of not more than $5,000). All insurance required to be maintained pursuant to this Section may be subject to deductible clauses as may be approved by the Purchaser, provided deductible amounts for fire extended coverage shall

not exceed $5,000 for any one loss. Each such policy of insurance shall contain an inflation cost endorsement, a standard replacement cost endorsement providing for no deduction for depreciation, and a stipulated amount endorsement. Such insurance may be maintained in conjunction with or separate from any other similar insurance carried by Purchaser.

In addition, the Seller shall maintain or cause to be maintained use and occupancy or business interruption or rental income insurance against the perils of fire, lightning, earthquake, vandalism and malicious mischief and such other perils ordinarily defined as "extended coverage" on the above-ground structures of the Project in an amount equal to not less than 18 months' aggregate Installment Payments due from Purchasers under all the Agreements.

Any insurance required by Sections 403, 404 and 405 hereof carried by the Seller shall name the Purchasers as additional named coinsured or if carried by the Purchasers shall name the Seller as additional coinsured. Seller, or Purchasers if the required insurance is carried by the Purchasers, may be self-insured up to $500,000 for any single event.

406. Form of Insurance Policies; Delivery.

(a) All policies of insurance required by Section 405 of this Agreement shall provide (or Seller shall separately agree) that all proceeds thereunder relating to that portion of the Project damaged or destroyed shall be payable to the Trustee pursuant to a lender's loss payable endorsement, substantially in accordance with the form approved by the California Bankers Association. The Trustee may adjust, collect and receive all monies relating to the Project which may become due and payable under any such policies, may compromise any and all claims thereunder and shall apply the Net Proceeds of such insurance as provided in this Agreement. All policies of insurance required by Section 405 of this Agreement shall be to the Letter of Credit Bank and shall provide that Seller or its assignee and Purchaser, shall be given thirty (30) days' notice of any intended cancellation thereof or reduction of the coverage provided thereby.

(b) Seller shall deliver, or cause to be delivered, to Purchaser the Letter of Credit Bank and the Trustee in the month of December in each year a schedule, in such detail as Purchaser or the Trustee may request, setting forth the insurance policies then in force pursuant to this Agreement, the names of the insurers which have issued the policies, the amounts thereof, the property and risks covered thereby and evidence of the payment of premiums due

thereunder. If so requested in writing by Purchaser or the Trustee or the Letter of Credit Bank, Seller shall also deliver, or cause to be delivered to Purchaser or the Trustee or the Letter of Credit Bank duplicate originals or certified copies of each insurance policy described in such schedule, provided, however, that delivery of the insurance policies under the provisions of this Section shall confer no responsibility upon Purchaser or the Trustee or the Letter of Credit Bank as to the sufficiency of coverage or amounts of said policies. In the event of failure of Seller to obtain or cause to be obtained the insurance required by Sections 403 through 405 of the Trust Agreement, Purchaser may obtain such insurance on behalf of Seller and may collect premiums thereof from Seller with interest at the rate of twelve percent (12%) on unpaid premiums.

407. Inability to Obtain Insurance. Notwithstanding the provisions of Sections 403 through 405, if at any time Seller shall be unable to obtain or maintain insurance to the extent required by such Sections on reasonable terms, as to amounts, costs or as to risks, the failure to maintain such insurance shall not constitute a default under this Agreement if Purchaser shall cause the employment of an independent insurance consultant having a favorable reputation for skill and experience in such matters, for the purpose of reviewing such insurance requirements and making recommendations respecting the types, amounts and provisions of reasonably obtainable insurance, including self-insurance, or the establishment of other generally accepted forms of alternative protection that should be carried in lieu thereof, or the infeasibility of obtaining insurance, and if Seller shall comply with the recommendations made in such report. A signed copy of the report of the insurance consultant shall be filed with the Trustee and the Letter of Credit Bank, and the insurance requirements specified in Sections 403 through 405 shall be deemed to be modified to conform with the recommendations in such report.

408. Application of Net Proceeds of Insurance. The Net Proceeds of any insurance required by this Agreement relating to the loss or destruction of any part of the Project which is received by the Seller shall be deposited in the Construction Fund and Seller shall assure that such Net Proceeds are and shall be applied and disbursed as set forth below:

(a) If Seller determines that such Net Proceeds are sufficient to repair, reconstruct or replace the damaged or destroyed portion of the Project, which determination shall be evidenced by a certificate executed by an Authorized Officer of Seller and filed with the Trustee as assignee of Seller, then Seller shall cause such portion of the Project to be repaired,

reconstructed or replaced to at least the same good order, repair and condition as it was in prior to the damage or destruction, insofar as the same may be accomplished by the use of said Net Proceeds, and Seller shall disburse said Net Proceeds for said purpose. Any balance of said Net Proceeds not required for such repair, reconstruction or replacement shall be transferred by the Trustee to the Redemption Fund to be applied as prepayment of Installment Payments and shall be used to redeem Certificates as provided in Section 606 of the Trust Agreement.

(b) In the event that such Net Proceeds are not sufficient to repair, reconstruct or replace the damaged or destroyed portion of the Project, as evidenced by a certificate executed by an Authorized Representative of Seller and filed with the Trustee, Seller shall deposit such Net Proceeds with the Trustee and direct the Trustee to apply such Net Proceeds to the prepayment in full, on the next succeeding Installment Payment Date, of Installment Payments, by paying the then-stipulated fair market value of the stated capacity in the Project as set forth in Exhibit B of this Agreement, or if such Net Proceeds are insufficient to prepay Installment Payments in full, then Seller shall direct the Trustee to apply such Net Proceeds to prepayment of a portion of the Installment Payments, except that no such prepayment shall be in an amount less than $5,000.

Unless the Purchaser's Installment Payments have been paid in full as provided in subsection (b) of this Section 408, Purchaser shall be obligated to continue to make Installment Payments required by this Agreement notwithstanding damage to or destruction of all or a portion of the Project.

409. Application of Net Proceeds of Condemnation. All Net Proceeds received in any condemnation proceeding undertaken by any governmental agency relating to all or a portion of the Project shall be paid by Purchasers, if received by Purchasers, to the Trustee for deposit in the Principal Payment Fund and deposited in the appropriate Principal Payment Accounts and Seller shall assure that such Net Proceeds are applied and disbursed as set forth below:

(a) If Seller determines that such condemnation has not materially adversely affected the operation of the Project as set forth in a certificate executed by an Authorized Representative of Seller and filed with the Trustee, as assignee of Seller, and if such Net Proceeds are insufficient to enable Seller to prepay Installment Payments in full by paying the stipulated value of the Project as set forth in Exhibit B of the Agreements on the next succeeding Installment Payment Date, Seller shall direct the Trustee to retain such

Net Proceeds in the Principal Payment Fund and to cause such Net Proceeds to be applied as a credit against the appropriate Purchaser's next succeeding Installment Payments.

(b) If Seller determines that such condemnation has materially adversely affected the operation of the Project as set forth in a certificate executed by an Authorized Representative of Seller and filed with the Trustee, as assignee of Seller, or if such Net Proceeds are sufficient to enable Purchasers to prepay the Installment Payments in full by paying the stipulated value of the Project on the next succeeding Installment Payment Date, Seller shall direct the Trustee to deposit the Net Proceeds in the Redemption Fund and to apply such Net Proceeds to the prepayment in full or (to the extent that such condemnation pertains only to a portion of the Project) in part on the next succeeding Installment Payment Date of Installment Payments.

Unless Installment Payments shall have been paid in full as provided in subsection (b) of this Section 409, Purchaser shall be obligated to continue to make Installment Payments required by this Agreement, notwithstanding condemnation of all or a portion of the Project.

410. Payment of Installment Payments. Purchaser shall duly and punctually pay or cause to be paid the Installment Payments and the other amounts due hereunder at the dates and places and in the manner provided in this Agreement according to the true intent and meaning hereof and of the Trust Agreement and shall not directly or indirectly extend or assent to the extension of the Installment Payment Dates for any Installment Payments.

411. Compliance with this Agreement. Seller and Purchaser will faithfully observe and perform or cause to be faithfully observed and performed all the covenants, conditions and requirements of this Agreement, and will not suffer or permit any default to occur hereunder, nor do or permit to be done in, upon or about the Project or any part thereof, anything that might in any way weaken, diminish or impair the operation thereof. Neither Seller nor Purchaser will do or permit anything to be done, or omit or refrain from doing anything, in any case where any such act done or permitted to be done, or any such omission of or refraining from action, would or might be a ground for cancellation or termination of this Agreement (other than by prepayment).

412. Payment of Taxes. Purchaser will pay or cause to be paid all taxes, assessments and other governmental charges, if any, that may be levied, assessed or charged upon the Purchasers' capacity in the Project promptly as and when the

same shall become due and payable; provided, however, that Purchaser shall not be required to pay any such tax, assessment, or charge, if the validity thereof shall concurrently be contested in good faith by appropriate proceedings, if Purchaser shall set aside, or cause to be set aside, reserves agreed by Purchaser and Seller or its assignee to be in a form and amount which is adequate with respect thereto and if Purchaser shall hold Seller and its assignee harmless as to any loss or forfeiture which might arise from the nonpayment of any such item; and provided further, that Purchaser, upon the commencement of any proceedings to foreclose the lien of any such tax, assessment, or charge, will forthwith pay, or cause to be paid, any such tax, assessment or charge, unless contested in good faith as aforesaid. Purchaser will not suffer the Purchaser's capacity in the Project or any part thereof, to be sold for any taxes, assessments or other charges whatsoever, or to be forfeited therefor. Nothing herein contained shall be deemed to impose any liability to pay taxes, assessments or charges where none is imposed by law.

413. Observance of Laws and Regulations. Seller and Purchaser will well and truly keep, observe and perform or cause to be kept, observed and performed all valid and lawful obligations or regulations now or hereafter imposed on either of them by contract, or prescribed by any law of the United States, or of the State of California, or by any officer, board or commission having jurisdiction or control, as a condition of the continued enjoyment of any and every right, privilege or franchise now owned or hereafter acquired by Purchaser and enjoyed by Seller, including Seller's and Purchaser's right to exist and carry on business as a public body, corporate and political, to the end that such rights, privileges and franchises shall be maintained and preserved, and shall not become abandoned, forfeited or in any manner impaired.

414. Maintain and Preserve the Project. Seller will operate, maintain and preserve, or will cause to be operated, maintained and preserved, the Project in good repair and working order and will operate or cause to be operated the Project, in an efficient and economical manner.

415. Other Liens. Seller and Purchaser shall keep, or cause to be kept, the Project and all parts thereof free from judgments, from mechanics and materialmen's liens (except those arising from construction of the Project) and free from all liens, claims, demands and encumbrances of whatsoever nature or character, other than Permitted Encumbrances, and Seller and Purchaser shall keep or cause to be kept the Project free from any claim or liability which might impair or impede the operations of the Project; provided, however, that Seller or Purchaser shall not be required to pay any such liens, claims

or demands if the validity thereof shall concurrently be contested in good faith by appropriate proceedings, and if Seller or Purchaser shall set aside, or cause to be set aside, reserves deemed by it to be adequate with respect thereto and provided further, that Seller or Purchaser upon the commencement of any proceedings to foreclose the lien of any such charge or claim, will forthwith pay, or cause to be paid, any such charge or claim unless contested in good faith as aforesaid. Seller, Purchaser or the Trustee, may, (after first giving the other parties ten (10) days' written notice to comply therewith and failure of party liable to so comply within said ten-day period) defend against any and all actions or proceedings in which the validity of this Agreement is or might be questioned, or may pay or compromise any claim or demand asserted in any such actions or proceedings; provided, however, that, in defending against such actions or proceedings or in paying or compromising such claims or demands, Seller shall not in any event be deemed to have waived or released Purchaser from liability for or on account of any of its covenants and warranties contained herein, or from its liability hereunder to defend the validity of this Agreement and the pledge herein made and to perform such covenants and warranties.

416. Against Encumbrances or Sales. Except for the emcumbrance created by Purchasers Resolution No. __ providing for the issuance of its 1976 Water Revenue Bonds neither Seller nor Purchaser shall create or suffer to be created any mortgage, pledge, lien, charge or encumbrance upon the Project, or upon any real or personal property essential to the operation of the Project except Permitted Encumbrances. Except as expressly provided in this Article IV, Purchaser shall promptly, at its own expense, take such action as may be necessary to discharge or remove any such mortgage, pledge, lien, charge or encumbrance for which it is responsible, if the same shall arise at any time. Neither Seller nor Purchaser shall sell or otherwise dispose of any property essential to the proper operation of the Project, except as otherwise permitted by this Agreement.

417. Prosecution and Defense of Suits. Purchaser shall, promptly upon request of Seller or its assignee, from time to time take such action, or cause such action to be taken, as may be necessary or proper to remedy or cure any defect in or cloud upon its interest in the Project whether now existing or hereafter developing and shall prosecute, or cause to be prosecuted, all such suits, actions and other proceedings as may be appropriate for such purpose and shall indemnify and save Seller and its assignee harmless from all loss, cost, damage and expense, including attorneys' fees, which they or any of them may incur by reason of any such defect, cloud, suit, action or proceedings.

418. Recordation and Filing. Purchaser shall record and file, or shall cause to be recorded and filed, this Agreement and all such documents as may be required by law (together with whatever else may be necessary or be reasonably required by Seller or its assignee), in such manner, at such times and in such places as may be required by law in order fully to preserve and protect the rights of Seller and its assignee under this Agreement.

419. Waiver of Laws. Purchaser shall not at any time insist upon or plead in any manner whatsoever, or claim or take the benefit or advantage of, or suffer, any stay or extension law now or at any time hereafter in force which may adversely affect the covenants and agreements contained in this Agreement and the benefit and advantage of any such law is hereby expressly waived by Seller to the extent that Seller may legally make such waiver.

420. Compliance with Conditions Precedent. Upon the date of delivery of this Agreement, all conditions, acts and things required by law or by this Agreement to have happened or to have been performed precedent to or in the execution of this Agreement shall exist, have happened and have been performed, and this Agreement shall be within every limit prescribed by law.

421. Power to Enter Into Agreements.

(a) Purchaser is duly authorized to enter into this Agreement and the Trust Agreement. The provisions of this Agreement are and will be the valid and legally enforceable obligations of Purchaser in accordance with their terms and the terms of this Agreement.

(b) Seller is duly authorized to enter into this Agreement, the Assignment Agreement and the Trust Agreement and to enter into the transactions contemplated by this Agreement, the Assignment Agreement and the Trust Agreement. Seller has duly authorized the execution and delivery of this Agreement, the Assignment Agreement and the Trust Agreement.

422. Further Assurances. Whenever and so often as requested so to do by Seller or its assignee, Purchaser will promptly execute and deliver or cause to be executed and delivered all such other and further instruments, documents or assurances, and promptly do or cause to be done all such other and further things, as may be necessary or reasonably required in order further and more fully to vest in Seller or its assignee all rights, interest, powers, benefits, privileges and advantages conferred or intended to be conferred upon Seller and its assignee by this Agreement.

423. Seller Not Liable. Neither Seller nor its assignee nor its members, officers, agents or employees shall be liable to the Purchasers or to any other person whomsoever for any death, injury or damage that may result to any person or property by or from any cause whatsoever in, on or about the Project. The Purchasers shall indemnify, or cause indemnification of, and hold Seller, its assignee, its and their members, officer, agents and employees harmless from, and defend each of them against, any and all claims, liens and judgments for death of or injury to any person or damage to property whatsoever occurring in, on or about the Project.

424. Indemnification Due to Trustee. Purchaser shall pay, or cause to be paid, to Seller or the Trustee as assignee of Seller, fees, compensation and expenses due under the Trust Agreement upon periodic billing therefor by Seller or the Trustee as assignee of Seller. In addition, Purchaser shall and hereby agrees to indemnify, or cause indemnification of, and hold, or cause to be held, Seller and the Trustee as assignee of Seller harmless from and against all claims, losses and damages, including legal fees and expenses, arising out of (i) the use, maintenance, condition or management of, or from any work or thing done on, the Project by Purchaser, (ii) any breach or default on the part of Purchaser in the performance of any of its obligations under this Agreement, (iii) any act of negligence of Purchaser, or of any of its agents, contractors, servants, employees or licensees with respect to the Project, (iv) the authorization of payment of the Cost of the Project by Purchaser, or (v) the defense (pursuant to Section 417 of the Installment Agreement or Section 611 of the Trust Agreement) against actions or proceedings in which the validity of this Agreement is or might by questioned and the payment or compromise of claims or demands asserted in any such actions or proceedings, all to the extent permitted by law. Indemnification for any tort mentioned in this Section shall be limited to the extent and in the amounts provided for by California law. No indemnification will be made under this Section or elsewhere in this Agreement for wilful misconduct, gross negligence or negligence by the Trustee, its officers, agents, employees, successors or assigns.

425. Authority to Operate the Project. The Seller shall assure that the Property including the Project is operated pursuant to complete and lawful authority. No permits, rights, franchises or privileges relating thereto shall be allowed to lapse or be forfeited so long as the same shall be necessary for the ownership or operation of the Project. Seller shall procure, or cause to be procured, the extension or renewal of each and every permit, right, franchise or privilege so expiring and necessary or desirable for the ownership or operation of the Project as such.

426. Operation and Equipping of the Project. The Seller shall continuously furnish and equip the Project, or cause the Project to be furnished and equipped, so that the Project shall at all times constitute complete and operational water treatment and distribution facilities which are conducted, operated and maintained in an efficient and economical manner. All costs of operating and maintaining the Project shall be borne by the Purchasers pro rata or as may otherwise be set forth in further agreements between the Seller and the Purchasers.

427. Furnishing Additional Information. Purchaser shall, from time to time, furnish or cause to be furnished to Seller or its assigneesuch data regarding the Project as shall be reasonably requested in order to enable Seller and the Trustee as assignee of Seller to determine whether there has been compliance with the covenants, terms and provisions of this Agreement and of the Trust Agreement.

428. Quiet Enjoyment. The parties hereto mutually covenant that Purchaser, so long as it shall keep and perform the covenants and agreements herein contained, shall at all times during the term of this Agreement peaceably and quietly, have, hold and enjoy its interest in the Project without suit, trouble or hindrance from Seller.

429. Restriction Against Pledge. Seller shall not pledge Installment Payments or other amounts derived from the Project or from rights of Seller under this Agreement nor shall Seller encumber or place any lien upon the Project, except as otherwise provided in this Agreement, the Reimbursement Agreement, Participants Security Agreements and the Trust Agreement.

430. Assignment by Seller. Except pursuant to the Assignment Agreement and except as otherwise set forth herein, Seller shall not assign this Agreement, its rights to receive Installment Payments or its duties and obligations hereunder.

431. No Violation of Other Agreements.

(a) Purchaser hereby represents that neither the execution and delivery of this Agreement and the Trust Agreement, nor the fulfillment of and compliance with the terms and conditions of the Trust Agreement and hereof, nor the consummation of the transactions contemplated hereby or thereby, conflicts with or results in a breach of terms or violation of any other agreement to which Purchaser is a party or by which Purchaser is bound, or constitutes a default under any of the foregoing.

(b) Seller hereby represents that neither the execution and delivery of this Agreement, the Assignment Agreement, the Trust Agreement or the Reimbursement Agreement, nor the fulfillment of and compliance with the terms and conditions of the Trust Agreement and thereof, nor the consummation of the transactions contemplated hereby or thereby, conflicts with or results in a breach of terms or violation of any other agreement to which Seller is a party or by which Seller is bound, or constitutes a default under any of the foregoing or is in violation of any law, regulation or ruling of the State of California.

ARTICLE V

WATER REVENUES, COVENANTS

501. Water Revenue Fund. The Purchaser has established a Water Revenue Fund in connection with Purchasers 1976 Water Revenue Bond issue which is held by the appropriate financial officer of the Purchaser. All Gross Revenues of the Enterprise shall be deposited with the Treasurer and credited to the Water Revenue Fund. After the payment of or the provision for the payment of the principal and interest on Purchasers 1976 Water Revenue Bond issue, the Treasurer shall transfer moneys from the Water Revenue Fund to pay the Installment Payments in accordance with Section 305. Any moneys in excess of that budgeted as required for the payment of the Installment Payments and any obligations on a parity with the Installment Payments and the Maintenance and Operation Cost of the Enterprise shall constitute are surplus revenues in the Water Revenue Fund. After all covenants contained herein have been duly performed, and provided that there are no amounts then owing to the Letter of Credit Bank, these surplus revenues may be used for: (1) extensions and betterments of the Enterprise; or (2) any lawful purpose of the Purchaser.

502. Covenants. So long as the Installment Payments are unpaid, the Purchaser makes the following covenants with the Seller and its assigns, which covenants are necessary, convenient and desirable to secure the payment of the Installment Payments; provided, however, that said covenants do not require the Purchaser to expend any funds other than the revenues received or receivable from the Enterprise.

Covenant 1. Discharge Claims. The Purchaser covenants that in order fully to preserve and protect the priority and security of the Installment Payments, the Purchaser shall pay from the Water Revenue Fund and discharge all lawful claims for labor, materials and supplies furnished for or in connection with the Enterprise which, if unpaid, may become a lien or

charge upon Gross Revenues of the Enterprise prior or superior to the lien of the Installment Payments and impair the security of the Installment Payments. The Purchaser shall also pay from the Water Revenue Fund all taxes and assessments or other governmental charges lawfully levied or assessed upon or in respect of the Enterprise or upon any part thereof or upon any of the Gross Revenues therefrom.

Covenant 2. Operate Works in Efficient and Economical Manner. The Purchaser covenants and agrees to operate the Enterprise in an efficient and economical manner and to operate, maintain and preserve the Enterprise in good repair and working order.

Covenant 3. Against Sale, Eminent Domain. The Purchaser covenants that the Enterprise shall not be mortgaged or otherwise encumbered, sold, leased, pledged, any charge placed thereon, or disposed of as a whole or substantially as a whole unless such sale or other disposition be so arranged as to provide for a continuance of payments into the Water Revenue Fund sufficient in amount to permit payment therefrom of the Installment Payments, payment of which is required to be made out of the Gross Revenues of the Enterprise. Provided that there is such continuance of payments into the Water Revenue Fund, the sale of a portion of the Enterprise to another Purchaser shall be permitted.The Gross Revenues of the Enterprise shall not be mortgaged, encumbered, sold, leased, pledged, any charge placed thereon, or disposed of or used except as authorized by the terms of this Agreement. The Purchaser further covenants that it will not enter any agreement which impairs the operation of the Enterprise or any part of it necessary to secure adequate revenues to pay the Installment Payments or which otherwise would impair the rights of the Purchaser with respect to the revenues or the operation of the Enterprise. If any substantial part of the Enterprise is sold, the payment therefor shall either be used for the acquisition and/or construction of improvements and extensions of the Enterprise or shall be placed in the appropriate funds and shall be used to pay the Installment Payments in the manner provided in this Agreement.

The Purchaser covenants that any amounts received as awards as a result of the taking of all or any part of the Enterprise by the lawful exercise of eminent domain, if any, either shall be used for the acquisition and/or construction of the improvements and extension of the Enterprise or shall be placed in the appropriate funds and shall be used to pay the Installment Payments in the manner provided in this Agreement.

Covenant 4. Insurance. The Purchaser covenants that it shall at all times maintain with responsible insurers all such insurance on the Enterprise as is customarily maintained with

respect to facilities and properties of like character against accident to, loss of or damage to such Enterprise or properties. If any useful part of the Enterprise shall be damaged or destroyed, such part shall be restored to use. The money collected from insurance against accident to or destruction of the physical Enterprise shall be used for repairing or rebuilding the damaged or destroyed Enterprise, and to the extent not so applied, shall be applied to the prepayment of the Installment Payments.

The Purchaser shall also maintain with responsible insurers workmen's compensation insurance and insurance against public liability and property damage to the extent reasonably necessary to protect the Purchaser and the Gross Revenues.

The Purchaser mayy be self-insured up to $500,000 for any single event.

Covenant 5. Records and Accounts. The Purchaser covenants that it shall keep proper books of record and accounts of the Enterprise, separate from all other records and accounts, in which complete and correct entries shall be made of all transactions relating to the Enterprise. Said books shall at all reasonable times be subject to the inspection of the Seller or its assigns, and the Letter of Credit Bank.

Covenant 6. No Free Service. The Purchaser covenants that, except to the extent that the Purchaser is required under agreements and/or contracts existing on the effective date of this Agreement, no water or other service from the Enterprise may be furnished or rendered to the United States of America, the State of California, or any private corporation or person free of charge, and that, except to the extent that the Purchaser is required under agreements and/or contracts existing on the effective date of this Agreement, no such service shall be rendered to the United States of America, the State of California, or any private corporation or person at rates or for consideration lower than those charged other persons for similar service. The Purchaser covenants that it shall at all times during the period any of the Certificates are Outstanding maintain and enforce valid regulations for the payment of bills for water service and that such regulations shall at all times during such period provide that the Purchaser shall discontinue water service to any user whose water bill has not been paid within the time fixed by said regulations, which shall not be more than two months from the date the water bill became delinquent.

Covenant 7. Rates and Charges. The Purchaser shall and hereby covenants that it shall prescribe, revise and collect such rates and charges for the services and facilities of the

Enterprise which, after making allowances for contingencies and error in the estimates, shall in each Fiscal Year be at least sufficient, when added to funds on hand, to pay the following amounts in the order set forth:

(a) The Installment Payments and any parity obligations as they become due and payable;

(b) All current expenses for the Maintenance and Operation Cost of the Enterprise.

(c) All payments required to meet any other obligations of the Purchaser which are charges, liens, encumbrances upon or payable from the principal and interest on the Purchaser's 1976 Water Revenue Bonds, Gross Revenues of the Enterprise, including the, Trustee's fees, unreimbursed draws on the Letter of Credit, Letter of Credit Bank fees and Tender Interest;

and the charges shall be so fixed that the Gross Revenues of the Enterprise shall be at least 1.25 times the amounts payable under (a), assuming an interest rate on the Certificates of 8% per; and shall be 1.00 times the amounts payable under each of (b) and (c), if within six months after any increase in the interest rate on the Certificates above 8% per annum, the Purchaser shall increase its rates and charges to a level sufficient to maintain the foregoing coverage.

Covenant 8. No Priority for Additional Obligations. The Purchaser covenants that no additional bonds, notes or obligations shall be issued pursuant to any law of the State of California having any priority in payment of principal or interest out of the Gross Revenues of the Enterprise over the Installment Payments to be payable out of said revenues.

Covenant 9. Limits on Additional Debt. The Purchaser covenants that, except for obligations issued to refund the Certificates, no additional indebtedness evidenced by revenue bonds, revenue notes or any other evidences of indebtedness payable out of the Water Revenue Fund and ranking on a parity with the obligation to make the Installment Payments shall be created or incurred unless:

First: The Purchaser is not in default under the terms of this Agreement; and

Second: The Net Revenues of the Enterprise, calculated on sound accounting principles, as shown by the books of the Purchaser for the latest fiscal year or the last completed 12 month period ended at least 60 days prior to the adoption of the resolution of issuance for such

additional indebtedness as shown by an audit certificate or opinion of an independent certified public accountant or firm of certified public accountants employed by the Purchaser, plus, at the option of the Purchaser, any or all of the items hereinafter in this covenant designated (a) and (b), shall have amounted to at least 1.25 times the Installment Payments due and any additional debt due in the next fiscal year immediately subsequent to the incurring of such additional indebtedness.

The items any or all of which may be added to such Net Revenues of the Enterprise for the purpose of applying the restriction contained in this covenant are the following:

(a) An allowance for Net Revenues of the Enterprise from any additions to or improvements or extensions of the Enterprise to be made with the proceeds of such additional indebtedness, and also for net revenues of the Enterprise from any such additions, improvements or extensions which have been made from moneys from any source but which, during all or any part of such fiscal year or last completed 12-month period, were not in service, all in an amount equal to 75% of the estimated additional average annual net revenues of the Enterprise to be derived from such additions, improvements and extensions for the first 36-month period in which each addition, improvement or extension, respectively, is expected to be in operation, all as shown by the certificate or opinion of a qualified independent engineer employed by the Purchaser.

(b) An allowance for earnings arising from any increase in the charges made for service from the Enterprise which has become effective prior to the incurring of such additional indebtedness but which, during all or any part of such fiscal year or last completed 12-month period, was not in effect, in an amount equal to 75% of the amount by which the net revenues of the Enterprise would have been increased if such increase in charges had been in effect during the whole of such fiscal year or last completed 12-month period, as shown by the certificate or opinion of a qualified independent engineer employed by the Purchaser.

Nothing herein shall preclude the Purchaser from issuing obligations subordinate to the payment of the Installment Payments.

Covenant 10. Against Competing Utility. The Purchaser will not acquire, construct, operate or maintain, and will not, within the scope of its powers, permit any other private or public corporation, political subdivision, district or agency,

or any person whomsoever to acquire, construct, operate or maintain within the Purchaser's boundaries or any part thereof, any system or utility in competition with the Enterprise.

Covenant 11. Financial Reports. Within one hundred and eighty (180) days after the close of each fiscal year of Purchaser, Purchaser will furnish, or cause to be furnished, to Seller or its assignee and to the Letter of Credit Bank detailed certified reports of audit, based on an examination sufficiently complete, prepared by an independent certified public accountant, covering the operations of Purchaser's Water Revenue Fund and the Enterprise for said fiscal year. Such audit report shall include statements of the status of each account pertaining to the Enterprise, showing the amount and source of deposits therein, the amount and purpose of the withdrawals therefrom and the balance therein at the beginning and end of said fiscal year.

Covenant 12. Purchase of Additional Capacity. In the event of default by another defaulting Purchaser and the capacity of that defaulting Purchaser has not been acquired by another Purchaser or entity, the Purchaser agrees to purchase a portion of said defaulting Purchaser's capacity on the following conditions:

1. The purchase price for said capacity shall be not less than the payment of the balance of the Installment Payments of the defaulting Purchaser attributable to the capacity being acquired.

2. The aggregate amount of the defaulting Purchaser's capacity acquired does not exceed 25% of the original capacity of the acquiring Purchaser in the Project.

Covenant 13. Purchase of Water. Should an event of default occur hereunder the Purchaser convenants that it will obtain and pay for water from the Authority up to the amount of its originally purchased capacity interest in the Project before it will obtain, purchase, rent, lease or otherwise acquire water, or an interest in water, from any public or private source other than the Authority.

503. Prior Lien Water Revenue Bonds. The payment of the Installment Payments and all covenants and provisions of this Agreement are subject to the prior first lien on the Gross Revenues of the Enterprise created by Resolution No. __ of the Purchaser providing for the issuance of Purchaser's 1976 Water Revenue Bonds and further subject to the rights and obligations of the Purchaser set forth in said Resolution.

ARTICLE VI

EVENTS OF DEFAULT AND REMEDIES

601. Events of Default Defined. The following shall be "events of default" under this Agreement and the terms "events of default" and "default" shall mean, whenever they are used in this Agreement, with respect to the Purchaser, any one or more of the following events, namely:

(a) Failure by Purchaser to pay any Installment Payment or other payment required to be paid hereunder at the time specified herein;

(b) Failure by Purchaser to observe and perform any covenant, condition or agreement on its part to be observed or performed, other than as referred to in clause (a) of this Section, for a period of thirty (30) days after written notice specifying such failure and requesting that it be remedied has been given to Purchaser by Seller or its assignee; provided, however, that Seller or its assignee may, upon written request of Purchaser prior to the expiration of such thirty (30) day period, consent to an extension of such time in order to cure such failure if corrective action has been instituted by Purchaser and is being diligently pursued and will, in the judgment of Seller or its assignee, be diligently pursued until the default is corrected;

(c) A court having jurisdiction in the Project shall enter a decree or order for relief in respect of Purchaser in an involuntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or appointing a receiver, liquidator, assignee, custodian, trustee, sequestrator (or similar official) of Purchaser or for any substantial part of its property, or ordering the winding up or liquidation of its affairs, and such decree or order shall remain unstayed and in effect for a period of sixty (60) days;

(d) Purchaser shall commence a voluntary case under any applicable bankruptcy, insolvency or other similar law now or hereafter in effect, or shall consent to the entry of an order for relief in an involuntary case under any such law, or shall consent to the appointment of or taking possession by a receiver, liquidator, assignee, trustee, custodian, sequestrator (or similar official) of Purchaser for any substantial part of its property, or shall make any general assignment for the benefit of creditors, or shall fail generally to pay its debts as they become due or shall take any corporate action in furtherance of any of the foregoing; or

The Seller shall give written notice of a default by the Purchaser to the Trustee and the Letters of Credit Bank. The Letter of Credit Bank shall have the right to cure any default undfer (a) and (b) hereof within thirty (30) days of receipt of such written notice.

602. Remedies on Default. Upon the happening of any of the events of default specified in Section 601 hereof, which default has not been cured by the Letter of Credit Bank as provided in Section 601 hereof, Seller or its assignee may exercise any and all remedies available pursuant to law or granted pursuant to this Agreement. Seller or its assignee is expressly authorized hereby to take over for the benefit of Seller or its assigns the Purchaser's interest in the Project described in Exhibit A of the Trust Agreement, and, in addition, at its option, to terminate this Agreement. In the event of default and notwithstanding the take-over of the Purchaser's interest in the Project by Seller or its assignee, Purchaser shall, as herein expressly provided, continue to remain liable for the payment of Installment Payments and/or damages for breach of this Agreement and the performance of all conditions herein contained and, in any event, such Installment Payments and/or damages shall be payable to Seller or its assignee at the time and in the manner set forth in subsections (a) and (b) of this Section.

(a) In the event that Seller or its assignee does not elect to terminate this Agreement pursuant to subparagraph (b) below, Purchaser agrees to and shall remain liable for the payment of Installment Payments and the performance of all conditions herein contained and shall reimburse Seller or its assignee for any deficiency arising out of the sale or leasing of the Purchaser's interest in the Project, or, in the event that Seller or its assignee is unable to sell or lease the Purchaser's interest in the Project, then for the full amount of the Installment Payments to the end of the term of this Agreement, but said Installment Payments and/or deficiency shall be payable only at the same time and in the same manner as provided in Section 305, notwithstanding such take-over of the Purchaser's capacity in the Project by Seller or its assignee or any suit in unlawful detainer, or otherwise, brought by Seller or its assignee for the purpose of effecting such take-over of the Purchaser's capacity in the Project or the exercise of any other remedy by the Seller or its assignee. Purchaser hereby irrevocably appoints Seller or its assignee as the agent and attorney-in-fact of the Purchaser to sell or lease the Purchaser's capacity in the Project in the event of default by Purchaser. Purchaser hereby exempts and agrees to save harmless Seller and its assignee from any cost, loss or damage whatsoever arising or occasioned by any such entry upon and the sale or the letting of the Purchaser's

capacity in the Project. Purchaser hereby waives any and all claims for damages caused, or which may be caused, by Seller or its assignee in entering and taking possession of the Purchaser's capacity in the Project, for all claims for damages that may result from the destruction of or injury to the Project, and all claims for damges to or loss of any property belonging to Purchaser that may be in or upon the Project. Purchaser agrees that the terms of this Agreement constitute full and sufficient notice of the right of Seller or its assignee to sell or lease the Purchaser's capacity in the Project in the event of such taking of possession without effecting a surrender of this Agreement, and further agrees that no acts of Seller or its assignee in effecting such sale or leasing shall constitute a surrender or termination of this Agreement irrespective of the term for which such sale or leasing is made, or of the terms and conditions of such sale or leasing, or otherwise, but that, on the contrary, in the event of such default by Purchaser, the right to terminate this Agreement shall vest in Seller or its assignee to be effected in the sole and exclusive manner hereinafter provided for in subsection (b) below. Purchaser shall have the right to any sale proceeds or rental obtained by Seller or its assignee in excess of the full amount of the Installment Payments herein specified.

(b) In the event of default by Purchaser and consequent termination of this Agreement at the option of Seller or its assignee in the manner hereinafter provided (and notwithstanding the taking of possession of the Purchaser's capacity in the Project by Seller or its assignee in any manner whatsoever or the sale or leasing of the Project), Purchaser nevertheless agrees to pay to Seller or its assignee all cost, loss or damages howsoever arising or occurring payable at the same time and in the same manner as in the case of payment of Installment Payments pursuant to Section 305 of the Trust Agreement. Neither notice to pay the Installment Payments or to deliver up possession of the Project given pursuant to law nor any proceeding in unlawful detainer taken by Seller or its assignee shall of itself operate to terminate this Agreement, and no termination of this Agreement on account of default by Purchaser shall be or become effective by operation of law, or otherwise, unless and until Seller or its assignee shall have given written notice to the Purchaser of the election on the part of Purchaser or its assignee to terminate this Agreement.

Each and all of the remedies given to Seller and its assignee hereunder or by any law now or hereafter enacted are cumulative and the exercise of one right or remedy shall not impair the right to Seller or its assignee to exercise any or all other remedies.

Notwithstanding the foregoing, no action shall be taken by the Seller or its assignee under this Section without the prior written consent of the Letter of Credit Bank.

603. Suits at Law or in Equity and Mandamus. In addition to the remedies set forth in Section 602 of the Trust Agreement, in case one or more of the events of default shall happen, then and in every such case, Seller and its assignee shall be entitled to proceed to protect and enforce the rights vested in the Seller by this Agreement by such appropriate judicial proceeding as Seller or its assignee shall deem most effectual to protect and enforce any such right, either by suit in equity or by action at law, whether for the specific performance of any covenant or agreement contained in this Agreement or by law. The provisions of this Agreement and the duties of Purchaser and of the officers, agents and employees thereof shall be enforceable by Seller or its assignee by mandamus or other appropriate suit, action or proceeding in any court of competent jurisdiction.

(a) Without limiting the generality of the foregoing, Seller and its assignee shall have the right:

(i) Accounting. By action or suit in equity to require the Purchaser and its officers, agents and employees to provide an accounting as the trustee of an express trust.

(ii) Injunction. By action or suit in equity to enjoin any acts or things which may be unlawful or in violation of the rights of Seller or its assignee.

(iii) Mandamus. By mandamus or other suit, action or proceeding at law or equity to enforce its or their rights against Purchaser and its and any of its officers, agents, and employees, and to compel it or them to perform and carry out its and their duties and obligations under the law and its and their covenants and agreements with Purchaser as provided herein.

604. Non-Waiver. Nothing in this Article VI or in any other provision of this Agreement shall affect or impair the obligation of Purchaser, which is to pay the Installment Payments, as herein provided. No delay or omission of Seller or its assignee to exercise any right or power arising upon the happening of any event of default shall impair any such right or power or shall be construed to be a waiver of any such event of default or any acquiescence therein, and every power and remedy given by this Article VI to Seller and its assignee may be exercised from time to time and as often as shall be deemed expedient by Seller or its assignee.

605. Remedies Not Exclusive. No remedy herein or by law conferred upon or reserved to Seller or its assignee is intended to be exclusive of any other remedy, but each such remedy is cumulative and in addition to every other remedy, and every remedy given hereunder or now or hereafter existing, at law or in equity or by statute or otherwise may be exercised without exhausting and without regard to any other remedy conferred or by any law.

606. Status Quo. In case any suit, action or proceeding to enforce any right or exercise any remedy shall be brought or taken and then discontinued or abandoned, or shall be determined adversely to Seller and its assignee, then, and in every such case, Seller and its assignee shall be restored to its former position and rights and remedies as if no such suit, action or proceedings had been brought or taken.

ARTICLE VII

ADMINISTRATIVE PROVISIONS

701. Preservation and Inspection of Documents. All documents received by Seller or its assignee or Purchaser under the provisions of this Agreement shall be retained in their respective possessions and shall be subject at all reasonable times to the inspection of the other party hereto and its assigns, agents and representatives, any of whom may make copies thereof.

702. Parties in Interest. Nothing in this Agreement, expressed or implied, is intended to or shall be construed to confer upon or to give to any person or party other than Seller, its assignee the Letter of Credit Bank and Purchaser any rights, remedies or claims under or by reason of this Agreement or any covenants, condition or stipulation of the Trust Agreement; and all covenants, stipulations, promises and agreements in this Agreement made by or on behalf of Seller or Purchaser shall be for the sole and exclusive benefit of Seller and its assignee, the Trustee and the Letter of Credit Bank and Purchaser.

703. No Recourse Under Agreement. All covenants, stipulations, promises, agreements and obligations of the parties hereto contained in this Agreement shall be deemed to be the covenants, stipulations, promises, agreements and obligations of the parties hereto, respectively, and not of any member, officer, employee or agent of the parties hereto in an individual capacity, and no recourse shall be had under this Agreement for the payment of the Installment Payments or for any claim based thereon or under this Agreement against any member, officer, employee or agent of the parties hereto.

704. Notices. All notices, certificates or other communications hereunder shall be sufficiently given and shall be deemed given when delivered or deposited in the United States mail in registered form with postage fully prepaid:

If to the Seller:

Water Facilities Authority
P. O. Box 71
Montclair, California 91763
Attn: General Manager

If to the Trustee:

Bank of America National Trust and
Savings Association
555 South Flower, Fifth Floor
Los Angeles, California
Attn: Security Services Division-Trust (213) 228-4146

If to the Letter of Credit Bank:

The Mitsubishi Bank, Ltd., Los Angeles Agency
800 Wilshire Boulevard
Los Angeles, California 90017
Attn: Letter of Credit Department

If to the Remarketing Agent:

Merrill Lynch, Pierce, Fenner
& Smith, Incorporated
Tax-Exempt Money Markets
Department 43rd Floor
One Liberty Plaza 165 Broadway
New York, New York 10080 (212) 637-8862

If to the Paying Agent:

BankAmerica Trust Company of New York
Corporate Trust Department
40 Broad Street 4th Floor
New York, New York 10064 (212) 248-6992

If to Chino:

City of Chino
13220 Central Avenue
Chino, California 91710
Attn: City Manager (714) 627-7577

If to Ontario:

City of Ontario
303 East B Street
Ontario, California 91764
Attn: City Manager (714) 986-1151

If to Upland:

City of Upland
460 N. Euclid Avenue
Upland, California 91786
Attn: City Manager (714) 982-1352

If to County:

San Bernardino County Waterworks
District No. 8
13260 Central Avenue
Chino, California 91710
Attn: Chino Valley Manager (714) 627-7575

If to Monte Vista:

Monte Vista Water District
10575 Central Avenue
Montclair, California 91763
Attn: General Manager (714) 624-0035

The parties hereto, by notice given hereunder, may, respectively designate different addresses to which subsequent notices, certificates or other communications will be sent.

705. Binding Effect. This Agreement shall inure to the benefit of and shall be binding upon Seller and Purchaser and their respective successors and assigns.

706. Severability. If any one or more of the covenants, stipulations, promises, agreements or obligations provided in this Agreement on the part of Seller or Purchaser to be performed should be determined by a court of competent jurisdiction to be contrary to law, then such covenant, stipulation, promise, agreement or obligation shall be deemed and construed to be severable from the remaining covenants, stipulations, promises, agreements and obligations herein contained and shall in no way affect the validity of the other provisions of this Agreement.

707. Headings. Any headings preceding the text of the several Articles and Sections of the Trust Agreement, and any table of contents or marginal notes appended to copies of the

Trust Agreement, shall be solely for convenience or reference and shall not constitute a part of this Agreement, nor shall they affect its meaning, construction or effect.

708. Applicable Law. This Agreement shall be governed by and construed in accordance with the laws of the State of California.

709. Seller and Purchaser Representatives. Whenever under the provisions of this Agreement the approval of Seller or its assignee or Purchaser is required, or Seller or its assignee or Purchaser are required to take some action at the request of the other, such approval of such request may be given for Seller by an Authorized Representative of Seller, for assignees of Seller by an authorized representative thereof, and for Purchaser by an Authorized Representative of City, and any party hereto shall be authorized to rely upon any such approval or request.

710. Form of Certificate of Officers. Every certificate with respect to compliance with a condition or covenant provided for in this Agreement and which is precedent to the taking of any action under this Agreement shall include:

(a) A statement that the person making or giving such certificate has read such covenant or condition and the definitions herein relating thereto;

(b) A brief statement as to the nature and scope of the examination or investigation upon which the statements or opinions contained in such certificate are based;

(c) A statement that, in the opinion of the signer, he has made or caused to be made such examination or investigation as is necessary to enable him to express an informed opinion as to whether or not such covenant or condition has been complied with; and

(d) A statement as to whether, in the opinion of the signer, such condition or covenant has been complied with.

A certificate may be based, insofar as its relates to legal matters, upon a certificate or opinion of or representations by counsel, unless the persons provided the certificate know that the certificate or representations with respect to the matters upon which the certificate may be based are erroneous, or in the exercise of reasonable care should have known that the same were erroneous.

711. Counterpart. This Installment Agreement may be executed in counterpart.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed in their respective names by their duly authorized officers as of the date first above written.

WATER FACILITIES AUTHORITY, as Seller

By: _____
Chairman

By: _____
Secretary

CITY OF ONTARIO, as Purchaser

By: Faye Myers / Pastuga
Mayor pro Tem

ATTEST:

Dr. Louis E. Cuteliun
City Clerk

EXHIBIT A

COMPONENT	UPLAND	MVWD	ONTARIO	CHINO	SBC#8
Treatment Plant	29.4118	14.7059	29.4118	11.7647	14.7059
Pipeline to 8th Street	.0000	23.8095	47.6190	28.5714	.0000
Pipeline to 8th Street	.0000	.0000	100.0000	.0000	.0000
Pipeline to 8th Street	.0000	.0000	.0000	100.0000	.0000
Connections	20.0000	20.0000	40.0000	20.0000	.0000
Energy R. S. Ontario	.0000	.0000	100.0000	.0000	.0000
Energy R.S. Chino	.0000	.0000	.0000	100.0000	.0000
Energy R.S. Ontario, Chino	.0000	.0000	55.5555	44.4445	.0000

Exhibit A

EXHIBIT B

Installment Payments

Payment Date	Principal Component	Interest* Component	Total Payment
15-Dec-85	$0.00	$265,800.33	$265,800.33
01-Apr-86	0.00	265,800.33	265,800.33
01-Jul-86	0.00	265,800.33	265,800.33
01-Oct-86	0.00	265,800.33	265,800.33
01-Jan-87	0.00	265,800.33	265,800.33
01-Apr-87	0.00	265,800.33	265,800.33
01-Jul-87	0.00	265,800.33	265,800.33
01-Oct-87	9,574.94	265,800.33	275,375.27
01-Jan-88	9,574.94	265,800.33	275,375.27
01-Apr-88	9,574.94	265,800.33	275,375.27
01-Jul-88	9,574.94	265,800.33	275,375.27
01-Oct-88	9,574.94	265,034.34	274,609.28
01-Jan-89	9,574.94	265,034.34	274,609.28
01-Apr-89	9,574.94	265,034.34	274,609.28
01-Jul-89	9,574.94	265,034.34	274,609.28
01-Oct-89	19,149.88	264,268.34	283,418.22
01-Jan-90	19,149.88	264,268.34	283,418.22
01-Apr-90	19,149.88	264,268.34	283,418.22
01-Jul-90	19,149.88	264,268.34	283,418.22
01-Oct-90	19,149.88	262,736.35	281,886.23
01-Jan-91	19,149.88	262,736.35	281,886.23
01-Apr-91	19,149.88	262,736.35	281,886.23
01-Jul-91	19,149.88	262,736.35	281,886.23
01-Oct-91	19,149.88	261,204.36	280,354.24
01-Jan-92	19,149.88	261,204.36	280,354.24
01-Apr-92	19,149.88	261,204.36	280,354.24
01-Jul-92	19,149.88	261,204.36	280,354.24
01-Oct-92	19,149.88	259,672.37	278,822.25
01-Jan-93	19,149.88	259,672.37	278,822.25
01-Apr-93	19,149.88	259,672.37	278,822.25
01-Jul-93	19,149.88	259,672.37	278,822.25
01-Oct-93	28,724.82	258,140.38	286,865.20
01-Jan-94	28,724.82	258,140.38	286,865.20
01-Apr-94	28,724.82	258,140.38	286,865.20
01-Jul-94	28,724.82	258,140.38	286,865.20
01-Oct-94	28,724.82	255,842.40	284,567.22
01-Jan-95	28,724.82	255,842.40	284,567.22
01-Apr-95	28,724.82	255,842.40	284,567.22
01-Jul-95	28,724.82	255,842.40	284,567.22
01-Oct-95	38,299.76	253,544.41	291,844.17
01-Jan-96	38,299.76	253,544.41	291,844.17
01-Apr-96	38,299.76	253,544.41	291,844.17
01-Jul-96	38,299.76	253,544.41	291,844.17

Guiana #2

01-Oct-96	38,299.76	250,480.43	288,780.19
01-Jan-97	38,299.76	250,480.43	288,780.19
01-Apr-97	38,299.76	250,480.43	288,780.19
01-Jul-97	38,299.76	250,480.43	288,780.19
01-Oct-97	47,874.70	247,416.45	295,291.15
01-Jan-98	47,874.70	247,416.45	295,291.15
01-Apr-98	47,874.70	247,416.45	295,291.15
01-Jul-98	47,874.70	247,416.45	295,291.15
01-Oct-98	47,874.70	243,586.47	291,461.17
01-Jan-99	47,874.70	243,586.47	291,461.17
01-Apr-99	47,874.70	243,586.47	291,461.17
01-Jul-99	47,874.70	243,586.47	291,461.17
01-Oct-99	57,449.64	239,756.50	297,206.14
01-Jan-2000	57,449.64	239,756.50	297,206.14
01-Apr-2000	57,449.64	239,756.50	297,206.14
01-Jul-2000	57,449.64	239,756.50	297,206.14
01-Oct-2000	67,024.58	235,160.53	302,185.11
01-Jan-2001	67,024.58	235,160.53	302,185.11
01-Apr-2001	67,024.58	235,160.53	302,185.11
01-Jul-2001	67,024.58	235,160.53	302,185.11
01-Oct-2001	76,599.52	229,798.56	306,398.08
01-Jan-2002	76,599.52	229,798.56	306,398.08
01-Apr-2002	76,599.52	229,798.56	306,398.08
01-Jul-2002	76,599.52	229,798.56	306,398.08
01-Oct-2002	86,174.46	223,670.60	309,845.06
01-Jan-2003	86,174.46	223,670.60	309,845.06
01-Apr-2003	86,174.46	223,670.60	309,845.06
01-Jul-2003	86,174.46	223,670.60	309,845.06
01-Oct-2003	95,749.40	216,776.64	312,526.04
01-Jan-2004	95,749.40	216,776.64	312,526.04
01-Apr-2004	95,749.40	216,776.64	312,526.04
01-Jul-2004	95,749.40	216,776.64	312,526.04
01-Oct-2004	114,899.28	209,116.69	324,015.97
01-Jan-2005	114,899.28	209,116.69	324,015.97
01-Apr-2005	114,899.28	209,116.69	324,015.97
01-Jul-2005	114,899.28	209,116.69	324,015.97
01-Oct-2005	124,474.22	199,924.75	324,398.97
01-Jan-2006	124,474.22	199,924.75	324,398.97
01-Apr-2006	124,474.22	199,924.75	324,398.97
01-Jul-2006	124,474.22	199,924.75	324,398.97
01-Oct-2006	143,624.10	189,966.81	333,590.91
01-Jan-2007	143,624.10	189,966.81	333,590.91
01-Apr-2007	143,624.10	189,966.81	333,590.91
01-Jul-2007	143,624.10	189,966.81	333,590.91
01-Oct-2007	172,348.92	178,476.88	350,825.80
01-Jan-2008	172,348.92	178,476.88	350,825.80
01-Apr-2008	172,348.92	178,476.88	350,825.80
01-Jul-2008	172,348.92	178,476.88	350,825.80
01-Oct-2008	191,498.80	164,688.97	356,187.77
01-Jan-2009	191,498.80	164,688.97	356,187.77

Outerto #3

01-Apr-2009	191,498.80	164,688.97	356,187.77
01-Jul-2009	191,498.80	164,688.97	356,187.77
01-Oct-2009	220,223.62	149,369.06	369,592.68
01-Jan-2010	220,223.62	149,369.06	369,592.68
01-Apr-2010	220,223.62	149,369.06	369,592.68
01-Jul-2010	220,223.62	149,369.06	369,592.68
01-Oct-2010	248,948.44	131,751.17	380,699.61
01-Jan-2011	248,948.44	131,751.17	380,699.61
01-Apr-2011	248,948.44	131,751.17	380,699.61
01-Jul-2011	248,948.44	131,751.17	380,699.61
01-Oct-2011	287,248.20	111,835.30	399,083.50
01-Jan-2012	287,248.20	111,835.30	399,083.50
01-Apr-2012	287,248.20	111,835.30	399,083.50
01-Jul-2012	287,248.20	111,835.30	399,083.50
01-Oct-2012	325,547.96	88,855.44	414,403.40
01-Jan-2013	325,547.96	88,855.44	414,403.40
01-Apr-2013	325,547.96	88,855.44	414,403.40
01-Jul-2013	325,547.96	88,855.44	414,403.40
01-Oct-2013	363,847.72	62,811.61	426,659.33
01-Jan-2014	363,847.72	62,811.61	426,659.33
01-Apr-2014	363,847.72	62,811.61	426,659.33
01-Jul-2014	363,847.72	62,811.61	426,659.33
01-Oct-2014	421,297.36	33,703.79	455,001.15
01-Jan-2015	421,297.36	33,703.79	455,001.15
01-Apr-2015	421,297.36	33,703.79	455,001.15
01-Jul-2015	421,297.36	33,703.79	455,001.15

* During the period that Certificates bear interest at an Adjusted Interest Rate, the Interest Component shall be computed at 8.0%, or at the highest Adjusted Interest Rate during the preceding three (3) months period, whichever is higher. Following conversion to a Fixed Rate of Interest, the Interest Component shall be the Fixed Rate of Interest.

APPENDIX E

CALIFORNIA DEPARTMENT
OF
HEALTH SERVICES
LETTER OF AUGUST 16, 1999
PERTAINING TO
"PERMIT AMENDMENT – INCREASED FILTRATION RATE"
(SYSTEM NO. 3610006)

STATE OF CALIFORNIA - HEALTH AND HUMAN SERVICES AGENCY

GRAY DAVIS, Governor

DEPARTMENT OF HEALTH SERVICES
DRINKING WATER FIELD OPERATIONS BRANCH
Government Center
464 West 4th Street, Suite 437
San Bernardino, CA 92401
GEN (909) 383-4328
FAX (909) 383-4745

August 16, 1999

Eric Fraser, P.E.
Plant Manager, Agua de Lejos Water Filtration Plant
Water Facilities Authority
1775 N. Benson Avenue
Upland, CA 91784

Subject: Permit Amendment-Increased Filtration Rate (System No. 3610006)

Dear Mr. Fraser:

This is in reference to a permit amendment application dated March 30, 1999, submitted with your letter dated May 18, 1999. Supporting documentation was initially submitted with your letter dated March 30, 1999. Our letter to you dated April 19, 1999, provided our comments. Your letter dated May 18, 1999, addressed some of our comments. In order to resolve other issues, a meeting was held with you on June 24, 1999, at which remaining issues were also addressed. As a result of the meeting, you submitted additional information on the pretreatment results with your letter dated July 1, 1999.

Currently the approved capacity of the Agua de Lejos water filtration plant (Plant), based on the previous studies, is 68 MGD in contrast to the design capacity of 77 MGD (8.4 gpm/ft^2). Your permit amendment application requested that the Plant capacity be increased from the current 77 MGD to 81 MGD. During a three week study in November 1998 the Plant was operated with one of the four sedimentation basins and equivalent of four of 16 filters in service, at an average flow of 20.25 MGD (range of 19.7 to 20.7 MGD). Actually five filters were in rotation with only four filters in service at any one time. Typical filter run lengths were 10 hours each. The filtration rate achieved was 8.8 gpm/ft^2 under these operating conditions. Based on the readings of the individual filter effluent turbidities, the following range of results were reported for the three week study period:

Filter No.	TURBIDITY, NTU		
	Average	Minimum	Maximum
2	0.05-0.07	0.04-0.06	0.09-0.28
4	0.04-0.04	0.02-0.04	0.07-0.26
5	0.05-0.07	0.03-0.03	0.09-0.24
6	0.05-0.07	0.03-0.04	0.09-0.26
8	0.04-0.05	0.03-0.04	0.09-0.31

The individual filter effluent turbidity results complied with SWTR requirements. Further, the combined filter effluent turbidities ranged between 0.04 and 0.09 NTU with an average of 0.046 NTU which is also in compliance with SWTR requirements.

The settled water turbidities (range of 3.0 to 4.9 NTU) during the study period, however, were generally similar to, and often marginally higher than, the raw water turbidities (range of 2.5 to 3.3 NTU). Also, the settled water turbidities were significantly higher than the goal of 1 to 2 NTU referenced in the Department's Cryptosporidium Action Plan (CAP), dated April 1995 . It is recognized that low turbidity raw waters are more difficult to pretreat. It is nevertheless important to explore all options of optimization.

The current Water Supply Permit for Water Facilities Authority was issued on July 22, 1987, before the construction of the facilities was complete. A new full permit will be issued in the near future that documents the Plant's current facilities. Therefore, this letter serves to communicate the decision of the Department on the increased filtration rate prior to issuance of the new full permit.

The Department approves the increased filtration rate of Agua de Lejos water filtration plant from 8.4 gpm/ft^2 to 8.8 gpm/ft^2 . However, the length of filters runs cannot exceed a maximum of 10 hours based on the filter runs during the studies. If you wish to operate the filters with longer filter runs, please submit additional performance data for such longer filter runs for our consideration. When all 16 filters are in service under the above conditions, the Plant capacity can be increased to the rate of 81 MGD.

We commend the Water Facilities Authority on their efforts to comply with the SWTR requirements and urge further efforts to optimize the pretreatment to meet the goals of CAP. We look forward to working with you and your staff in the future. If you have questions, please call me at (909) 383-4327.

Sincerely,

Kalyanpur Y. Baliga, Ph.D., P.E.
Senior Sanitary Engineer

cc: Robert Brownwood
Cindy Forbes
Richard Haberman
SBCDEHS

ORDINANCE NO. 99-07-02
ORDINANCE OF THE WATER FACILITIES AUTHORITY-JPA
REPEALING ORDINANCE 96-09-01

WHEREAS, the Agua de Lejos Treatment Plant has been in service since 1988;

WHEREAS, in order to maintain a state of plant readiness and reliability a scheduled approach to replacement of capital equipment is needed;

WHEREAS, a need to stabilize the fiscal impacts incurred by each Member Agency is needed;

NOW, THEREFORE, be it ordained by the Board of Directors of the Water Facilities Authority - Joint Powers Agency ("WFA") that:

1. This Ordinance establishes nine charges that will be made to each Member Agency. Charges to the Member Agencies for the WFA COPs will still be governed by the installment payment agreements. These charges are set forth below.

2. Definitions.

g. "Capital Replacement Project": Projects and/or equipment that are identified in the Capital Replacement Plan.

h. "FY": The Fiscal Year of the WFA beginning July 1.

3. Payments for the Capital Investment Required for the Treatment Plant. The final cost of the treatment plant (land, Metropolitan Water District of Southern California ("MWD") connection, treatment plant, and treatment plant expansion) is to be allocated among the Member Agencies based on percent entitlement of the treatment plant. Payments on the Certificates of Participation ("COPs") will be made quarterly in advance. The percentage entitlement of design capacity of each Member Agency is:

City of Upland	23.0% of design capacity in mg
Monte Vista Water District	24.0% of design capacity in mg
City of Ontario	31.4% of design capacity in mg
City of Chino	5.9% of design capacity in mg
City of Chino Hills	15.7% of design capacity in mg

4. Operations Issues.

a. If plant capability exceeds plant design capacity of 77 mgd, then each participating Member Agency's entitlement of plant capability is according to the

APPENDIX F

ORDINANCE NO. 99-07-02
"ORDINANCE OF THE WATER FACILITIES AUTHORITY – JPA
REPEALING ORDINANCE 96-09-01"

ORDINANCE NO. 99-07-02
ORDINANCE OF THE WATER FACILITIES AUTHORITY-JPA
REPEALING ORDINANCE 96-09-01

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1. This Ordinance establishes nine charges that will be made to each Member Agency. Charges to the Member Agencies for the WFA COPs will still be governed by the installment payment agreements. These charges are set forth below.

2. Definitions.

a. "Plant Capability": The total capability of the plant, based upon the current physical limits of the treatment plant, the ability to produce water that meets all drinking water standards, and any other reason that may justify operating the treatment plant at more or less than design capacity.

b. "Design Capacity": The capacity of the Agua de Lejos Treatment Plant is 77 mgd.

c. "Member Agency": The agencies that are signatories to the WFA Joint Powers Agreement.

d. "IEUA": Inland Empire Utility Agency (formerly Chino Basin Municipal Water District).

e. "Capital Replacement Plan": The plan and time schedule for replacement of plant equipment as adopted by the Board of Directors.

f. "Capital Improvement Project": Projects that substantially increase the capability or value of the treatment plant and are not capital replacement projects.

g. "Capital Replacement Project": Projects and/or equipment that are identified in the Capital Replacement Plan.

h. "FY": The Fiscal Year of the WFA beginning July 1.

3. Payments for the Capital Investment Required for the Treatment Plant. The final cost of the treatment plant (land, Metropolitan Water District of Southern California ("MWD") connection, treatment plant, and treatment plant expansion) is to be allocated among the Member Agencies based on percent entitlement of the treatment plant. Payments on the Certificates of Participation ("COPs") will be made quarterly in advance. The percentage entitlement of design capacity of each Member Agency is:

City of Upland	23.0% of design capacity in mg
Monte Vista Water District	24.0% of design capacity in mg
City of Ontario	31.4% of design capacity in mg
City of Chino	5.9% of design capacity in mg
City of Chino Hills	15.7% of design capacity in mg

4. Operations Issues.

a. If plant capability exceeds plant design capacity of 77 mgd, then each participating Member Agency's entitlement of plant capability is according to the

APPENDIX G

"WATER PURCHASE AGREEMENT"
DATED AS OF JANUARY 15, 2002
BY AND BETWEEN
CHINO BASIN DESALTER AUTHORITY
AND
THE CITY OF ONTARIO

EXECUTION COPY

WATER PURCHASE AGREEMENT

Dated as of January 15, 2002

By and Between

CHINO BASIN DESALTER AUTHORITY

and

THE CITY OF ONTARIO

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EXHIBITS

WATER PURCHASE AGREEMENT

This Agreement, dated as of January 15, 2002, by and between the Chino Basin Desalter Authority (the "Authority"), a joint exercise of powers agency duly organized and existing pursuant to Article 1, Chapter 5, Division 7, Title 1 of the Government Code (the "Joint Powers Act"), commencing with Section 6500, and the City of Ontario (the "Purchaser").

WITNESSETH:

WHEREAS, the Purchaser and certain other water purveyors in the Chino Basin have entered into the Integrated Chino-Arlington Desalters System Term Sheet (the "Term Sheet") pursuant to which such water purveyors have made a contractual commitment to purchase desalted water from certain desalting facilities (capitalized terms used herein and not otherwise defined shall have the meanings set forth below);

WHEREAS, in order for the Purchaser to receive desalter water, certain facilities described in the Term Sheet and comprising the Project must be acquired and constructed by the Authority;

WHEREAS, the Authority and the Purchaser now wish to enter into this Agreement to provide for the acquisition, construction, operation and financing of the Project, for the sale by the Authority to the Purchaser of the Purchaser's Project Allotment and certain other matters;

NOW THEREFORE, the parties hereto do agree as follows:

Section 1. Definitions.

The following terms shall, for all purposes of this Agreement have the following meanings:

"Authority" shall have the meaning assigned thereto in the preamble hereto.

"Authority Bonds" means bonds, notes or other evidences of indebtedness issued by or on behalf of the Authority to finance or refinance the Project.

"Authority Fiscal Year" means the twelve month period commencing on July 1 of each calendar year and ending on the following June 30 or such other twelve month period which may be designated by the Authority as its fiscal year.

"Bonds" mean all bonds, notes or similar obligations (but not including Contracts) of the Purchaser authorized and issued by the Purchaser under and pursuant to applicable laws of the State of California after the date of execution of this Agreement, the principal of and interest on which are an operation and maintenance expense of the Purchaser Water System determined in accordance with generally accepted accounting principles and which are secured by a pledge or a lien on Purchaser Net Water System Revenues and which are on a parity with the obligations of the Purchaser under this Agreement.

"Bond Resolution" means the resolution or resolutions providing for the issuance of Authority Bonds and the terms thereof, and any indenture or trust agreement related thereto.

"Contract Payments" means:

(1) the interest payable during such Purchaser Fiscal Year on all outstanding Bonds, assuming that all outstanding term Bonds are redeemed or paid from sinking fund payments as scheduled (except to the extent that such interest is to be paid from the proceeds of the sale of any Bonds);

(2) that portion of the principal amount of all outstanding serial Bonds maturing during such Purchaser Fiscal Year;

(3) that portion of the principal amount of all outstanding term Bonds required to be redeemed or paid during such Purchaser Fiscal Year; and

(4) that portion of payments under Contracts (other than under this Agreement) constituting principal and interest required to be made at the times provided in the Contracts.

"Contracts" means this Agreement and all contracts of the Purchaser authorized and executed by the Purchaser under and pursuant to the applicable laws of the State of California after the date of execution of this Agreement, the payments under which are an operation and maintenance expense of the Purchaser Water System determined in accordance with generally accepted accounting principles and which are secured by a pledge of or lien on the Purchaser Net Water System Revenues and which are on a parity with the obligations of the Purchaser under this Agreement.

"Debt Service" means, as of the date of calculation and with respect to Authority Bonds, an amount equal to the sum of (i) interest payable during such Authority Fiscal Year on Authority Bonds, except to the extent that such interest is to be paid from capitalized interest, (ii) that portion of principal of Authority Bonds payable during such Authority Fiscal Year, (iii) amounts necessary to replenish the Reserve Fund created pursuant to the Bond Resolution, and (iv) all letters of credit and other financing costs payable on a periodic basis. Such interest, principal installments and financing costs for such series shall be calculated on the assumption that no Authority Bonds outstanding at the date of calculation will cease to be outstanding except by reason of the payment of principal on the due date thereof;

provided further that, as to any such Authority Bonds bearing or comprising interest at other than a fixed rate, the rate of interest used to calculate Debt Service shall be one hundred ten percent (110%) of the greater of (a) the daily average interest rate on such Authority Bonds during the twelve (12) calendar months preceding the date of calculation (or the portion of the then current Authority Fiscal Year that such Authority Bonds have borne interest) or (b) the most recent effective interest rate on such Authority Bonds prior to the date of calculation; and

provided further that, as to any such Authority Bonds or portions thereof bearing no interest but which are sold at a discount and which discount accretes with respect to such Authority Bonds or portions thereof, such accreted discount shall be treated as interest in the calculation of Debt Service; and

provided further that the amount on deposit in a debt service reserve fund on any date of calculation of Debt Service shall be deducted from the amount of principal due at the final maturity of the Authority Bonds for which such debt service reserve fund was established and in each preceding Authority Fiscal Year until such amount is exhausted.

"Facilities Acquisition Agreement" means the Facilities Acquisition Agreement, dated as of January 15, 2002, by and between SAWPA and the Authority, as such Facilities Acquisition Agreement may be amended or supplemented from time-to-time.

"Fixed Project Costs" means capital costs, including Debt Service, and reserves for repair and replacement and improvement to the Project and for payment of Debt Service of the Project, and all other amounts paid by the Authority other than Variable O&M Costs and Fixed O&M Costs.

"Fixed O&M Costs" means operation, maintenance, power, replacement and other costs, including Project Operation and Maintenance Expenses and a reasonable reserve for contingencies, in each case incurred by the Authority with respect to the Project, irrespective of the amount of water delivered to the Project Participants, including but not limited to amounts required to be deposited in the Membrane Replacement Fund, and amounts payable to Jurupa Community Services District under the Agreement By And Between The Chino Basin Desalter Authority, Jurupa Community Services District, The City Of Ontario, The City Of Norco And Santa Ana River Water Company Providing For The Transportation Of Chino II Desalter Water.

"Independent Certified Public Accountant" means any firm of certified public accountants appointed by the Purchaser, or the Authority, as the case may be, and each of whom is independent pursuant to the Statement on Auditing Standards No. 1 of the American Institute of Certified Public Accountants.

"Joint Powers Agreement" means the Joint Exercise of Powers Agreement creating the Chino Basin Desalter Authority, as such agreement may be amended or supplemented from time to time.

"Project" means certain facilities necessary to deliver desalted water to the Project Participants, including the following: (i) the Chino I Desalter, (ii) the Chino I Expansion facilities, (iii) Chino II Desalter; and (iv) water pipelines, electric generators and associated facilities. The Authority and the Purchaser acknowledge that portions of the Project are currently being designed and that the definition of the Project may be revised from time-to-time prior to commencement of construction as provided in Section 4 hereof without amendment to this Agreement.

"Project Allotment" means 5,000 acre-feet of desalted water per year.

"Project Operation and Maintenance Expenses" means the actual costs spent or incurred by the Authority for maintaining and operating the Project, calculated in accordance with generally accepted accounting principles and Section 9 hereof, including (among other things) the expenses of management and repair and other expenses necessary to maintain and preserve the Project, in good repair and working order, and including administrative costs of the Authority, overhead, insurance, taxes (if any), fees of auditors, accountants, attorneys or engineers and insurance premiums, and including all other reasonable and necessary costs of the Authority, or charges required to be paid by it to comply with the terms of the Authority Bonds or of this Agreement, but excluding in all cases (i) depreciation, replacement and obsolescence charges or reserves therefor, (ii) amortization of intangibles or other bookkeeping entries of a similar nature, (iii) costs of capital additions, replacements, betterments, extensions or improvements to the Project, which under generally accepted accounting principles are chargeable to a capital account or to a reserve for depreciation and (iv) Debt Service.

"Project Participant" mean the Purchaser and each entity listed in Exhibit A hereto executing Water Purchase Agreements with the Authority.

"Purchaser" shall have the meaning assigned thereto in the preamble hereto.

"Purchaser Fiscal Year" means the twelve month period commencing on July 1 of each year and ending on the following June 30 or such other twelve month period which may be designated by the Purchaser as its fiscal year.

"Purchaser Net Water System Revenues" means, for any Purchaser Fiscal Year, the Purchaser Water System Revenues for such Purchaser Fiscal Year less the Purchaser Operation and Maintenance Expenses for such Purchaser Fiscal Year.

"Purchaser Operation and Maintenance Expenses" means the costs spent or incurred by the Purchaser for maintaining and operating the Purchaser Water System, calculated in accordance with generally accepted accounting principles, including (among other things) the expenses of management and repair and other expenses necessary to maintain and preserve the Purchaser Water System, in good repair and working order, and including administrative costs of the Purchaser, salaries and wages of employees, payments to the Public Employees Retirement System, overhead, insurance, taxes (if any), fees of auditors, accountants, attorneys or engineers and insurance premiums, and all other reasonable and necessary costs of the Purchaser, but excluding in all cases (i) depreciation, replacement and obsolescence charges or reserves therefor, (ii) amortization of intangibles or other bookkeeping entries of a similar nature, and (iii) charges for the payment of principal and interest on Bonds or Contracts.

"Purchaser Share" means the Purchaser's Project Allotment divided by the sum of all Project Participants' Project Allotments, all as set forth as Exhibit A hereto.

"Purchaser Water System" means properties and assets, real and personal, tangible and intangible, of the Purchaser now or hereafter existing, used or pertaining to the acquisition, treatment, reclamation, transmission, distribution and sale of water, including all additions, extensions, expansions, improvements and betterments thereto and equipment relating thereto; provided, however, that to the extent the Purchaser is not the sole owner of an asset or property or to the extent that an asset or property is used in part for the above described water purposes, only the Purchaser's ownership interest in such asset or property or only the part of the asset or property so used for water purposes shall be considered to be part of the Purchaser Water System.

"Purchaser Water System Revenues" means the income, rents, rates, fees, charges, and other moneys derived by the Purchaser from the ownership or operation of Purchaser Water System including, without limiting the generality of the foregoing, (i) all income, rents, rates, fees, charges or other moneys derived from the sale, furnishing, and supplying of water and other services, facilities, and commodities sold, furnished, or supplied through the facilities of Purchaser Water System, including standby and availability charges, capital water facilities fees for design, construction and reconstruction expenses, development fees and other fees allocable to the Purchaser Water System, (ii) taxes or assessments as may be imposed if the levy thereof and payment hereunder is permitted by law, and (iii) the earnings on and income derived from amounts set forth in clauses (i) and (ii) above, and shall not include (y) customers' deposits or any other deposits subject to refund until such deposits have become the property of the Purchaser and (z) proceeds of any taxes or assessments except taxes or assessments described in clause (ii) above.

"SAWPA" means the Santa Ana Watershed Project Authority, a joint exercise powers agency, including the successors and assigns thereof.

"Term Sheet" shall have the meaning assigned thereto in the preamble hereto.

"Trustee" means the entity or entities designated by the Authority pursuant to any Bond Resolution to administer any funds or accounts required by such Bond Resolution or otherwise.

"Variable O&M Costs" means the operation, maintenance, power, replacement and other costs, including Project Operation and Maintenance Expenses incurred by the Authority in connection with the Project in an amount which is dependent upon and varies with the amount of water delivered to the Project Participants.

"Water Purchase Agreement" means this Agreement and each Water Purchase Agreement by and between the Authority and a Project Participant, as the same may be amended or supplemented from time to time.

Section 2. Purpose.

The purpose of this Agreement is for the Authority to sell Project Allotment to the Purchaser, to deliver Project Allotment to the Purchaser available from the Project, to provide the terms and conditions of such delivery and sale and to provide for the acquisition, construction and financing of the Project. The parties hereto confirm that this Agreement constitutes a contractual right to purchase desalted water and that no water right is being transferred by the Authority to any Project Participant under this Agreement.

Section 3. Financing, Construction and Operation.

The Authority will use its best efforts to cause or accomplish the acquisition, construction, operation and financing of the Project, the obtaining of all necessary authority and rights, consents and approvals, and the performance of all things necessary and convenient therefor, subject to compliance with all necessary federal and state laws, including but not limited to the California Environmental Quality Act ("CEQA"), the terms and conditions of the Authority's permits and licenses and all other agreements relating thereto.

Section 4. Delivery of Water.

(a) Request by Purchaser. Pursuant to the terms of this Agreement, the Authority shall provide to the Purchaser, and the Purchaser shall take, or cause to be taken, in each Authority Fiscal Year an amount of water equal to the Purchaser's Project Allotment unless the Purchaser notifies the Authority, pursuant to procedures to be developed by the Authority, that the Purchaser requires an amount of water less than the Purchaser's Project Allotment. Subject to the Project Participant's payment obligations hereunder, the Authority agrees to use its best efforts to deliver desalted water pursuant to this Agreement meeting the water quality standards set forth in Section 5.3 of the Joint Powers Agreement and all applicable local, state and federal water quality standards as such standards may be in effect from time to time.

(b) Points of Delivery; Flow Rate. The Authority will deliver or cause to be delivered to or for the account of the Purchaser the amount of water specified in each request at a flow rate and through delivery structures at a point along the Project to be agreed upon by the Authority and the

Purchaser. The Authority will remain available to make or cause to be made all necessary and possible arrangements for transmission and delivery of such water in accordance with this Agreement.

(c) Delivery of Water Not Delivered in Accordance with Schedule. If in any Authority Fiscal Year the Authority, as a result of causes beyond its control, is unable to deliver any portion of the Purchaser's Project Allotment for such Authority Fiscal Year as provided for in the delivery schedule established for that Authority Fiscal Year, the Purchaser may elect to receive the amount of water which otherwise would have been delivered to it during such period at other times during the Authority Fiscal Year or subsequent to such Authority Fiscal Year, to the extent that such water is then available and such election is consistent with the Authority's overall delivery ability, considering the then current delivery schedules of all Project Participants and the Authority.

(d) SARWC Request. Pursuant to the Joint Powers Agreement, if Santa Ana River Water Company cannot receive the full 1,200 acre feet of water allocated thereto as provided in the Term Sheet, then Jurupa Community Services District and the City of Ontario will abate their deliveries of water from the Project on a pro-rata basis to ensure that Santa Ana River Water Company can receive the full 1,200 acre feet of water from the Authority for such year. Notwithstanding the foregoing, Jurupa Community Services District and the City of Ontario shall only have such obligation if Santa Ana River Water Company's demand for water is constant or at a "steady-rate" of 744 gpm.

Section 5. Curtailment of Delivery for Maintenance Purposes.

(a) Authority May Curtail Deliveries. The Authority may temporarily discontinue or reduce the delivery of water to the Purchaser hereunder for the purposes of necessary investigation, inspection, maintenance, repair, or replacement of any of the Project facilities necessary for the delivery of water to the Purchaser. The Authority shall notify the Purchaser as far in advance as possible of any such discontinuance or reduction, except in cases of emergency, in which case notice shall be given as soon thereafter as possible.

(b) Purchaser May Receive Later Delivery of Water Not Delivered. In the event of any discontinuance or reduction of delivery of water pursuant to subsection (a) of this Section, the Purchaser may elect to receive the amount of water which otherwise would have been delivered to it during such period under the water delivery schedule for that Authority Fiscal Year at other times during the Authority Fiscal Year or subsequent to such Authority Fiscal Year to the extent that such water is then available and such election is consistent with the Authority's overall delivery ability, considering the then current delivery schedules of all Project Participants and the Authority.

Section 6. Shortage in Water Supply.

In any Authority Fiscal Year in which there may occur a shortage or interruption in the supply of water available for delivery to the Project Participants, including but not limited to shortages or interruptions caused by changes in laws, regulations or rulings relating to or affecting the Authority's permits and licenses, with the result that such supply is less than the total of the annual Project Allotments of all Project Participants for that Authority Fiscal Year, the Authority shall reduce the delivery of water to the Purchaser in accordance with the Joint Powers Agreement.

Section 7. Measurement of Water Delivered.

The Authority shall measure, or cause to be measured, all water delivered to the Purchaser and shall keep and maintain accurate and complete records thereof. For this purpose and in accordance with Section 4 hereof, the Authority shall install, operate, and maintain, or cause to be installed, operated and maintained, at all delivery structures for delivery of water to the Purchaser at the point of delivery determined in accordance with Section 4(b) such measuring devices and equipment as are satisfactory and acceptable to both parties. Said devices and equipment shall be examined, tested, and serviced by the Authority regularly to insure their accuracy. At any time or times, the Purchaser may inspect such measuring devices and equipment, and the measurements and records taken therefrom.

Section 8. Responsibility for Delivery and Distribution of Water.

(a) Neither the Authority nor any of its officers or agents shall be liable for the control, carriage, handling, use, disposal, or distribution of water supplied to the Purchaser after such water has passed the points of delivery established in accordance with Section 4(b) hereof; nor for claim of damage of any nature whatsoever, including but not limited to property damage, personal injury or death, arising out of or connected with the control, carriage, handling, use, disposal or distribution of such water beyond said points of delivery and including attorneys fees and other costs of defense in connection therewith; the Purchaser shall indemnify and hold harmless the Authority and its officers, agents, and employees from any such damages or claims of damages.

(b) Neither the Purchaser nor any of its officers, agents, or employees shall be liable for the control, carriage, handling, use, disposal, or distribution of water supplied to the Purchaser until such water has passed the points of delivery established in accordance with Section 4(b) hereof; nor for claim of damage of any nature whatsoever, including but not limited to property damage, personal injury or death, arising out of or connected with the control, carriage, handling, use, disposal or distribution of such water prior to such water passing said points of delivery and including attorneys fees and other costs of defense in connection therewith; the Authority shall indemnify and hold harmless the Purchaser and its officers, agents, and employees from any such damages or claims of damages.

Section 9. Rates and Charges.

(a) Establishment of Rates and Charges. The Authority shall fix charges to the Purchaser under this Agreement to produce revenues to the Authority from the Project equal to the amounts anticipated to be needed by the Authority to pay the actual cost of producing the Purchaser's Project Allotment, which shall include the following costs of the Authority to deliver the Purchaser's Project Allotment through the Project: (i) Fixed Project Costs, (ii) Fixed O&M Costs and (iii) Variable O&M Costs.

(b) Insufficiency of Funds. If Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs collected by the Authority are insufficient to operate and maintain the Project as contemplated under the Joint Powers Agreement, the Authority shall notify the Purchaser of such insufficiency and the Purchaser shall pay to the Authority an amount of such insufficiency equal to such insufficiency multiplied by the Purchaser Share. The obligation of the Purchaser to pay Fixed Project Costs and Fixed O&M Costs shall commence and continue to exist and be honored by the Purchaser whether or not water is furnished to it from the Project at all times or at all (which

provision may be characterized as an obligation to pay all costs on a take-or-pay basis whether or not water is delivered or provided and whether or not the Project is completed or is operable).

(c) Source of Payments. The obligation of the Purchaser to make payments under this Agreement is a limited obligation of the Purchaser and not a general obligation thereof. The Purchaser shall make payments under this Agreement solely from Purchaser Water System Revenues as a Purchaser Operation and Maintenance Expense. The Purchaser shall make such payments on a parity with other Purchaser Operation and Maintenance Expenses and prior to any other payments other than Bonds or Contracts. Nothing herein shall be construed as prohibiting (i) the Purchaser from using any other funds and revenues for purposes of satisfying any provisions of this Agreement or (ii) from incurring obligations payable on a parity with the obligations under this Agreement so long as the Purchaser complies with Section 13(a) hereof.

(d) Obligation Is Not Subject To Reduction. The Purchaser shall make payments of Fixed Project Costs and Fixed O&M Costs under this Agreement whether or not the Project is completed, operable, operated or retired and notwithstanding the suspension, interruption, interference, reduction or curtailment of operation of the Project or of water contracted for in whole or in part for any reason whatsoever. Such payments are not subject to any reduction, whether offset or otherwise, and are not conditioned upon performance by the Authority or any other Project Participant under this Agreement or any other agreement.

(e) Several Obligation. The Purchaser shall not be liable under this Agreement for the obligations of any other Project Participant. The Purchaser shall be solely responsible and liable for performance of its obligations under this Agreement. The obligation of the Purchaser to make payments under this Agreement is a several obligation and not a joint obligation with those of the other Project Participants.

(f) Allocation of Costs and Expenses.

The Authority shall not allocate costs and expenses in any way which discriminates among Project Participants.

(i) Method of Computation of Fixed Project Costs and Fixed O&M Costs. The Fixed Project Costs shall be sufficient to return to the Authority those capital costs of the Authority necessary to deliver water to the Purchaser. The Fixed O&M Costs shall be sufficient to return to the Authority Project Operation and Maintenance Expenses and a reasonable reserve for contingencies, in each case incurred by the Authority with respect to the Project, irrespective of the amount of water delivered to the Project Participants. The total amount of Fixed Project Costs shall be allocated to the Purchaser by multiplying the Purchaser Share times all Fixed Project Costs. The total amount of Fixed O&M Costs shall be allocated to the Purchaser by multiplying the Purchaser Share times all Fixed O&M Costs.

(ii) Method of Computation of Variable O&M Costs. The Variable O&M Costs shall return to the Authority those costs of the Project which constitute Variable O&M Costs. There shall be computed for the Project a charge per acre-foot of water which will return to the Authority the total projected Variable O&M Costs of the Project for each Authority Fiscal Year. The parties confirm that if the Purchaser complies with the notice requirement of Section 4(a), no Variable O&M Costs will be allocated to the Purchaser for the portion of Project Allotment not produced by the Authority for the Purchaser.

(iii) Adjustments. The Authority shall update the values and amounts of Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs on a quarterly basis, including year-to-date comparisons to the approved Project budget in order that the costs and expenses to the Purchaser may accurately reflect increases or decreases from Authority Fiscal Year to Authority Fiscal Year in Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs. In addition, each such determination shall include an adjustment to be paid or received by the Purchaser for succeeding Authority Fiscal Years which shall account for the differences, if any, between projections of Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs used by the Authority in determining the amounts of said Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs for all preceding Authority Fiscal Years and actual Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs incurred by the Authority for water delivered to the Purchaser during such Authority Fiscal Years.

(iv) Interest Earnings. Interest earnings on all amounts paid by the Purchaser to the Authority shall be credited to the Purchaser through the budgeting process.

(g) Time and Method of Payment.

(i) Fixed Project Costs and Fixed O&M Costs. The Purchaser shall pay to the Authority, on or before July 15 of each Authority Fiscal Year, 100% of the charge to the Purchaser for such Authority Fiscal Year of the Fixed Project Costs and Fixed O&M Costs; provided that the Purchaser shall not be obligated to pay Fixed Project Costs or Fixed O&M Costs for any Authority Fiscal Year prior to Authority Fiscal Year ending June 30, 2004; and further provided that the Purchaser will only pay Fixed Project Costs and Fixed O&M Costs pro rata based on the number of months Project Allotment is projected to be available for the Purchaser during such Authority Fiscal Year.

(ii) Variable O&M Costs. The Purchaser shall pay to the Authority the charges to the Purchaser for the Variable O&M Costs on the date the Chino 2 Desalter is completed by the Authority and thereafter for the three-month period commencing on the next succeeding January 1, April 1, July 1 or October 1 so that the Authority receives quarterly payments of Variable O&M Costs three months in advance of the time when such Variable O&M Costs will begin to be incurred by the Authority.

(iii) Statement of Charges. The Authority shall furnish the Purchaser with a written statement of the estimated Fixed Project Costs for the next succeeding Authority Fiscal Year, taking into account applicable credits received by the Authority and estimated investment earnings on moneys related to the Project held by the Authority. The Authority shall, on or before March 15, June 15, September 15 and December 15 of each Authority Fiscal Year, commencing on the date the Chino 1 Desalter is acquired by the Authority, furnish the Purchaser with a statement of the charges to the Purchaser for the Variable O&M Costs for the three-month period commencing on the July 1, October 1, January 1 or April 1, commencing three and one-half months subsequent to such date.

(iv) Contest of Accuracy of Charges. If the Purchaser questions or disputes the correctness of any billing statement by the Authority, it shall pay the Authority the amount claimed when due and shall, within thirty (30) days of the completion and delivery of the Authority's annual audit, request an explanation from the Authority. If the bill is determined to be incorrect, the Authority will adjust the bill to the Purchaser in the next Authority Fiscal

Year, including an adjustment equal to the interest actually earned by the Authority on its general reserves during such period. If the Authority and the Purchaser fail to agree on the correctness of a bill within thirty (30) days after the Purchaser has requested an explanation, the parties shall promptly submit the dispute to arbitration under Section 1280 et seq. of the Code of Civil Procedure.

Section 10. Annual Budget and Billing Statement.

The Authority will prepare and approve a budget for the period from the date of acquisition of the Chino 1 Desalter through June 30, 2002 on or prior to acquisition of the Chino 1 Desalter. Such initial budget shall include all Variable O&M Costs, Fixed O&M Costs and Fixed Project Costs. Thereafter, the Authority will prepare a preliminary annual budget for each applicable Authority Fiscal Year for credits, costs and expenses relating to the Project, including Variable O&M Costs and Fixed Project Costs. The Authority shall submit a draft of such budget to the Purchaser on or prior to each April 1 for review and comment. Authority staff shall use its best efforts to resolve any questions or concerns caused by a Project Participant during such review. The Board of Directors of the Authority will adopt a final annual budget for the applicable Authority Fiscal Year on or before June 1 of each Authority Fiscal Year after at least one public hearing on the budget and shall allow any Project Participant which may object to any provision of the budget to present such objection during such hearing. The Authority shall supply a copy of said final annual budget to the Purchaser on or before June 15 of each Authority Fiscal Year. Any amendment to the budget shall be submitted to the Purchaser for review and comment at least 30 days prior to action thereon by the Authority Board of Directors. Any such amendment shall be subject to the same hearing requirements applicable to the budget set forth above.

Section 11. Obligation in the Event of Default.

(a) Written Demand. Upon failure of the Purchaser to (i) make any payment in full when due under this Agreement or (ii) to perform any other obligation hereunder, the Authority shall make written demand upon the Purchaser. If a failure described in clause (i) above is not remedied within thirty (30) days from the date of such demand or, if Authority Bonds are outstanding, for such additional time as is reasonably required, in the sole discretion of the Trustee, to correct the same, such failure shall constitute a default at the expiration of such period. If a failure described in clause (ii) cannot be remedied within thirty (30) days from the date of such demand but the Purchaser commences remedial action within such thirty (30) day period, such failure shall not constitute a default hereunder. Notice of any such demand shall be provided to each other Project Participant by the Authority. Upon failure of the Authority to perform any obligation of the Authority hereunder, the Purchaser shall make written demand upon the Authority, and if said failure is not remedied within thirty (30) days from the date of such demand or, if Authority Bonds are outstanding, for such additional time as is reasonably required, in the sole discretion of the Trustee, to correct the same, such failure shall constitute a default at the expiration of such period. Notice of such demand shall be provided to each Project Participant by the Purchaser making such written demand.

In addition to any default resulting from breach by the Authority or the Purchaser of any agreement, condition, covenant or term hereof, if the Authority or the Purchaser shall file any petition or institute any proceedings under any act or acts, state or federal, dealing with or relating to the subject of bankruptcy or insolvency or under any amendment of such act or acts, either as a bankrupt or as an insolvent or as a debtor or in any similar capacity, wherein or whereby the Authority or the Purchaser asks or seeks or prays to be adjudicated a bankrupt, or is to be discharged

from any or all of its debts or obligations, or offers to its creditors to effect a composition or extension of time to pay its debts, or asks, seeks or prays for a reorganization or to effect a plan of reorganization or for a readjustment of its debts or for any other similar relief, or if the Authority or the Purchaser shall make a general or any assignment for the benefit of its creditors, then in each and every such case the Authority or the Purchaser, as the case may be, shall be deemed to be in default hereunder.

(b) Transfer for Defaulting Purchaser's Account. Upon the failure of the Purchaser to make any payment which failure constitutes a default under this Agreement, the Authority shall use its best efforts to transfer for the Purchaser's account all or a portion of the Purchaser's Project Allotment for all or a portion of the remainder of the term of this Agreement. Notwithstanding that all or any portion of the Purchaser's Project Allotment is so transferred, the Purchaser shall remain liable to the Authority to pay the full amount of its share of costs hereunder as if such sale or transfer has not been made, except that such liability shall be discharged to the extent that the Authority shall receive payment from the transferee thereof.

(c) Termination of Entitlement to Project Allotment; Continuing Obligations. Upon the failure of the Purchaser to make any payment which failure constitutes a default under this Agreement and causes the Authority to be in default under any Bond Resolution, the Authority may (in addition to the remedy provided by subsection (b) of this Section) give notice of termination of the provisions of this Agreement insofar as the same entitle the Purchaser to its Project Allotment which notice shall be effective within 30 days thereof unless such termination shall be enjoined, stayed or otherwise delayed by judicial action. Irrespective of such termination, the Purchaser shall remain liable to the Authority to pay the full amount of costs hereunder.

(d) Enforcement of Remedies. In addition to the remedies set forth in this Section, upon the occurrence of an Event of Default as defined herein, the Authority or the Purchaser, as the case may be, shall be entitled to proceed to protect and enforce the rights vested in such party by this Agreement by such appropriate judicial proceeding as such party shall deem most effectual, either by suit in equity or by action at law, whether for the specific performance of any covenant or agreement contained herein or to enforce any other legal or equitable right vested in such party by this Agreement or by law. The provisions of this Agreement and the duties of each party hereof, their respective boards, officers or employees shall be enforceable by the other party hereto by mandamus or other appropriate suit, action or proceeding in any court of competent jurisdiction, with the losing party paying all costs and attorney fees.

(e) Trustee is Third Party Beneficiary. Any Trustee for Authority Bonds shall have the right, as a third party beneficiary, to initiate and maintain suit to enforce this Agreement to the extent provided in any Bond Resolution.

Section 12. Transfers, Sales and Assignments of Project Allotment or Purchaser Water System.

(a) Transfer of Project Allotment. The Purchaser has rights to make transfers, sales, assignments and exchanges (collectively "transfers") of its Project Allotment or its rights or obligations with respect thereto only as expressly provided in this Section. In no event shall any sale or other disposition of all or any portion of the Purchaser's Project Allotment relieve the Purchaser of any of its obligations hereunder. The Purchaser shall give notice to the Authority in accordance with rules and regulations approved by the Authority from time to time.

(b) Sale or Other Disposition of Project Allotment. If in any Fiscal Year the Purchaser determines in accordance with 4(a) not to receive all of the Project Allotment, the Authority shall offer such portion of the Project Allotment to the State of California at a price to be determined by the Authority. If the State of California declines to purchase such Project Allotment, the Purchaser shall have the right to sell such portion of the Project Allotment to another Project Participant or an entity which is not a Project Participant. No such sale of the Project Allotment shall relieve the Purchaser of any of its obligations hereunder.

Section 13. Covenants of the Purchaser.

The Authority and the Purchaser agree that the covenants contained in this Section shall only be enforced by the Authority to the extent necessary to enforce the payment provisions contained herein.

(a) Amount of Rates and Charges. The Purchaser will fix, prescribe and collect rates and charges for the Purchaser Water System which will be at least sufficient to yield during each Purchaser Fiscal Year Purchaser Net Water System Revenues (excluding Contract Payments, Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs) equal to one hundred twenty-five percent (125%) of the Contract Payments, Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs for such Purchaser Fiscal Year. The Purchaser may make adjustments from time to time in such rates and charges and may make such classification thereof as it deems necessary, but shall not reduce the rates and charges then in effect unless the Purchaser Net Water System Revenues from such reduced rates and charges will at all times be sufficient to meet the requirements of this section.

(b) Against Sale or Other Disposition of Property. Subject to Section 13(j), the Purchaser will not sell, lease or otherwise dispose of the Purchaser Water System or any part thereof unless the governing board of the Purchaser determines in writing that such sale, lease or other disposition will not materially adversely affect the Purchaser's ability to comply with subsection (a) of this Section and, in the case of a sale or other disposition, the entity acquiring the Purchaser Water System or such part thereof shall assume all obligations of the Purchaser under this Agreement. The Purchaser will not enter into any agreement or lease which impairs the operation of the Purchaser Water System or any part thereof necessary to secure adequate Purchaser Net Water System Revenues for the payment of the obligations imposed under this Agreement or which would otherwise impair the rights of the Authority with respect to the Purchaser Water System Revenues or the operation of the Purchaser Water System.

(c) Against Competitive Facilities. To the extent permitted by existing law and within the scope of its powers but only to the extent necessary to protect the rights of the owners of Authority Bonds, the Purchaser will not acquire, construct, maintain or operate and will use its best efforts not to permit any other public or private agency, corporation, district or political subdivision or any person whomsoever to acquire, construct, maintain or operate within the boundaries of the Purchaser any water system competitive with the Purchaser Water System which might have the effect of materially adversely affecting the Purchaser's ability to pay Fixed Project Costs, Fixed O&M Costs and Variable O&M Costs.

(d) Maintenance and Operation of the Purchaser Water System; Budgets. The Purchaser will maintain and preserve the Purchaser Water System in good repair and working order at all times and will operate the Purchaser Water System in an efficient and economical manner and will pay all Purchaser Operation and Maintenance Expenses as they become due and payable. On or before the

first day of each Purchaser Fiscal Year thereafter, the Purchaser will adopt and file with the Authority a budget approved by the legislative body of the Purchaser, including therein in the estimated Variable O&M Costs and Fixed Project Costs payable to the Authority. Any budget may be amended at any time during any Purchaser Fiscal Year and such amended budget shall be filed by the Purchaser with the Authority.

(e) Insurance. The Purchaser shall procure and maintain or cause to be procured and maintained insurance on the Purchaser Water System with responsible insurers so long as such insurance is available from reputable insurance companies, or, alternatively, shall establish a program of self-insurance, or participate in a joint powers agency providing insurance or other pooled insurance program, in such amounts and against such risks (including accident to or destruction of the Purchaser Water System) as are usually covered in connection with water systems similar to the Purchaser Water System.

(f) Accounting Records and Financial Statements.

(i) The Purchaser will keep appropriate accounting records in which complete and correct entries shall be made of all transactions relating to the Purchaser Water System, which records shall be available for inspection by the Authority and the Trustee at reasonable hours and under reasonable conditions.

(ii) The Purchaser will prepare and file with the Authority annually within two hundred ten (210) days after the close of each Purchaser Fiscal Year (commencing with the Purchaser Fiscal Year ending June 30, 2002) financial statements of the Purchaser for the preceding Purchaser Fiscal Year prepared in accordance with generally accepted accounting principles, together with a report of an Independent Certified Public Accountant thereon. The Purchaser will promptly furnish a copy of such report to the Authority and to the Trustee.

(g) Protection of Security and Rights of the Authority. The Purchaser will preserve and protect the rights of the Authority and the Trustee to the obligations of the Purchaser hereunder and will warrant and defend such rights against all claims and demands of all persons.

(h) Payment of Taxes and Compliance with Governmental Regulations. The Purchaser will pay and discharge all taxes, assessments and other governmental charges which may hereafter be lawfully imposed upon the Purchaser Water System or any part thereof or upon the Purchaser Water System Revenues when the same shall become due. The Purchaser will duly observe and conform with all valid regulations and requirements of any governmental authority relative to the operation of the Purchaser Water System or any part thereof, but the Purchaser shall not be required to comply with any regulations or requirements so long as the validity or application thereof shall be contested in good faith.

(i) Further Assurances. The Purchaser will adopt, deliver, execute and make any and all further assurances, instruments and resolutions as may be reasonably necessary or proper to effect the financing and refinancing of the Project and to allow the Authority to comply with reporting obligations, to assure the Authority of the Purchaser's intention to perform hereunder and for the better assuring and confirming unto the Authority and the Trustee of the rights and benefits provided to them herein.

(j) Maintenance of Tax-Exempt Status of Authority Bonds. Notwithstanding any other provision of this Agreement, the Purchaser shall not take any action or omit to take any action, directly or indirectly, in any manner, which would result in any of the Authority Bonds being treated as an obligation not described in Section 103(a) of the Internal Revenue Code of 1986, as amended, by reason of classification of such Authority Bond as a "private activity bond" within the meaning of Section 141 of said Code or for any other reason.

Section 14. Covenants of the Authority.

(a) Insurance. The Authority shall procure and maintain or cause to be procured and maintained insurance on the Project with responsible insurers so long as such insurance is available from reputable insurance companies, or, alternatively, shall establish a program of self-insurance, or participate in a joint powers agency providing insurance or other pooled insurance program, covering such risks, in such amounts and with such deductibles as shall be determined by the Authority and as may be required under the Authority Bonds. The Authority shall indemnify and hold harmless the Purchaser from any liability for personal injury or property damage resulting from any accident or occurrence arising out of or in any way related to the construction or operation of the Project.

(b) Accounting Records and Financial Statements.

(i) The Authority will keep appropriate accounting records in which complete and correct entries shall be made of all Authority transactions relating to the Project, which records shall be available for inspection, copying and audit by the Purchaser and its accountants, attorneys and agents at reasonable hours and under reasonable conditions.

(ii) The Authority will prepare annually within two hundred ten (210) days after the close of each Authority Fiscal Year (commencing with the Authority Fiscal Year ending June 30, 2002) financial statements of the Authority for the preceding Authority Fiscal Year prepared in accordance with generally accepted accounting principles, together with a report of an Independent Certified Public Accountant thereof. The Authority will promptly furnish a copy of such report to the Purchaser and to the Trustee.

(c) Compliance with Law. The Authority shall comply with all local, state and federal laws applicable to the Project.

(d) Against Sale or Other Disposition of Project. The Authority will not sell, lease or otherwise dispose of the Project or any part thereof unless the Board of Directors of the Authority determines that such sale, lease or other disposition will not materially adversely affect the Authority's ability to comply with its obligations hereunder and under the Authority Bonds.

(e) Maintenance and Operation of the Project. Subject to the payment obligations of the Project Participants hereunder, the Authority will maintain and preserve the Project in good repair and working order at all times and will operate the Project in an efficient and economical manner consistent with the Joint Powers Agreement. Notwithstanding the foregoing, no material portion of the Project shall be abandoned by the Authority without the consent of all Project Participants.

Section 15. Term.

(a) No provision of this Agreement shall take effect until (i) it and Water Purchase Agreements with all Project Participants have been duly executed and delivered to the Authority together with an opinion for each Project Participant of an attorney or firm of attorneys in substantially the form attached hereto as Exhibit B and an opinion for the Authority of Stradling Yocca Carlson & Rauth, a Professional Corporation, Special Counsel, in substantially the form attached hereto as Exhibit C, and (ii) the Authority delivers a written certificate to the Purchaser stating that the Authority has acquired the portion of the Project known as the Chino 1 Desalter.

(b) Notwithstanding the delay in effective date of this Agreement until all Project Participants have complied with subsection (a) of this Section, it is agreed by the Purchaser that in consideration for the Authority's signature hereto, and for its commitment to use its best efforts to obtain the commitment of all Project Participants, the Purchaser upon its execution and delivery of this Agreement to the Authority along with the required opinion and any required evidence of compliance as required by subsection (a) of this Section shall be immediately bound not to withdraw its respective offer herein made to enter into this Agreement as executed and/or supplemented or to decrease or terminate its Project Allotment before March 31, 2002.

(c) The term of this Agreement shall continue until the later of January 15, 2031 or the final maturity of Authority Bonds. The parties hereto agree to negotiate in good faith to amend this Agreement on or prior to such date to extend the term hereof and to include terms and conditions as are mutually agreeable to the parties, provided that the price to be paid with respect to the Project Allotment in such amendment shall reflect the payment of capital costs to such date.

Section 16. Assignment.

The Authority may pledge and assign to any Trustee for Authority Bonds, all or any portion of the payments received under this Agreement from the Purchaser and the Authority's other rights and interests under this Agreement. Such pledge and assignment by the Authority shall be made effective for such time as the Authority shall determine and provide that the Trustee shall have the power to enforce this Agreement in the event of a default by the Authority under a Bond Resolution. The Purchaser may assign its rights or obligations under this Agreement only in accordance with Section 15 hereof.

Section 17. Amendments.

Except as otherwise provided in this Agreement, on and after the date Authority Bonds are issued and so long as any Authority Bonds are outstanding in accordance with the applicable Bond Resolution, Section 9, 11, 12, 13, 14 and 16 and this Section of this Agreement shall not be amended, modified or otherwise changed or rescinded by agreement of the parties without the consent of each Trustee for Authority Bonds whose consent is required under the applicable Bond Resolution. This Agreement may only be otherwise amended, modified, changed or rescinded in writing by each of the parties hereto.

The Authority agrees not to grant to the owners of Authority Bonds as individuals any rights relating to the amendment, modification or change of this Agreement.

Notwithstanding the foregoing, the sections of this Agreement set forth in the prior paragraph of this Section may be amended without the consent of each Trustee for Authority Bonds for any of the following purposes:

(a) to add to the agreements, conditions, covenants and terms contained herein required to be observed or performed by the Authority or the Purchaser other agreements, conditions, covenants and terms hereafter to be observed or performed by the Authority or the Purchaser, or to surrender any right reserved herein to or conferred herein on the Authority or the Purchaser, and which in either case shall not adversely affect the interests of the owners of any Authority Bonds;

(b) to make such provisions for the purpose of curing any ambiguity or of correcting, curing or supplementing any defective provision contained herein or in regard to questions arising hereunder which the Authority or the Purchaser may deem desirable or necessary and not inconsistent herewith, and which shall not materially adversely affect the interests of the owners of any Authority Bonds;

(c) to make any modifications or changes necessary or appropriate in the opinion of a firm of nationally recognized standing in the field of law relating to municipal bonds to preserve or protect the exclusion from gross income of interest on the Authority Bonds for federal income tax purposes;

(d) to make any modifications or changes to this Agreement in order to enable the execution and delivery of Authority Bonds on a parity with any Authority Bonds previously issued and to make any modifications or changes necessary or appropriate in connection with the execution and delivery of Authority Bonds;

(e) to make any other modification or change to the provisions of this Agreement which does not materially adversely affect the interests of the owners of any Authority Bonds;

(f) to make changes to the definition of "Project."

Section 18. Miscellaneous.

(a) Headings. The headings of the sections hereof are inserted for convenience only and shall not be deemed a part of this Agreement.

(b) Partial Invalidity. If any one or more of the covenants or agreements provided in this Agreement to be performed should be determined to be invalid or contrary to law, such covenant or agreement shall be deemed and construed to be severable from the remaining covenants and agreements herein contained and shall in no way affect the validity of the remaining provisions of this Agreement.

(c) Counterparts. This Agreement may be executed in several counterparts, all or any of which shall be regarded for all purposes as one original and shall constitute and be but one and the same instrument.

(d) Governing Law. THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF CALIFORNIA.

(e) Notices. Any notices required or permitted to be given hereunder shall be given in writing and shall be delivered (a) in person, (b) by certified mail, postage prepaid, return receipt requested, (c) by Federal Express or another reputable commercial overnight courier that guarantees next day delivery and provides a receipt, or (d) by telefacsimile or telecopy, and such notices shall be addressed as follows:

If to Purchaser:	City of Ontario 1425 South Bon View Avenue Ontario, CA 91761-4406 Attn: Director of Public Works
With a copy to:	Covington & Crowe LLP 1131 West Sixth Street, Suite 300 Ontario, CA 91762 Attn: Robert Dougherty
If to Authority:	Chino Basin Desalter Authority c/o Jurupa Community Services District 8621 Jurupa Road Riverside, California 92509
With a copy to:	Stradling Yocca Carlson & Rauth 660 Newport Center Drive Newport Beach, CA 92660 Attention: Douglas Brown

or to such other address as either party may from time to time specify in writing to the other party. Any notice shall be deemed delivered when actually delivered, if such delivery is in person, upon deposit with the U.S. Postal Service, if such delivery is by certified mail, upon deposit with the overnight courier service, if such delivery is by an overnight courier service, and upon transmission, if such delivery is by telefacsimile or telecopy.

(f) Merger of Prior Agreements. This Agreement and the exhibits hereto constitute the entire agreement between the parties and supersede all prior agreements and understandings between the parties relating to the subject matter hereof. This Agreement is intended to implement, and should be interpreted consistent with, the Joint Powers Agreement.

(g) Time of the Essence. Time is of the essence in the performance of this Agreement.

IN WITNESS WHEREOF the Purchaser has executed this Agreement with the approval of its governing body, and caused its official seal to be affixed and the Authority has executed this Agreement in accordance with the authorization of its Board of Directors.

CHINO BASIN DESALTER AUTHORITY

By: _____
Chairperson

Attest:

By: _____
Secretary

CITY OF ONTARIO

By: _____
City Manager

[SEAL]

Attest:

By: _____
Assistant City Clerk

CITY OF ONTARIO INCORPORATED DECEMBER 1891 CALIFORNIA

EXHIBIT A

Project Participant	Project Allotment (acre-feet)
City of Chino	5,000
City of Chino Hills	4,200
City of Norco	1,000
City of Ontario	5,000
Jurupa Community Services District	8,200
Santa Ana River Water Company	1,200
	24,600

* Eliminates 400 acre feet of other per Exhibit A to the Term Sheet.

EXHIBIT B

[This opinion shall be delivered upon execution of the Water Purchase Agreement]

January __, 2002

Chino Basin Desalter Authority

_____

_____

City of Ontario
1425 South Bon View Avenue
Ontario, CA 91761-4406

Ladies and Gentlemen:

We are acting as general counsel to the City of Ontario (the "Purchaser") under the Water Purchase Agreement, dated as of January 15, 2002 (the "Agreement"), between the Chino Basin Desalter Authority (the "Authority") and the Purchaser, and have acted as general counsel to the Purchaser in connection with the matters referred to herein. As such counsel we have examined and are familiar with (i) documents relating to the existence, organization and operation of the Purchaser provided to us by the Purchaser, (ii) certifications by officers of the Purchaser, (iii) all necessary documentation of the Purchaser relating to the authorization, execution and delivery of the Agreement, and (iv) an executed counterpart of the Agreement. Terms used herein and not otherwise defined have the respective meanings set forth in the Agreement.

Based upon the foregoing and such examination of law and such other information, papers and documents as we deem necessary or advisable to enable us to render this opinion, including the Constitution and laws of the State of California, together with the resolutions, ordinances and public proceedings of the Purchaser, we are of the opinion that:

1. The Purchaser is a general law city, duly created, organized and existing under the laws of the State of California and duly qualified to furnish water service within its boundaries.

2. The Purchaser has legal right, power and authority to enter into the Agreement and to carry out and consummate all transactions reasonably contemplated thereby, and the Purchaser has complied with the provisions of applicable law relating to such transactions.

3. The Agreement has been duly authorized, executed and delivered by the Purchaser, is in full force and effect as to the Purchaser in accordance with its terms and, subject to the qualifications set forth in the second to the last paragraph hereof, and assuming that the Authority has all requisite power and authority, and has taken all necessary action, to authorize, execute and deliver such Agreement, the Agreement constitutes the valid and binding obligation of the Purchaser .

4. The obligations of the Purchaser to make payments under the Agreement from the Revenues of its Purchaser Water System or other lawfully available funds as provided in Section 10 of the Agreement is a valid, legal and binding obligation of the Purchaser enforceable in accordance with its terms.

5. No approval, consent or authorization of any governmental or public agency, authority or person is required for the execution and delivery by the Purchaser of the Agreement.

6. The authorization, execution and delivery of the Agreement and compliance with the provisions thereof will not conflict with or constitute a breach of, or default under, any instrument relating to the organization, existence or operation of the Purchaser, any commitment, agreement or other instrument to which the Purchaser is a party or by which it or its property is bound or affected, or any ruling, regulation, ordinance, judgment, order or decree to which the Purchaser (or any of its officers in their respective capacities as such) is subject or any provision of the laws of the State of California relating to the Purchaser and its affairs.

7. There is no action, suit, proceeding, inquiry or investigation at law or in equity, or before any court, public board or body, pending or, to our knowledge, threatened against or affecting the Purchaser or any entity affiliated with the Purchaser or any of its officers in their respective capacities as such, which questions the powers of the Purchaser referred to in paragraph 2 above or the validity of the proceedings taken by the Purchaser in connection with the authorization, execution or delivery of the Agreement, or wherein any unfavorable decision, ruling or finding would materially adversely affect the transactions contemplated by the Agreement, or which would adversely affect the validity or enforceability of the Agreement.

The opinion expressed in paragraphs 3 and 4 above are qualified to the extent that the enforceability of the Agreement may be limited by any applicable bankruptcy, insolvency, reorganization, arrangement, moratorium, or other laws affecting creditors' rights, to the application of equitable principles and to the exercise of judicial discretion in appropriate cases and to the limitations on legal remedies against public agencies in the State of California and provided that no opinion is expressed with respect to any indemnification or contribution provisions contained therein.

This opinion is rendered only with respect to the laws of the State of California and the United States of America and is addressed only to the Chino Basin Desalter Authority and the Purchaser . No other person is entitled to rely on this opinion, nor may you rely on it in connection with any transactions other than those described herein.

Very truly yours,

EXHIBIT C

[This opinion shall be delivered upon execution of the Water Purchase Agreement]

January __, 2002

Chino Basin Desalter Authority

The Project Participants Listed on
Exhibit A attached hereto

Ladies and Gentlemen:

We are special counsel to the Chino Basin Desalter Authority (the "Authority") and are familiar with those certain Water Purchase Agreements, dated as of January 15, 2002 (each, an "Agreement"), between the Authority and each of the water contractors identified on Exhibit A attached hereto (each, a "City") in connection with the matters referred to herein. As special counsel we have examined and are familiar with (i) documents relating to the existence, organization and operation of the Authority provided to us by the Authority, (ii) certifications by officers of the Authority, (iii) all necessary documentation of the Authority relating to the authorization, execution and delivery of the Agreement, and (iv) an executed counterpart of the Agreement. Terms used herein and not otherwise defined have the respective meanings set forth in the Agreement.

Based upon the foregoing and such examination of law and such other information, papers and documents as we deem necessary or advisable to enable us to render this opinion, including the Constitution and laws of the State of California, together with the resolutions, ordinances and public proceedings of the Authority, we are of the opinion that:

1. The Authority is a joint exercise of powers agency duly created, organized and existing under the laws of the State of California.

2. The Authority has legal right, power and authority to enter into the Agreement and to carry out and consummate all transactions reasonably contemplated thereby, and the Authority has complied with the provisions of applicable law relating to such transactions.

3. The Agreement has been duly authorized, executed and delivered by the Authority, is in full force and effect as to the Authority in accordance with its terms and, subject to the qualifications set forth in the second to the last paragraph hereof, and assuming that each City has all requisite power and authority, and has taken all necessary action, to authorize, execute and deliver such Agreement, the Agreement constitutes the valid and binding obligation of the Authority.

4. No approval, consent or authorization of any governmental or public agency, authority or person is required for the execution and delivery by the Authority of the Agreement.

5. The authorization, execution and delivery of the Agreement and compliance with the provisions thereof will not conflict with or constitute a breach of, or default under, any instrument relating to the organization, existence or operation of the Authority, any commitment, agreement or

other instrument to which the Authority is a party or by which it or its property is bound or affected, or, to the best of our knowledge, any ruling, regulation, ordinance, judgment, order or decree to which the Authority (or any of its officers in their respective capacities as such) is subject or any provision of the laws of the State of California relating to the Authority and its affairs.

6. There is no action, suit, proceeding, inquiry or investigation at law or in equity, or before any court, public board or body, pending or, to our knowledge, threatened against or affecting the Authority or any of its officers in their respective capacities as such, which questions the powers of the Authority referred to in paragraph 2 above or the validity of the proceedings taken by the Authority in connection with the authorization, execution or delivery of the Agreement, or wherein any unfavorable decision, ruling or finding would materially adversely affect the transactions contemplated by the Agreement, or which, in any way, would adversely affect the validity or enforceability of the Agreement.

The opinion expressed in paragraph 3 above is qualified to the extent that the enforceability of the Agreement may be limited by any applicable bankruptcy, insolvency, reorganization, arrangement, moratorium, or other laws affecting creditors' rights, to the application of equitable principles and to the exercise of judicial discretion in appropriate cases and to the limitations on legal remedies against public agencies in the State of California and provided that no opinion is expressed with respect to any indemnification or contribution provisions contained therein.

This opinion is rendered only with respect to the laws of the State of California and the United States of America and is addressed only to the Authority and the Project Participants. No other person is entitled to rely on this opinion, nor may you rely on it in connection with any transactions other than those described herein.

Respectfully submitted,

APPENDIX H

CITY OF ONTARIO
SOURCE PLANNING MODEL
JULY 2004

Well #	Capacity (gpm)		Well #	Capacity	Well #	Capacity
	Current	Replacement		Current		(Future)
7	0	2,500	24	1,779	NMC 1	2,500
9	1,770	2,500	25	1,395	NMC 2	2,500
11	1,386	2,500	31	2,917	NMC 3	2,500
15	1,615	2,500	35	2,747	NMC 4	2,500
16	657	2,500	37	2,927	NMC 5	2,500
17	1,277	2,500	38	2,341	NMC 6	2,500
18	0	2,500	39	2,132	NMC 7	2,500
19	0	2,500	40	3,000	NMC 8	2,500
20	816	2,500	41	2,500	NMC 9	2,500
26	885	2,500	44	3,000		
27	1,101	2,500				
34	1,525	2,500			OMC 1	2,500
3	780	2,500			OMC 2	2,500
4	1,000	2,500				
36	1,565	2,500				
29	2,592	2,500				
	14,377	40,000		24,738		27,500
TOTAL CAPACITY AFTER REPLACEMENTS + ADDITIONS						**92,238**

[1] Source Planning Model July 2004

Water Supply Management Model
Outline - July 1, 2003

Sht. No.	Sheet Name	Description	Original Data (Cells in yellow)
1	Long Term Model	demand/supply summary by zone for years 2005, 2010, 2015, 2020 and ultimate.	Flow controlled transfer of water between zones to balance deficits.
2	5yr Model	demand/supply summary by zone for the next 5 year period.	Flow controlled transfer of water between zones to balance deficits.
3	Demand Sum	summary of the demand by zone and a demand forecast by year through build out using assumed linear growth projections.	Demand by zone (gpm) and growth projections
4	Supply Sum	Summary of supply sources (wells, WFA, CDA, recycled) by zone for each year.	WFA supply and CDA supply
5	Wells	Existing and planned well supply by zone for each year. Includes the replacement schedule for existing wells.	All well supply data including year constructed, year out of service and current/planned capacity.
6	Recycled	Recycled water service goals by zone and an annual forecast of recycled water consumption by zone.	Existing recycled water consumption and planned service goals.
7	PRV's	PRV station water transfers required to meet the hydraulics of maximum day demand.	Water transfers from the hydraulic model.

Addition Planned Sheets/Modifications

Dry-Year Yield Program - Include forecasted WFA consumption and impact during a MET take year.
Water Transfer Capacity - Include limitations on flow controlled water transfer between zones.
CIP Program for Wells and water treatment assumptions
Water Storage Sheet
Well Replacement Schedule - Feeds to Wells sheet
Well Site Land Banking summary sheet - Sites needed for each zone

Indicate original data in yellow and cells that can be changed for modeling analysis in blue.

City of Ontario Water Source Assessment
May 2002

Year	ZONE	Max Day Demand (mgd)*	Source of Water Supply (mgd)				MDD	Total Supply	Zone Balance	Transfer of Water between Zones **					Excess Supply
			Wells	WFA	Desalter	Recycled	prv transfers			13th	8th	4th	Phillips	Francis	
2005	13th St.	8.8	0.0	9.0	0.0	0.0	-1.3	7.7	-1.1	1.0					-0.1
	8th St.	27.8	30.3	16.0	3.1	1.0	-7.4	43.0	15.2		-3.8				11.4
	4th St.	12.7	24.5	0.0	0.0	0.1	-1.3	23.3	10.7			2.8			13.5
	Phillips St.	15.8	5.3	0.0	1.3	1.1	10.1	17.7	1.9						1.9
	Francis St.	1.3	0.0	0.0	0.0	0.2	0.0	0.2	-1.2						-1.2
	Total	**66.3**	**60.1**	**25.0**	**4.4**	**2.4**	**0.0**	**91.9**	**25.5**	**1.0**	**-3.8**	**2.8**	**0.0**	**0.0**	**25.5**
2010	13th St.	8.9	3.6	9.0	0.0	0.1	-1.3	11.3	2.5						2.5
	8th St.	29.6	36.2	16.0	0.0	1.3	-7.4	46.0	16.5						16.5
	4th St.	13.2	28.1	0.0	0.0	0.2	-1.3	27.0	13.9						13.9
	Phillips St.	17.5	8.9	0.0	1.3	1.3	10.1	21.5	4.0						4.0
	Francis St.	7.9	7.2	0.0	3.1	0.9	0.0	11.2	3.3						3.3
	Total	**77.0**	**84.0**	**25.0**	**4.4**	**3.8**	**0.0**	**117.2**	**40.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**40.1**
2015	13th St.	8.9	3.6	9.0	0.0	0.1	-1.3	11.4	2.5						2.5
	8th St.	29.6	45.8	16.0	0.0	1.5	-7.4	55.9	26.3						26.3
	4th St.	13.2	38.8	0.0	0.0	0.3	-1.3	37.8	24.7						24.7
	Phillips St.	18.9	8.9	0.0	0.0	1.5	10.1	20.4	1.5						1.5
	Francis St.	14.5	10.8	0.0	4.4	1.7	0.0	16.9	2.4						2.4
	Total	**85.0**	**107.9**	**25.0**	**4.4**	**5.2**	**0.0**	**142.4**	**57.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**57.4**
2020	13th St.	8.9	3.6	9.0	0.0	0.2	-1.3	11.5	2.6						2.6
	8th St.	29.6	48.9	16.0	0.0	1.8	-7.4	59.2	29.7						29.7
	4th St.	13.2	41.4	0.0	0.0	0.4	-1.3	40.5	27.4						27.4
	Phillips St.	20.2	13.9	0.0	0.0	1.6	10.1	25.6	5.4						5.4
	Francis St.	21.1	18.0	0.0	4.4	2.5	0.0	24.9	3.8						3.8
	Total	**92.9**	**125.8**	**25.0**	**4.4**	**6.5**	**0.0**	**161.7**	**68.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**68.7**
2025	13th St.	8.9	3.6	9.0	0.0	0.2	-1.3	11.5	2.6						2.6
	8th St.	29.6	48.8	16.0	0.0	1.8	-7.4	59.1	29.5						29.5
	4th St.	13.2	41.4	0.0	0.0	0.4	-1.3	40.5	27.4						27.4
	Phillips St.	21.6	13.9	0.0	0.0	1.7	10.1	25.7	4.1						4.1
	Francis St.	27.7	21.6	0.0	4.4	3.3	0.0	29.3	1.5						1.5
	Total	**100.9**	**129.2**	**25.0**	**4.4**	**7.4**	**0.0**	**166.0**	**65.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**65.1**
2030	13th St.	8.9	3.6	9.0	0.0	0.2	-1.3	11.5	2.6						2.6
	8th St.	29.6	48.8	16.0	0.0	1.8	-7.4	59.1	29.5						29.5
	4th St.	13.2	41.4	0.0	0.0	0.4	-1.3	40.5	27.4						27.4
	Phillips St.	22.9	13.9	0.0	0.0	1.8	10.1	25.8	2.9						2.9
	Francis St.	34.3	25.2	0.0	4.4	4.0	0.0	33.6	-0.7						-0.7
	Total	**108.8**	**132.8**	**25.0**	**4.4**	**8.3**	**0.0**	**170.5**	**61.6**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**61.6**

* **Water Demand = Max Day plus 0%**

* **Water Transfer between Pressure Zones (minus = water leaving the zone, plus = water is added to the zone)**

City of Ontario 5 Year Water Source Assessment

Jun-04

Year	ZONE	Max Day Demand (mgd)*	Source of Water Supply (mgd)				MDD	Total Supply	Zone Balance	Transfer of Water between Zones **					Excess Supply
			Wells	WFA	Desalter	Recycled	prv transfers			13th	8th	4th	Phillips	Francis	
2003	13th St.	8.7	0.0	9.0	0.0	0.0	-1.3	7.7	-1.1	1.1					0.0
	8th St.	27.1	26.7	16.0	0.0	0.0	-7.4	35.2	8.2		-4.6				3.6
	4th St.	12.5	12.1	0.0	0.0	0.1	-1.3	10.9	-1.6			3.5			1.9
	Phillips St.	15.4	5.3	0.0	0.0	1.0	10.1	16.4	1.0						1.0
	Francis St.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0
	Total	**63.6**	**44.1**	**25.0**	**0.0**	**1.1**	**0.0**	**70.2**	**6.5**	**1.1**	**-4.6**	**3.5**	**0.0**	**0.0**	**6.5**
2004	13th St.	8.8	0.0	9.0	0.0	0.0	-1.3	7.7	-1.1	1.1					0.0
	8th St.	27.4	26.7	16.0	0.0	1.0	-7.4	36.2	8.8		-1.1				7.7
	4th St.	12.6	13.6	0.0	0.0	0.1	-1.3	12.3	-0.2						-0.2
	Phillips St.	15.4	5.3	0.0	0.0	1.0	10.1	16.4	0.9						0.9
	Francis St.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0
	Total	**64.2**	**45.5**	**25.0**	**0.0**	**2.1**	**0.0**	**72.6**	**8.4**	**1.1**	**-1.1**	**0.0**	**0.0**	**0.0**	**8.4**
2005	13th St.	8.8	0.0	9.0	0.0	0.0	-1.3	7.7	-1.1	1.1					0.0
	8th St.	27.8	30.3	16.0	3.1	1.0	-7.4	43.0	15.2		-1.1				14.1
	4th St.	12.7	24.5	0.0	0.0	0.1	-1.3	23.3	10.7						10.7
	Phillips St.	15.8	5.3	0.0	1.3	1.1	10.1	17.7	1.9				-1.2		0.7
	Francis St.	1.3	0.0	0.0	0.0	0.2	0.0	0.2	-1.2					1.2	0.0
	Total	**66.3**	**60.1**	**25.0**	**4.4**	**2.4**	**0.0**	**91.9**	**25.5**	**1.1**	**-1.1**	**0.0**	**-1.2**	**1.2**	**25.5**
2006	13th St.	8.8	0.0	9.0	0.0	0.0	-1.3	7.7	-1.1	1.1					0.0
	8th St.	28.1	33.9	16.0	3.1	1.1	-7.4	46.6	18.5		-1.1				17.4
	4th St.	12.8	28.1	0.0	0.0	0.1	-1.3	27.0	14.2						14.2
	Phillips St.	16.1	8.9	0.0	1.3	1.1	10.1	21.3	5.2				-2.3		2.9
	Francis St.	2.6	0.0	0.0	0.0	0.3	0.0	0.3	-2.3					2.3	0.0
	Total	**68.5**	**70.9**	**25.0**	**4.4**	**2.7**	**0.0**	**102.9**	**34.4**	**1.1**	**-1.1**	**0.0**	**-2.3**	**2.3**	**34.4**
2007	13th St.	8.8	0.0	5.0	0.0	0.0	-1.3	3.7	-5.1	1.1					-4.0
	8th St.	28.5	37.5	0.0	3.1	1.1	-7.4	34.3	5.8		-1.1				4.7
	4th St.	12.9	28.1	0.0	0.0	0.2	-1.3	27.0	14.1						14.1
	Phillips St.	16.5	8.9	0.0	1.3	1.2	10.1	21.4	4.9				-3.6		1.3
	Francis St.	4.0	3.6	0.0	0.0	0.3	0.0	3.9	0.0					3.6	3.6
	Total	**70.6**	**78.1**	**5.0**	**4.4**	**2.8**	**0.0**	**90.2**	**19.6**	**1.1**	**-1.1**	**0.0**	**-3.6**	**3.6**	**19.6**

* **Water Demand = Max Day plus 0%**

** **Water Transfer between Pressure Zones (minus = water leaving the zone, plus = water is added to the zone)**

Demand Summary

Zone	Existing Average Day Demand			Ultimate Average Day Demand Pre New Model Colony			Ultimate Average Day Demand With New Model Colony			Max Day Peaking Factor For Each Zone
	(gpm)	(MGD)	(AF/yr)	(gpm)	(MGD)	(AF/yr)	(gpm)	(MGD)	(AF/yr)	
13th	3,720	5.4	6,000	3,820	5.5	6,161	3,820	5.5	6,161	1.62
8th	11,280	16.2	18,192	13,120	18.9	21,160	13,120	18.9	21,160	1.57
4th	5,270	7.6	8,499	5,770	8.3	9,306	5,770	8.3	9,306	1.58
Philps	6,420	9.2	10,354	6,790	9.8	10,951	9,790	14.1	15,789	1.63
Francis	0	0.0	0	0	0.0	0	17,600	25.3	28,385	1.35
Totals	26,690	38.4	43,046	29,500	42.5	47,578	50,100	72.1	80,801	1.51

Zone	Existing Max Day Demand		Ultimate Max Day Demand Pre New Model Colony		Ultimate Max Day Demand With New Model Colony	
	(gpm)	(MGD)	(gpm)	(MGD)	(gpm)	(MGD)
13th	6,020	8.7	6,170	8.9	6,170	8.9
8th	17,800	25.6	20,540	29.6	20,540	29.6
4th	8,390	12.1	9,140	13.2	9,140	13.2
Philps	10,460	15.1	11,030	15.9	15,910	22.9
Francis	0	0.0	0	0.0	23,830	34.3
Totals	42,670	61.4	46,880	67.5	75,590	108.8

Note: Demand data (in gpm) listed above is from August 2000 Water Master Plan Table 6-5 through 6-10

Max Day Demand Forcast (MGD)

Demand Assumptions:

1. Pre NMC area built out in year 2010 with linear demand increase.
2. NMC area built out in year 2030. Linear demand increase starts in 2005.

Year	13th	8th	4th	OMC Phillips	NMC Phillips	**Total Phillips**	Francis	Total
1999	8.7	25.6	12.1	15.1	0.0	15.1	0.0	61.4
2000	8.7	26.0	12.2	15.1	0.0	15.1	0.0	62.0
2001	8.7	26.3	12.3	15.2	0.0	15.2	0.0	62.5
2002	8.7	26.7	12.4	15.3	0.0	15.3	0.0	63.1
2003	8.7	27.1	12.5	15.4	0.0	15.4	0.0	63.6
2004	8.8	27.4	12.6	15.4	0.0	15.4	0.0	64.2
2005	8.8	27.8	12.7	15.5	0.3	15.8	1.3	66.3
2006	8.8	28.1	12.8	15.6	0.5	16.1	2.6	68.5
2007	8.8	28.5	12.9	15.7	0.8	15.5	4.0	70.6
2008	8.8	28.9	13.0	15.7	1.1	16.8	5.3	72.8
2009	8.9	29.2	13.1	15.8	1.4	17.2	6.6	74.9
2010	8.9	29.6	13.2	15.9	1.6	17.5	7.9	77.0
2011	8.9	29.6	13.2	15.9	1.9	17.8	9.2	78.6
2012	8.9	29.6	13.2	15.9	2.2	18.0	10.6	80.2
2013	8.9	29.6	13.2	15.9	2.4	18.3	11.9	81.8
2014	8.9	29.6	13.2	15.9	2.7	18.6	13.2	83.4
2015	8.9	29.6	13.2	15.9	3.0	18.9	14.5	85.0
2016	8.9	29.6	13.2	15.9	3.2	19.1	15.8	86.6
2017	8.9	29.6	13.2	15.9	3.5	19.4	17.2	88.2
2018	8.9	29.6	13.2	15.9	3.8	19.7	18.5	89.8
2019	8.9	29.6	13.2	15.9	4.1	19.9	19.8	91.4
2020	8.9	29.6	13.2	15.9	4.3	20.2	21.1	92.9
2021	8.9	29.6	13.2	15.9	4.6	20.5	22.4	94.5
2022	8.9	29.6	13.2	15.9	4.9	20.7	23.8	96.1
2023	8.9	29.6	13.2	15.9	5.1	21.0	25.1	97.7
2024	8.9	29.6	13.2	15.9	5.4	21.3	26.4	99.3
2025	8.9	29.6	13.2	15.9	5.7	21.6	27.7	100.9
2026	8.9	29.6	13.2	15.9	5.9	21.8	29.0	102.5
2027	8.9	29.6	13.2	15.9	6.2	22.1	30.4	104.1
2028	8.9	29.6	13.2	15.9	6.5	22.4	31.7	105.7
2029	8.9	29.6	13.2	15.9	6.8	22.6	33.0	107.3
2030	8.9	29.6	13.2	15.9	7.0	22.9	34.3	108.8
2031	8.9	29.6	13.2	15.9	7.0	22.9	34.3	108.8
2032	8.9	29.6	13.2	15.9	7.0	22.9	34.3	108.8
2033	8.9	29.6	13.2	15.9	7.0	22.9	34.3	108.8
2034	8.9	29.6	13.2	15.9	7.0	22.9	34.3	108.8
2035	8.9	29.6	13.2	15.9	7.0	22.9	34.3	108.8

Zone	Source	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
13th St.	GW	-	-	-	-	-	-	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	WFA	9.0	9.0	9.0	9.0	9.0	5.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Desalter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled	-	-	-	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
	Total	**9.0**	**9.0**	**9.0**	**9.0**	**9.0**	**5.0**	**12.6**	**12.7**	**12.7**	**12.7**	**12.7**	**12.7**	**12.7**	**12.7**	**12.7**	**12.7**
8th St.	GW	26.7	26.7	26.7	30.3	33.9	37.5	37.5	36.2	36.2	39.8	43.4	43.4	43.4	45.8	47.8	48.9
	WFA	16.0	16.0	16.0	16.0	16.0	-	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
	Desalter	-	-	-	3.1	3.1	3.1	2.1	1.1	-	-	-	-	-	-	-	-
	Recycled	-	-	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.0	1.4	1.4	1.5	1.5	1.6	1.6
	Total	**42.7**	**42.7**	**43.7**	**50.4**	**54.1**	**41.7**	**56.8**	**54.5**	**53.5**	**56.8**	**60.8**	**60.8**	**60.9**	**63.4**	**65.4**	**66.5**
4th St.	GW	12.1	12.1	13.6	24.5	28.1	28.1	28.1	28.1	28.1	28.1	34.1	34.1	34.1	38.8	40.1	40.1
	WFA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desalter	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4
	Total	**12.2**	**12.2**	**13.6**	**24.6**	**28.3**	**28.3**	**28.3**	**28.3**	**28.3**	**28.4**	**34.4**	**34.4**	**34.5**	**39.1**	**40.5**	**40.5**
Phillips St.	GW	5.3	5.3	5.3	5.3	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	13.9	13.9
	WFA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desalter	-	-	-	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	-	-	-	-	-
	Recycled	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.5	1.3	1.4	1.4	1.5	1.5	1.5
	Total	**6.3**	**6.3**	**6.3**	**7.6**	**11.3**	**11.3**	**11.4**	**11.4**	**11.4**	**11.7**	**11.5**	**10.2**	**10.3**	**10.3**	**15.4**	**15.4**
Francis St.	GW	-	-	-	-	-	3.6	7.2	7.2	7.2	7.2	10.8	10.8	10.8	10.8	10.8	14.4
	WFA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desalter	-	-	-	-	-	-	1.0	2.0	3.1	3.1	3.1	4.4	4.4	4.4	4.4	4.4
	Recycled	-	-	-	0.2	0.3	0.5	0.6	0.8	0.9	2.9	1.2	1.4	1.6	1.7	1.9	2.0
	Total	**-**	**-**	**-**	**0.2**	**0.3**	**4.1**	**8.8**	**10.0**	**11.2**	**13.2**	**15.1**	**16.6**	**16.8**	**16.9**	**17.1**	**20.8**

Zone	Source	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
13th St.	GW	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
	WFA	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
	Desalter	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	-
	Total	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.8**	**12.6**
8th St.	GW	48.9	48.9	48.9	48.9	48.9	48.9	48.9	48.8	48.8	48.8	48.8	48.8	48.8	40.0
	WFA	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
	Desalter	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	-
	Total	**66.6**	**66.6**	**66.7**	**66.7**	**66.7**	**66.7**	**66.7**	**66.5**	**66.5**	**66.5**	**66.5**	**66.5**	**66.5**	**56.0**
4th St.	GW	40.1	40.1	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	37.4
	WFA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desalter	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	-
	Total	**40.5**	**40.5**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**41.8**	**37.4**
Phillips St.	GW	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
	WFA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desalter	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Recycled	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	-
	Total	**15.4**	**15.5**	**15.5**	**15.5**	**15.5**	**15.6**	**15.6**	**15.6**	**15.6**	**15.6**	**15.7**	**15.7**	**15.7**	**13.9**
Francis St.	GW	14.4	14.4	18.0	18.0	18.0	21.6	21.6	21.6	25.2	25.2	25.2	25.2	25.2	25.2
	WFA	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Desalter	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
	Recycled	2.2	2.3	2.5	2.6	2.8	2.9	3.1	3.3	3.4	3.6	3.7	3.9	4.0	-
	Total	**21.0**	**21.1**	**24.9**	**25.0**	**25.2**	**28.9**	**29.1**	**29.3**	**33.0**	**33.2**	**33.3**	**33.5**	**33.6**	**29.6**

Zone	Well No.	Year Built	Year Out	Design Capacity gpm	Current Capacity gpm	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
13th	NW	2007	2060	2500	2500	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
13th	NW		0	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	gpm					-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
	mgd					-	-	-	-	-	-	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
8th	9	1958	2017	1770	1770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	1,770	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8th	18	1926	2000	1200	1200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8th	19	1926	2000	580	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8th	20	1920	2015	770	816	816	816	816	816	816	816	816	816	816	816	816	816	816	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8th	24	1969	2031	1880	1779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	1,779	-
8th	25	1926	2031	1390	1395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	1,395	-
8th	26	1959	2009	1270	885	885	885	885	885	885	885	885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8th	27	1961	2016	1100	1101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	1,101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8th	29	1979	2025	2490	2592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	2,592	-	-	-	-	-	-	-
8th	31	1979	2031	3070	2917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	-
8th	37	1994	2045	3040	2927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927	2,927
8th	38	1996	2045	2470	2341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341	2,341
8th	41	2004	2054	2600	2500	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
8th	42	2005	2055	2500	2500	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
8th	R18	2006	2056	2500	2500	-	-	-	-	-	-	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
8th	R19	2010	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
8th	R26	2011	2061	2500	2500	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
8th	R20	2014	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
8th	R27	2015	2065	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
8th	R9	2016	2066	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
8th	R29	2024	2074	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500
	gpm					18,523	18,523	18,523	21,023	23,523	26,023	26,023	25,138	25,138	27,638	30,138	30,138	30,138	31,822	33,221	33,951	33,951	33,951	33,951	33,951	33,951	33,951	33,951	33,859	33,859	33,859	33,859	33,859	33,859	27,768
	mgd					26.7	26.7	26.7	30.3	33.9	37.5	37.5	36.2	36.2	39.8	43.4	43.4	43.4	45.8	47.8	48.9	48.9	48.9	48.9	48.9	48.9	48.9	48.9	48.8	48.8	48.8	48.8	48.8	48.8	40.0
4th	3	1962	2015	900	780	780	780	780	780	780	780	780	780	780	780	780	780	780	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	4	1958	2015	1240	1000	-	-	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	11	1958	2012	1240	1386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	1,386	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	15	1960	2020	1660	1615	[illegible]	[illegible]	[illegible]	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	1,615	-	-	-	-	-	-	-	-	-	-	-	-
4th	16	1966	2012	730	657	657	657	657	657	657	657	657	657	657	657	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	17	1963	2012	1740	1277	1,277	1,277	1,277	1,277	1,277	1,277	1,277	1,277	1,277	1,277	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	33	1983	2000	2940	2940	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	35	1985	2031	1960	2747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	2,747	-
4th	36	1985	2016	1910	1565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	1,565	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4th	40	2004	2050	3000	3000	-	-	-	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
4th	43	2005	2050	2500	2500	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	44	2004	2050	3000	3000	-	-	-	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
4th	R17	2011	2061	2500	2500	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	R16	2011	2061	2500	2500	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	R11	2011	2051	2500	2500	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	R3	2014	2064	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	R4	2014	2064	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	R36	2015	2065	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
4th	R15	2019	2069	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
	gpm					8,412	8,412	9,412	17,027	19,527	19,527	19,527	19,527	19,527	19,527	23,707	23,707	23,707	26,927	27,862	27,862	27,862	27,862	28,747	28,747	28,747	28,747	28,747	28,747	28,747	28,747	28,747	28,747	28,747	26,000
	mgd					12.1	12.1	13.6	24.5	28.1	28.1	28.1	28.1	28.1	28.1	34.1	34.1	34.1	38.8	40.1	40.1	40.1	40.1	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	41.4	37.4
Phil.	34	1983	2016	2820	1525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	1,525	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phil.	39	2001	2050	2250	2132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132	2,132
Phil.	NMC	2005	2060	2500	2500	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Phil.	R34	2015	2065	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Phil.	NMC	2015	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Phil.	NW			2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phil.						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phil.						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phil.						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	gpm					3,657	3,657	3,657	3,657	6,157	6,157	6,157	6,157	6,157	6,157	6,157	6,157	6,157	6,157	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632	9,632
	mgd					5.3	5.3	5.3	5.3	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	8.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
Franc	NMC	2006	2060	2500	2500	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc	NMC	2007	2060	2500	2500	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc	NMC	2011	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc	NMC	2016	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc	NMC	2019	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc	NMC	2022	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc	NMC	2025	2060	2500	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,500	2,500	2,500	2,500	2,500	2,500	2,500
Franc						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Franc						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Franc						-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	gpm					-	-	-	-	-	2,500	5,000	5,000	5,000	5,000	7,500	7,500	7,500	7,500	7,500	10,000	10,000	10,000	12,500	12,500	12,500	15,000	15,000	15,000	17,500	17,500	17,500	17,500	17,500	17,500
	mgd					-	-	-	-	-	3.6	7.2	7.2	7.2	7.2	10.8	10.8	10.8	10.8	10.8	14.4	14.4	14.4	18.0	18.0	18.0	21.6	21.6	21.6	25.2	25.2	25.2	25.2	25.2	25.2
OMC only	gpm					30,592	31,592	41,707	46,707	49,207	51,707	50,822	50,822	53,322	60,002	60,002	60,002	64,906	65,715	66,445	66,445	66,445	67,330	67,330	67,330	67,330	67,330	67,238	67,238	67,238	67,238	67,238	67,238		
	mgd					44.1	45.5	60.1	67.3	70.9	74.5	73.2	73.2	76.8	86.4	86.4	86.4	93.5	94.6	95.7	95.7	95.7	97.0	97.0	97.0	97.0	97.0	96.8	96.8	96.8	96.8	96.8	96.8		
Total	gpm					30592	31592	41707	49207	54207	59207	58322	58322	60822	70002	70002	70002	74906	80715	83945	83945	83945	87330	87330	87330	89830	89830	89738	92238	92238	92238	92238	92238		
	mgd					44.1	45.5	60.1	70.9	78.1	85.3	84.0	84.0	87.6	100.8	100.8	100.8	107.9	116.2	120.9	120.9	120.9	125.8	125.8	125.8	129.4	129.4	129.2	132.8	132.8	132.8	132.8	132.8		

Recycled Water Supply Forcast AF/YR

Forcast Assumptions:

1. Actual existing recycled water usage updated each year.
2. Forcasted usage for OMC = existing usage + delta to meet ultimate usage in year 2020.
3. Forcasted usage for NMC = existing usage + delta to meet ultimate usage in year 2030.

Zone	Planned Ultimate Supply		
	(AF/YR)	MGD	gpm
13th	200	0.2	124
8th	2,000	1.8	1240
4th	500	0.4	310
Phlps-OMC	1,500	1.3	930
Phlps-NMC	549	0.5	340
Francis	4,519	4.0	2802
Total	9,268	8.3	5747

Zone
13th
8th
OMC Phlps
NMC Phlps
Total Phlps
Francis
Total (AF/YR)
Total (MGD)

Year	13th	8th	4th	OMC Phillips	NMC Phillips	Total Phillips	Francis	Total (AF/YR)	Total (MGD)
2002			105	1165		1165		1270	1.1
2003			105	1165		1165		1270	1.1
2004		1100	105	1165		1165		2370	2.1
2005	13	1156	130	1186	21	1207	174	2679	2.4
2006	25	1213	154	1207	42	1249	348	2989	2.7
2007	38	1269	179	1228	63	1291	521	3298	2.9
2008	50	1325	204	1249	84	1333	695	3607	3.2
2009	63	1381	228	1270	106	1375	869	3916	3.5
2010	75	1438	253	1291	127	1417	1043	4226	3.8
2011	88	1494	278	1312	148	1459	1217	4535	4.0
2012	100	1550	303	1333	169	1501	1390	4844	4.3
2013	113	1606	327	1353	190	1543	1564	5154	4.6
2014	125	1663	352	1374	211	1586	1738	5463	4.9
2015	138	1719	377	1395	232	1628	1912	5772	5.2
2016	150	1775	401	1416	253	1670	2086	6082	5.4
2017	163	1831	426	1437	275	1712	2260	6391	5.7
2018	175	1888	451	1458	296	1754	2433	6700	6.0
2019	188	1944	475	1479	317	1796	2607	7009	6.3
2020	200	2000	500	1500	338	1838	2781	7319	6.5
2021	200	2000	500	1500	359	1859	2955	7514	6.7
2022	200	2000	500	1500	380	1880	3129	7709	6.9
2023	200	2000	500	1500	401	1901	3302	7904	7.1
2024	200	2000	500	1500	422	1922	3476	8098	7.2
2025	200	2000	500	1500	443	1943	3650	8293	7.4
2026	200	2000	500	1500	465	1965	3824	8488	7.6
2027	200	2000	500	1500	486	1986	3998	8683	7.8
2028	200	2000	500	1500	507	2007	4171	8878	7.9
2029	200	2000	500	1500	528	2028	4345	9073	8.1
2030	200	2000	500	1500	549	2049	4519	9268	8.3

PRV Station Transfers During Maximum Day Demand

	Flow In		Flow Out		Net Change	
	gpm	MGD	gpm	MGD	gpm	MGD
13th St.	0	0.0	915	1.3	-915	-1.3
8th St.	915	1.3	6,086	8.8	-5,171	-7.4
4th St.	2,581	3.7	3,483	5.0	-902	-1.3
Phillips St.	6,988	10.1	0	0.0	6,988	10.1
Francis St.	0	0.0	0	0.0	0	0.0
Total	10,484	15.1	10,484	15.1	0	0.0

Existing Well Capacity & Current Status - May 20, 2003

Well No.	Year Drilled	Capacity Design (gpm)	Capacity Current (gpm)	Pumps to Zone	Nitrate High (mg/l)	Perchlorate High (ug/l)	Operable (1=yes, 0=no)	Current Status
9	1958	1770	1740	8th	57	8	0	Active status, operation requires higher demand/WFA take for blending
18	1926	1200	1200	8th	53	12	0	Not in use - Well to be destroyed
19	1926	580	580	8th	45	5	0	Need to sample nitrates on a daily basis when operating. For emergency only.
20	old	770	800	8th	26	ND	1	
24	1969	1880	1775	8th	14	ND	1	
25	1926	1390	1415	8th	14	ND	1	
26	1959	1270	900	8th	14	ND	1	Flow is backed off to prevent air in line.
27	1961	1100	1000	8th	15	ND	1	In path of Kaiser plume. TDS elevated to 300 ppm with increasing trend.
29	1979	2490	2600	8th	6	ND	1	
30	1979	3180	2200	8th	21	~5	1	In path of Kaiser plume. TDS approx. 500-550 ppm with decreasing trend.
31	1979	3070	2950	8th	26	ND	1	
37	1994	3040	2870	8th	19	4.5	1	Latest perchlorate sample is non detect
38	1996	2470	2300	8th	4	ND	1	
40	2004							
41	2004							
3	1962	900	805	4th	23	ND	1	
4	1909/58	1240	500	4th	46	8.1	0	Active status, operation depends on nitrate levels/flow for adequate blending.
11	1958	1240	1450	4th	6	ND	1	
15	1960	1660	1565	4th	34	~4.8	0	Latest perchlorate sample is non detect
16	1966	730	640	4th	14	ND	1	
17	1963	1740	1310	4th	27	ND	1	
33	1983	2940	2940	4th	16	ND	0	GE settlement - well scheduled to be destroyed
35	1985	1960	2765	4th	6	ND	1	
36	1985	1910	1575	4th	5	ND	1	
44	2004							
34	1983	2820	1595	Phillips	10	ND	1	
39	2002	2250	2185	Phillips	?	ND	1	

Zone	Well Supply (gpm) Design	Current	Operable
13th	0	0	0
8th	24,210	22,330	18,810
4th	14,320	13,550	8,545
Philps	5,070	3,780	3,780
Francis	0	0	0
Totals			
(gpm)	43,600	39,660	31,135
(mgd)	62.8	57.1	44.8

LEGEND

Perchlorate historical high above the DHS action level
Nitrate historical high above the MCL
Well not currently operable

City of Ontario Well Site Land Acquisition
Summary of Required Sites

Water Master Plan Goal: Meet maximum day potable water demand from Ontario wells.

1. New Wells for Existing Supply Deficits and Ultimate Build-Out Demand

Zone	Ult. Max Day Demand (gpm)	Max Day PRV Station Demand Flow in	Max Day PRV Station Demand Flow out	Exist. Well Capacity	Planned Rec. Water Use	Deficit	New Wells Required (2500 gpm per well)
13th Street (1348')	6,170	0	915	0	124	-6,961	2 *
8th Street (1212')	20,540	915	6,086	18,523	1,240	-5,948	3
4th Street (1070')	9,140	2,581	3,483	8,412	310	-1,320	1
Phlps Street (1010')	15,910	6,988	0	3,657	930	-4,335	2
Francis Street (935')	23,830	0	0	0	340	-23,490	7

* Ultimate ADD = 3800 gpm in 1348' zone. Additional MDD supplied from 1212' zone - Shift required 3rd well to 1212' zone.

2. Dry-Year-Yield Program Wells

3 well sites required (in 8th Street zone)

3. Projected Well Replacement Schedule (wells currently operable, non-water quality related)

Time	No of Wells	Current Production
0 to 5 years	5	4750
5 to 10 years	2	3000
10 to 20 years	8	11550

Assumptions: Existing sites used for replacement wells on 8 of the 15 sites.
New wells would yield a higher production rate than existing wells.

5 well sites required for replacement wells (assume 1 in 8th Street, 3 in 4th Street and 1 in Phlps Street Zones)

Summary - Total Well Sites Required By Pressure Zone (Sum of 1-3)

Zone	Wells Required (from items 1-3)	Wells Under Construction	No. of Sites Acquired	Acquisition In Progress *	No. of Sites Required
13th Street (1348')	2			2	2
8th Street (1212')	7	1	3	5	4
4th Street (1070')	4	2	4		0
Phlps Street (1010')	3				3
Francis Street (935')	7		2	4	5
Total	**23**	3	**9**	11	**14**

* Acquisition considered in progress if at a minimum, negotiations ongoing with a willing seller.

City of Ontario Well Site Land Acquisition
Property Status Summary

	Well Site Address/Location	Site No.	APN	CC Authorized To Negotiate	CC Authorized To Purchase	Site Acquired	Currently Negotiating	Title on File	Pressure Zone	Alt. PZ
1	Holt - Well No. 40 (exist. property)	N/A				N/A	N/A		1070	
2	Hellman - Well No. 41	40		1	1	1	N/A		1212	
3	John Galvin Park - Well No. 44 (exist. Property)	N/A				N/A	N/A		1070	
4	1341 East D Street (VFW site) "D" St. Park Expansic	5	0110-013-02	1					1070	
5	"E" Street & Campus	4		1		1	N/A		1070	1212
6	Concours site ("the notch")	26		1	1	1	N/A		1212	
7	Bon View & Francis	58		1	1	1	1		935	1010
8	San Antonio School District site	16		1			1		1348	1212
9	East Francis Zone Reservoir Site	21		1	1	1	N/A		935	1212
10	West Francis Zone Reservoir Site	18		1	1	1	N/A		935	
11	Rochester Reservoir Site			1	1		1		1212	
12	LAWA	3					1		1010	935, 1070
13	LAWA	73					1		935	1070, 1212
14	LAWA	74					1		935	1212
15	LAWA	75					1		935	1212, 1070
16	Shelby & Lotus (alt. To Well 24 repl.)	28		1	1	1	N/A		1212	
17	Inland Empire and Farrari Lane (CARMAX)	75		1			1		1212	
18	G Street and Corona Avenue (CENTEX Homes)	64		1	1		1		1212	
19	1650 N Grove Ave. (7th & Grove)		0108-404-01	1	1					
20	E. "G" Street		0110-241-054	1						
21	E. Ontario Blvd.		1049-203-17	1						
22	E. Ontario Blvd.		1049-203-18	1						
23	E. Ontario Blvd.		1049-203-15	1						
24	E. Ontario Blvd.		1049-203-16	1						
25	E. Ontario Blvd.		1049-203-14	1						
26	E. Ontario Blvd.		1049-203-13	1						
27	S. Rockefeller Ave.		0238-201-16	1						
28	North side of Francis E/O Haven (UPS site)		2112-632-02	1	1		1		1212	
29	East of I-15 and south of 4th Street		0238-012-23	1						
30	East of I-15 and north of Ontario Mills Parkway		0238-012-19	1						
31	Between the I-10 and Ontario Mills Parkway		0238-051-09	1						
32	Between the I-10 and Ontario Mills Parkway		0238-051-14	1						
33	SE and SW corner of I-15 and O.M. Parkway (CALTRANS)			1						
34	SE and SW corner of I-15 and O.M. Parkway (CALTRANS)			1						
35	Northeast corner of Vinyard and 8th		0209-013-15	1			1		1348	
36	Eastside of Vineyard and 8th		0209-013-13	1						
37	Eastside of Vineyard and 8th		0209-013-44	1						
38	Bon View Park Expansion (properties to the west)			1	1		1			
	TOTAL			**31**	**10**	**7**	**11**			

Notes:

1. Well 40 & 41 sites were already owned by the City and are not counted in the Sites Acquired total.
2. Adjacent properties to the "D" Street Park site and Bon View Park site are currently in acquisition. Well construction at "D" Street park could proceede prior to acquisition if necessary for current well RFP. Site not yet counted in sites acquied total.

10/25/04

APPENDIX I

ADJUDICATION DOCUMENTATION

JUDGMENT
TABLE OF CONTENTS

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Attorneys for
CHINO BASIN WATERMASTER

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO - WEST DISTRICT

CHINO BASIN MUNICIPAL WATER DISTRICT, Plaintiff, v. CITY OF CHINO, Defendant.	Case No.: RCV 51010 ORDER APPROVING AMENDMENTS TO JUDGMENT DATE: November 17, 1995 TIME: 2:00 p.m. DEPT: WD-2 Specially assigned to the Honorable Judge Ben T. Kayashima

On November 17, 1995, at 2:00 p.m., the petition and motion of the Chino Basin Watermaster for an order approving amendments to the judgment to simplify conversion claim procedures came on regularly for hearing, the Honorable Judge Ben T. Kayashima presiding.

Frederic A. Fudacz and John Ossiff, of Nossaman, Guthner, Knox & Elliot, appeared on behalf of Chino Basin Watermaster. No other appearances were made.

No opposition having been received and good cause appearing therefore

IT IS HEREBY ORDERED:

1. That the petition and motion of Watermaster is granted.

2. Paragraph 10(b), "Conversion Claims" of Exhibit "H" of the Judgment is hereby deleted and replaced with a new Paragraph 10(b), attached hereto as Exhibit 1.

Date: _____

_____
Ben T. Kayashima
Judge, San Bernardino County Superior Court

EXHIBIT "1"

AMENDMENT TO JUDGMENT

NEW PARAGRAPH 10(B) OF EXHIBIT "H"

(b) Conversion Claims. The following procedures may be utilized by any appropriator:

(1) Record of Uncoverted Agricultural Acreage.

Watermaster shall maintain on an ongoing basis a record, with appropriate related maps, of all agricultural acreage within the Chino Basin subject to being converted to appropriative water use pursuant to the provisions of this subparagraph. An initial identification of such acreage as of June 30, 1995 is attached hereto as Appendix 1.

(2) Record of Water Service Conversion. Any appropriator who undertakes to permanently provide water service to lands subject to conversion may report such intent to change water service to Watermaster. Watermaster should thereupon verify such change in water service and shall maintain a record and account for each appropriator of the total acreage involved. Should, at any time, converted acreage return to water service from the Overlying (Agricultural) Pool, Watermaster shall return such acreage to uncoverted status and correspondingly reduce or eliminate any allocation accorded to the appropriator involved.

(3) Allocation of Safe Yield Rights.

(i) In any year in which sufficient unallocated Safe Yield from the Overlying (Agricultural) Pool is available for such conversion claims, Watermaster shall allocate to each appropriator with a conversion claim 1.3 acre-

feet of unallocated Safe Yield water for each converted acre for which conversion has been approved and recorded by the Watermaster.

(ii) In any year in which the unallocated Safe Yield water from the Overlying (Agricultural) Pool is not sufficient to satisfy all outstanding conversion claims pursuant to subparagraph (i) herein above, Watermaster shall establish allocation percentages for each appropriator with conversion claims. The percentages shall be based upon the ratio of the total of such converted average approved and recorded for each appropriator's account in comparison to the total of converted acreage approved and recorded for all appropriators. Watermaster shall apply such allocation percentage for each appropriator to the total unallocated Safe Yield water available for conversion claims to derive the amount allocable to each appropriator.

(4) Notice and Allocation. Notice of the special allocation of Safe Yield water pursuant to conversion claims shall be given to each appropriator and shall be treated for purposes of this physical solution as an addition to such appropriator's share of the operating Safe Yield for the particular year only.

(5) Administrative Costs. Any costs of Watermaster attributable to the administration of such special allocations and conversion claims shall be assessed against the appropriators participating in such reporting, apportioned in accordance with the total amount of converted acreage held by each appropriator participating in the conversion program.

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Attorneys for
CHINO BASIN WATERMASTER

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO - WEST DISTRICT

CHINO BASIN MUNICIPAL WATER DISTRICT, Plaintiff, v. CITY OF CHINO, Defendant.	) Case No.: RCV 51010)) ~~(Amended Proposed)~~))) ORDER FOR AMENDMENTS TO) THE JUDGMENT REGARDING) CHANGES IN POOLING PLANS) AND APPROPRIATIVE POOL) REPRESENTATION OF THE) ADVISORY COMMITTEE)))) DATE: September 18, 1996) TIME: 10:00 a.m.) DEPT: H))) Specially assigned to the Honorable) Judge J. Michael Gunn

On September 18, 1996, the motion for amendments to the Judgment to change Appropriative Pool representation on the Advisory Committee came on regularly for hearing in this matter, the Honorable J. Michael Gunn, Judge, Presiding.

The matter having been duly presented, all arguments having been heard

and good cause appearing therefore,

IT IS HEREBY ORDERED:

1. That the petition and motion of Watermaster is granted.

2. That Paragraph 4, "Advisory Committee Representatives," of Exhibit "H" to the Judgment is hereby deleted and replaced with a new Paragraph 4, attached hereto as Exhibit 1.

3. That Paragraph 32, "Authorization," to the Judgment is hereby deleted and replaced with a new Paragraph 32, attached hereto as Exhibit 1.

Date: _____

_____

J. Michael Gunn

Judge, San Bernardino County Superior Court

AMENDMENT TO JUDGMENT

New Exhibit "H" Paragraph 4 to Judgment

4. Advisory Committee Representatives. Members of the Pool Committee shall be designated to represent this pool on the Advisory Committee on the following basis: Each major appropriator, i.e. the owner of an adjudicated appropriative right in excess of 3,000 acre feet, or each appropriator that produces in excess of 3,000 acre feet based upon the prior year's production, shall be entitled to one representative. Two additional representatives of the Appropriative Pool on the Advisory Committee shall be elected at large by the remaining members of the pool. The voting power of the Appropriative Pool on the Advisory Committee shall be apportioned between the major appropriator representatives in proportion to their respective voting power in the Pool Committee. The two representatives of the remaining appropriators shall exercise equally the voting power proportional to the Pool Committee voting power of said remaining appropriators; provided, however, that if any representative fails to attend an Advisory Committee meeting, the voting power of that representative shall be allocated among the representatives of the Approporiative Pool in attendance in the same proportion as their own

respective voting powers.

New Paragraph 32 to the Judgment:

32. Authorization. Watermaster is authorized and directed to cause committees of producer representatives to be organized to act as Pool Committees for each of the several pools created under the Physical Solution. Said Pool Committees shall, in turn, jointly form an Advisory Committee to assist Watermaster in performance of its functions under this judgment. Pool Committees shall be composed as specified in the respective pooling plans, and the Advisory Committee shall be composed of voting representatives from each pool, as designated by the repective Pool Committee in accordance with each pool's pooling plan. WMWD, Three Valleys Municipal Water District (Successor to PVMWD) and SBVMWD shall each be entitled to one non-voting representative on said Advisory Committee.

SCOTT SLATER (State Bar No. 117317)

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SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF SAN BERNARDINO

	) CASE NO. RCV 51010
CHINO BASIN MUNICIPAL	)
WATER DISTRICT,	) Judge: Honorable J. MICHAEL GUNN
Plaintiff,	)
vs.	)
CITY OF CHINO, et al.,	) MOTION TO AMEND JUDGMENT
Defendants.	)
	)
	)
	) Date: September 28, 2000
	) Time: 2:00 pm.
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I.

BACKGROUND

In 1978, judgment was entered in *Chino Basin Municipal Water District v. City of Chino,* a groundwater adjudication of the Chino Basin. This Judgment imposed a physical solution in order to halt the decline of the groundwater levels in the Basin. The Judgment also required the parties to develop an Optimum Basin Management Program ("OBMP") in order to provide a comprehensive program that would offer a long-term solution to the many issues facing the Basin. On June 29, 2000 a final OBMP for the Chino basin was submitted to the Court, and on

July 13, 2000 the Court approved the OBMP and ordered Watermaster to proceed in accordance with its terms.

In the final months prior to completion of the OBMP, the parties negotiated a Peace Agreement that resolved the issues inhibiting finalization of the OBMP. During these negotiations it was recognized that certain minor but necessary amendments would need to be made to the Judgment so that the final OBMP would be fully consistent with the Judgment. The negotiating parties consented to these modifications and they became a part of the Peace Agreement (Article IV, section 4).

In its July 13. Order approving the OBMP. the Court ordered that a hearing would be held on September 28, 2000 to. in part. hear arguments on proposed amendments to the Judgment. Part II of this brief describes Watermaster's recommended amendments to the Judgment in conformance with the Peace Agreement.

II

Proposed Amendments to the Judgment

Watermaster recommends the following amendments to the Judgment:

(a) The Judgment shall be amended so that the last sentence of Paragraph 8 of the Judgment reads:

All overlying rights are appurtenant to the land and cannot be assigned or conveyed separate of apart therefrom for the term of the Peace Agreement except that the members of the Overlying (Non-Agricultural) Pool shall have the right to Transfer or lease their quantified production rights within the Overlying (Non-Agricultural) Pool or to Watermaster in conformance with the procedures described in the Peace Agreement between the Parties therein, dated June 29, 2000.

(b) Paragraph 6 of Exhibit "G" to the Judgment regarding the Overlying Non- Agricultural Pool shall be amended to read:

Assignment. Rights herein decreed are appurtenant to that land and are

Only assignable with the land for overlying use thereon; provided, however, (a) that any appropriator who may, directly or indirectly, undertake to provide water service to such overlying lands may, by an appropriate agency agreement on a form approved by Watermaster, exercise said overlying right to the extent, but only to the extent necessary to provide water service to said overlying lands, and (b) the members of the pool shall have the right to Transfer or lease their quantified production rights within the pool or to Watermaster in conformance with the procedures described in the Peace Agreement between the Parties therein, dated June 29, 2000 for the term of the Peace Agreement.

(c) The 1995 Amendment to the Judgment shall be amended as follows: Section 10(b)(3)(i) shall now read:

"For the term of the Peace Agreement, in any year in which sufficient unallocated Safe Yield from the Overlying (Agricultural) Pool is available for such conversions claims, Watermaster shall allocate to each appropriator with a conversion claim, 2.0 acre-feet of unallocated Safe Yield water for each converted acre for which conversion has been approved and recorded by the Watermaster."

Appendix 1 to the Judgment shall be construed to be consistent with this amendment. All other parts of the 1995 Amendment shall remain the same.

III

Conclusion

The Peace Agreement is a carefully constructed balance of the various interests in the Basin that has enabled the OBMP to be finalized. One part of the negotiation of the Peace Agreement was an agreement on the necessary amendments to the Judgment in order to make the Peace Agreement and the Judgment fully consistent with one another. The signatories have agreed that the amendments described above are the only *necessary* amendments in order to

achieve consistency.

Neither the signatories to the Peace Agreement nor Watermaster believe any other proposed amendments are necessary at this time and accordingly urge this Court to make only those changes necessary so that the final OBMP is consistent with the Judgment. The Judgment has created a stable institutional framework in the Chino Basin that has made the development of the OBMP possible. Changes to this framework should be made only where absolutely necessary so as to cause minimal disruption to this stability. Watermaster has determined that the amendments proposed above are the only necessary changes that need to be made consistent with the Peace Agreement.

The parties have made a monumental effort to craft a solution that will fulfill the overriding goal of managing the Chino Basin on a sustainable basis for the benefit of all. Watermaster respectfully request that the Court approve the above referenced amendments in furtherance of the physical solution.

Dated: August __, 2000.

HATCH & PARENT

By: _____

Scott S. Slater

Michael Fife

Attorneys for Chino Basin Watermaster

SUPERIOR COURT FOR THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

	) CASE NO. RCV 51010
CHINO BASIN MUNICIPAL WATER	)
DISTRICT,	) ORDER CONCERNING
Plaintiff,	) MOTION TO AMEND JUDGMENT
vs.	)
CITY OF CHINO, et al.,	)
Defendants.	) Date: September 28, 2000
	) Dept: 8
	) Time: 2:00 p.m.
	)
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Background

On February 19, 1998, the Court directed Watermaster to prepare an optimum basin management program ("OBMP") for the Chino Basin. On July 13, 2000, the Court found, subject to certain conditions precedent, that Watermaster's support and approval of the Peace Agreement regarding the Chino Groundwater Basin, dated June 29, 2000, hereinafter "Peace Agreement," and Watermaster's commitment to implement the OBMP Phase I Report through the provisions of the OBMP Implementation Plan as expressly set forth in Article

V of the Peace Agreement satisfied Watermaster's obligation to prepare an OBMP. One of the conditions precedent to that finding is Court approval of all Judgment modifications in furtherance of the OBMP.

On August 15, 2000, Watermaster filed a Motion to Amend the Judgment. No other party has submitted proposed Judgment modifications in furtherance of the OBMP, nor has opposition been filed to Watermaster's motion. Watermaster asserts that the parties to the Peace Agreement have agreed that the proposed amendments are the only Judgment modifications necessary to achieve consistency between the OBMP and the Judgment. Consequently, the parties have not provided comprehensive briefing on Judgment modification issues.

Discussion

Special Referee Anne Schneider has provided the Court (and the parties) with a thoughtful

analysis of various provisions in the Peace Agreement that appear to be in conflict with the Judgment. Watermaster's motion recognizes some of these conflicts. However, the Special Referee's Report and Recommendation Regarding Watermaster's Motion to Amend Judgment notes several provisions in the Peace Agreement which appear to conflict with the Judgment, for which no modification is proposed. For example, Watermaster proposes to modify the amended Judgment Exhibit H conversion provisions to allow 2.0 acre-feet of unallocated Safe Yield water for each converted acre. However, no revision is proposed with respect to Appendix 1, which explains the basis for the existing 1.3 acre-feet per acre provision. Another example is the Peace Agreement provision which permits "Early Transfer" allocations of 32,800 acre-feet of water to occur annually, yet the Overlying (Agricultural) Pool is still entitled to pump 82,800 acre-feet per year without reduction. There are several other provisions of the Peace Agreement noted by the Special Referee which appear to conflict with the Judgment, for which no Judgment amendment is sought.

Order

The Court has considered the Special Referee's Report and Recommendation Regarding Motion to Amend Judgment and hereby issues its ruling accepting the Report and adopting the Recommendation of Anne Schneider.

The Court incorporates herein by reference the entirety of the Special Referee's Report and Recommendation Regarding Motion to Amend Judgment. Watermaster's Motion to Amend the Judgment is granted subject to the following: the parties are directed to file a post-hearing brief (s) clarifying their intent with respect to the Peace Agreement provisions discussed in Sections IIB through IIF in the Special Referee's Report and Recommendation Regarding Watermaster's Motion to Amend Judgment. The post-hearing brief(s) shall be submitted no later than October 26, 2000.

Dated: September 28, 2000. s/s J. Michael Gunn

J. MICHAEL GUNN, Judge

SUPERIOR COURT FOR THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT,	) CASE NO. RCV 51010
Plaintiff,	) ORDER CONCERNING
vs.	) MOTION TO EXTEND NINE-MEMBER
CITY OF CHINO, et al.,	) BOARD
Defendants.	) Date: September 28, 2000
	) Dept: 8
	) Time: 2:00 p.m.

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Background

On February 19, 1998, the Court appointed a nine-member board consisting of representatives from the Overlying (Agricultural) Pool, the Overlying (Non-agricultural) Pool, the Appropriative Pool, and three municipal water districts to serve as Interim Watermaster for the Chino Groundwater Basin (hereinafter sometimes referred to as "Basin"). Watermaster was directed to notice a hearing on or before October 28, 1999, to consider all parties' input as to the continuance of the nine-member board. The Court informed the parties that one of the measures that would be used in determining the effectiveness of the nine-member board, in functioning as a steward of the Basin,

would be the progress made on the adoption of an optimum basin management program ("OBMP") for the Basin. The OBMP was to be submitted to the Court no later than September 30, 1999, and a hearing was set on October 28, 1999, to consider whether to approve and order full implementation of the

program. The deadline for approval of the OBMP was continued several times. The Court finally approved the OBMP, consisting of the Phase I Report and Implementation Plan, subject to certain conditions precedent, on July 13, 2000.

Discussion

Extension of Appointment of Nine-member Board

On August 30, 2000, Watermaster filed a Motion to Extend the Nine-Member Board for a Full Five-Year Term. The motion requests the Court to order that the current nine-member structure of the Watermaster board continue in effect for a full five-year term. Watermaster asserts that all of the conditions precedent set forth in the Court's July 13, 2000, Order have been satisfied. However, as noted in Special Referee Anne Schneider's Report and Recommendation Concerning Motion to Extend Nine-Member Board, there are several outstanding issues that must be resolved before it can be said that all of the conditions have been satisfied. First, it is not clear that unanimous approval of the Peace Agreement regarding the Chino Groundwater Basin, dated June 29, 2000, hereinafter "Peace Agreement," has been obtained. Western Municipal Water District's "ratification" of the Peace Agreement was conditional. Watermaster reports the need for further negotiations related to the purchase of desalted water. Second, Watermaster states that the California Legislature has appropriated $235,000,000 for the benefit of the Santa Ana Watershed Project Authority ("SAWPA") and allocated this sum to the state Water Resources Control Board ("SWRCB") for distribution. Watermaster further states that SAWPA has submitted an application to SWRCB for distribution of these funds, including $56,000,000 to be used to fund the Chino II desalter and an expansion of the Chino I desalter. However, Watermaster has not explained how the $121,000,000 condition precedent is satisfied when only $56,000,000 of the funds allocated to SAWPA are to be used for the Chino Basin desalter project. Third, while Watermaster has submitted a schedule and process for submission to the Court of detailed periodic reports regarding compliance with the Implementation Plan for the OBMP, the schedule has

some omissions. For example, Program Elements 3 and 5, which encompass the desalter project, are not included in the schedule.

It must be noted that the City of Chino has filed an Opposition to Motion to Extend the Nine-Member Board for a Full Five-Year Term. Although it supports the continuation of the current nine-member board structure, the City of Chino asserts that Court guidance is needed with respect to the establishment of "criteria, procedures and schedules for the rotation of Appropriative Pool members" serving on the nine-member board. Watermaster responds that several groups must determine a procedure for rotation: Overlying (Agricultural) Pool, Overlying (Non-agricultural) Pool, and the three municipal districts that hold seats on the board and the Appropriative Pool. Watermaster is hopeful that a complete consensus will emerge prior to October 31, 2000, and requests the Court to allow the consensus-building process to continue and give the parties until October 31, 2000, to resolve their differences. An inability to reach consensus on the rotation issue is of considerable concern to the Court. The Court is unwilling to extend the appointment of the board unless and until the rotation Issue is resolved.

Periodic Reporting Requirements

In the exercise of its continuing jurisdiction, the Court shall require periodic progress reports regarding implementation of the OBMP to ensure that the Watermaster is performing its independent function and keeping to the schedule
adopted for OBMP implementation. The Court adopts the following schedule for

OBMP reporting:

Report No. 1	March 31, 2001
Report No. 2	September 30, 2001
Report No. 3	March 31, 2002

Report No. 4	September 30, 2002
Report No. 5	March 31, 2003
Report No. 6	September 30, 2003
Report No. 7	March 31, 2004
Report No. 8	September 30, 2004
Report No. 9	March 31, 2005
Report No. 10	September 30, 2005

Report No. 10 coincides with the end of the appointment of the Nine-Member Board. The OBMP progress reports, together with independent assessment of OBMP implementation status, including verification of data to be provided by the Special Referee and her technical expert, will be the basis for consideration of continuing the appointment. The Court may schedule hearings to coincide with some or all of these reports. Alternatively, the Court may, from time to time, direct the Special Referee to conduct a workshop in lieu of a court hearing. The reports should follow the format prescribed in Special Referee Anne Schneider's Report and Recommendation Concerning Motion to Extend Nine Member Board.

Future Desalters

The Court wants to particularly note that the Peace Agreement predicates any future desalting capacity on a reevaluation of the need for additional desalting after the earlier of ten years or the conversion of 20,000 acres of agricultural land. The Court is mindful that while the parties to the Peace Agreement contemplate the construction of future desalters and/or expansion of Chino I and/or Chino II

Desalters, there are no provisions in the Peace Agreement that effectively ensure that they will be built. In effect, future desalters (and any expansions of the Chino I and II Desalters) will be built "if and only If" funding from sources other than the Parties can be secured. The OBMP (Phase I Report and Phase II Implementation Plan) calls for some 40,000 acre-feet per year of desalting capacity to be installed in the southern part of the Basin by 2020. The Court hereby gives notice to the parties that a primary concern of the Court in any future application for reappointment of the nine-member board will be the parties' continued commitment to provide for future desalters and preserve safe yield in accordance with the OBMP.

Order

Watermaster seeks an order continuing the current nine-member structure of the Watermaster Board in effect for a full five-year term and authorizing it to perform all managerial and administrative functions as specified in the Judgment, including the execution of all administrative and employment contracts. Watermaster states that it will propose a schedule for rotation of its board members no later than October 31, 2000.

The Court is not inclined to extend unconditionally the reappointment of the nine-member board until both the rotation and the Western Municipal Water District issues have been resolved. Therefore, the appointment shall be made subject to certain conditions. The failure of any one of these conditions shall be considered by the Court as a compelling reason to reconsider the appointment of the nine member board. Therefore, subject to the continuing jurisdiction of the Court and satisfaction of conditions numbers 1 - 5 below, the Court hereby issues its order:

The Court has considered the Special Referee's Report and Recommendation Concerning Motion to Extend Nine-Member Board and hereby issues its ruling accepting the Report and adopting the Recommendation of Anne Schneider, except to the extent that it recommends continuation of the appointment for only three years. The Court incorporates herein by reference the entirety of the Special Referee's Report and Recommendation Concerning the Motion to Extend Nine-Member Board. The nine-member board is hereby appointed for an additional five-year term, until September 30, 2005, subject to the continuing jurisdiction of the Court to reconsider the appointment in the event Watermaster fails to timely comply with the following conditions:

1. Watermaster's report on the status of its efforts to resolve the terms and conditions applicable to the purchase of desalted water and to secure a recission of Western Municipal Water District's conditional execution of the Peace Agreement no later than December 31, 2000; and

2. Watermaster adoption and Court approval of Revised Rules and Regulations for Chino Basin by February 1, 2001; and

3. Submission of Reports Nos. 1 through 10 in accordance with the schedule set forth in the discussion above; and

4. Inclusion in such reports of schedule and budget information essentially in a form equivalent to Exhibit "E" and Table 4-14 of the Phase I Report; and

5. Watermaster cooperation in the independent assessment and verification of the data

included in Reports No. 1 through 10 to be provided to the Court by the Special Referee and her technical expert.

The parties are forewarned that any future application for reappointment of the nine-member board may be conditioned on the development of a detailed plan to reach the OBMP goal of 40,000 acre-feet per year of desalting capacity to be installed in southern part of the Basin by 2020.

Dated: September 28, 2000.

s/s J. Michael Gunn

J. MICHAEL GUNN, Judge

SCOTT SLATER (State Bar No. 117317)

MICHAEL FIFE (State Bar No. 203025)

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Attorneys for Chino Basin Watermaster

SUPERIOR COURT OF THE STATE OF CALIFORNIA

COUNTY OF SAN BERNARDINO

	) CASE NO. RCV 51010
CHINO BASIN MUNICIPAL	)
WATER DISTRICT,	)
Plaintiff,	)
vs.	)
CITY OF CHINO, et al.,	) NOTICE OF ENTRY OF ORDER
Defendants.	) CONCERNING MOTION TO
	) EXTEND NINE-MEMBER BOARD
	) AND ORDER CONCERNING
	) MOTION TO AMEND JUDGMENT
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TO ALL PARTIES AND THEIR ATTORNEYS OF RECORD;

Please take notice that on September 28, 2000, the Court entered its Order Concerning Motion to Extend Nine-Member Board and Order Concerning Motion to Amend Judgment. A true and correct copy of these Orders are attached hereto and made a part hereof by this reference.

The Court also provided guidance on the factors that it will consider when deciding to reappoint the Nine-Member Watermaster Board in 2005. These factors are:

(1) All production meters will be installed;

(2) Basin Monitoring will be completely in place and will have been the basis for semi-annual reports specified in the Order;

(3) The Recharge Master Plan will be complete and appropriate recharge facilities will have been installed;

(4) The OBMP Desalter I Expansion and Desalter II will be installed and operational, with demonstrated delivery of desalter water for municipal use in the Basin.

In addition, the Court wishes to schedule a hearing on February 1, 2001 at 2:00 pm. The purpose of the hearing will be to:

(1) Approve the Revised Rules and Regulations for the Chino Basin;

(2) Approve the post-Order memorandum which will be filed on October 26, 2000;

(3) Receive a report on the status Western Municipal Water District's recission of its conditional execution of the Peace Agreement; and

(4) Receive Watermaster's Annual Report.

The Revised Rules and Regulations for the Chino Basin should be submitted to the Court by December 31, 2000.

Dated: September 28, 2000

HATCH & PARENT

By: s/s Michael Fife

Michael Fife

Attorneys for Chino Basin Watermaster

APPENDIX 1

To Chino Basin Watermaster
Amendment Regarding Land Use Conversions

The purpose of the amendment is to simplify the methodology and procedure for land use conversions under the 1978 Judgment. The basic nature of the commitment undertaken by the parties who negotiated the Judgment is not intended to be changed. The methodology used to develop the recommended 2.0 [1] per acre (af/ac) conversion factor can best be described as a gross water duty method. Essentially, the total water use was divided by the total acreage remaining to be converted to develop the gross average water use per acre.

At the Land Use Conversion Workshop held on January 10, 1995, there was a consensus among the parties to the Judgment that the large agricultural acreage within the purveyor service areas must still be converted. To depict the large southern area remaining to be converted, Watermaster staff proposed the establishment of Conversion Area No. 1 (see attached map). This area can generally be described as the area that is south of the 60 Freeway, outside the current city boundaries of Chino, Chino Hills and Ontario and for the most part, the portion of Jurupa Community Services District (JCSD) that is west of Etiwanda. The southernmost boundary of the area is taken as the Army Corps of Engineers' Prado Basin take line, unless a specific agricultural well exists inside the take line. To obtain the acreage for Conversion Area No. 1, the Santa Ana Watershed Project Authority (SAWPA), used its Geographic Information System (GIS) and determined the total acreage shown in Conversion Area No. 1 to be approximately 27,133 acres.

Also at the January 10 Land Use Conversion Workshop, the appropriators were asked to submit the proposed remaining convertible acreage inside their established service areas. Submissions of the parcels proposed as eligible for conversion, both inside and outside Conversion area No. 1 began arriving in early March 1995, and were received as late as June 29, 1995. Watermaster staff worked with each appropriator to identify the proposed acreage by assessor's parcel number. The lists of parcels and the approximate acreage of each parcel, by appropriator, are included with Appendix 1 as Tables 2A - 2G for reference. The maps corresponding to these lists are on file with the Watermaster. The eligibility of most of the parcels submitted has been determined; however, the specific eligibility of some parcels is still in question. The eligibility criteria utilized by staff requires that the land:

1. has not been receiving water provided by an appropriator;
2. was not already included in the establishment of the appropriator's production rights; and
3. has been used for irrigated agriculture within the last five years if it is located outside Conversion Area No. 1

[1] Amended from 1.3 af/ac by Order dated September 28, 2000.

The appropriators were also asked which parcels they were proposing to convert for the production year 1994/95. The parcels proposed for conversion in FY 94/95 are included with Appendix 1 as Tables 3A - 3C. Any parcels converted for production year 1994/95 will affect the assessments and available unallocated safe yield from that production year in fiscal year 1995/96. Table 1 is a summary of the total acreage submitted by each appropriator as being eligible for conversion and of the acreage requested by that appropriator for conversion in FY 94/95, if any. Staff has evaluated the parcels requested for conversion in FY 94/95 and finds that all of those requested, or a total of 2, 185 acres, are eligible for conversion based on the above criteria.

When the 27,133 acres in Conversion Area No. 1 is added to the 5,209 acres (Table 1) proposed for conversion that is outside Conversion Area No. 1, there is a total of 32,343 acres remaining to be converted in the Chino Basin.
The 1978 agricultural water use was 84,095 acre-feet. When this is divided by the 32,343 acres, it results in a use of 2.6 af/ac. The value is still approximately 2.6 af/ac if the average annual post-judgment allocation of 82,800 af is divided and all acres were able to be converted as currently prescribed in the judgment, 50% of this per acre use would be allocated to an appropriator, and the appropriator would receive 1.3 acre-feet per acre. This would be a maximum use per acre. In 1994, the agricultural water use was reported as 44,092 acre-feet per acre. If this use is divided by the 32, 343 acres, it results in a present average use of 1.36 acre-feet per acre.

There was a consensus at the workshops and at the pool committee meetings that many of the conversions that potentially could have taken place since 1978, were not submitted by the appropriators. This is probably because of a lack of the right type of information to make the appropriate use-per-parcel determinations and because of the time and money that would be required if they were pursued extensively. Because of this, there was a consensus that the 1.3 af/ac conversion water use determinations were based only on 50% of the current average use.

Watermaster staff anticipates that each appropriator with remaining convertible acreage will request conversion on that acreage each year that they undertake to serve the land. If the service is anticipated to be permanent, they can request permanent conversion. For the acreage outside Conversion Area No. 1, the above criteria will be applied annually to make an eligibility determination. Also, an appropriator will be required to certify that the land is not currently using water that is being reported as agricultural pool production and Watermaster staff will field verify that agricultural activities have ceased, or that the appropriator is actually satisfying the agricultural use.

Chino Basin Watermaster

Unconverted Acreage

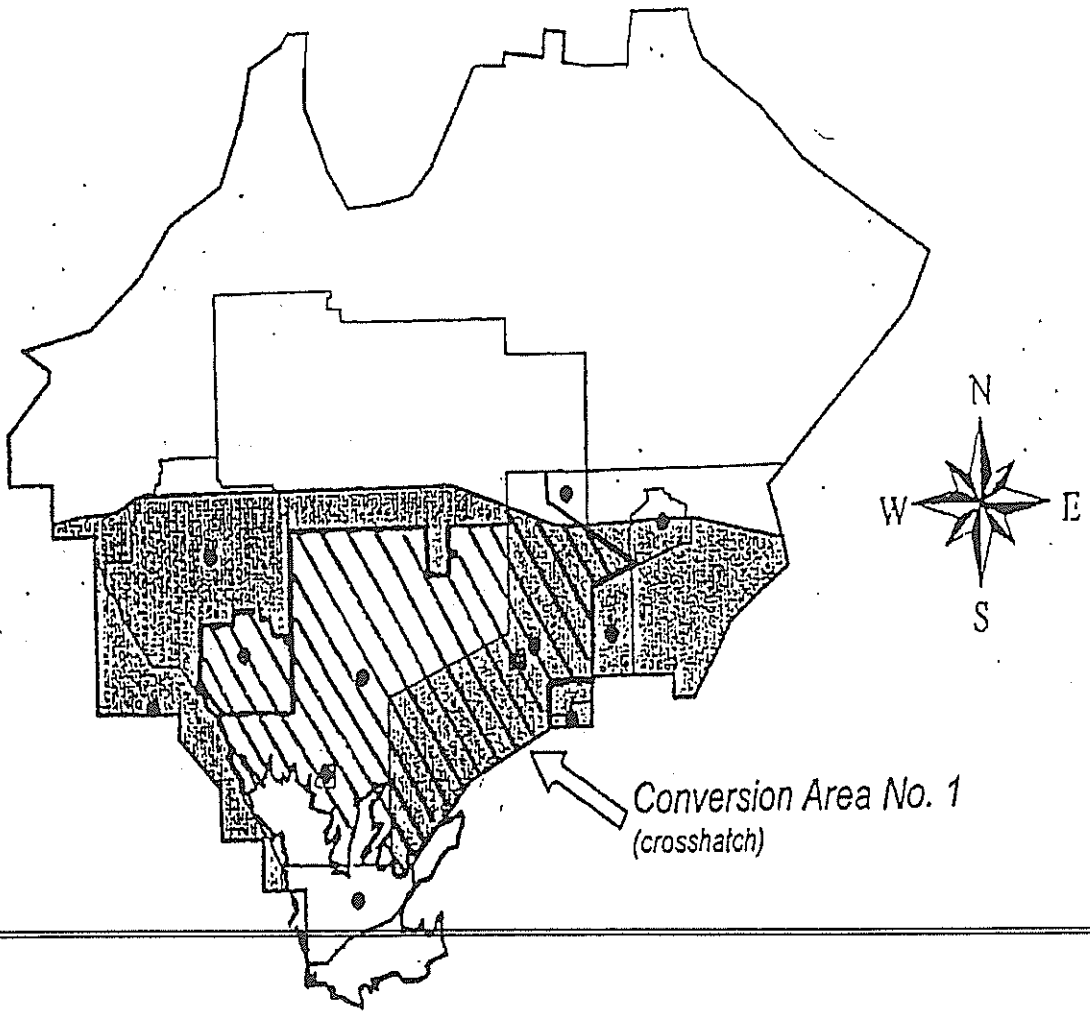

TABLE 1

Chino Basin Watermaster
Proposed Conversion Acres
Revised August 3, 1995

Appropriator	Outside Conversion Area #1		Inside Conversion Area #1	Total FY 94/95 Acres Proposed
	Total Acres Submitted	*Acres Proposed FY 94/95*	*Acres Proposed FY 94/95*	
Chino, City of	1923	519	0	519
Chino Hills, City of	1053	0	0	0
Cucamonga CWD	460	0	0	0
Fontana WC	417	0	0	0
Jurupa CSD	835	327	758	1085
Monte Vista WD	43	0	0	0
Ontario, City of	544	544	37	581
Total	5209	1390	795	2185

Chino
AGRICULTURAL LAND - WATER SUPPLY STUDY
OUTSIDE CONVERSION AREA NO. 1 LIST B

Property No	Acreage	ADDRESS N/S - E/W	APN	GENERAL NOTES
1	11	4800/12150	1016-121-4,5,6,7,8	ROSES RESIDENCE ON CITY WATER
2	16	4700/12200	1016-131-1,2,3	ROSES CROP ACREAGE SUPPLIED BY PVT WELL ON No 2
3	10	5350/11750	1014-381-1,2,3,4	BERRY
4	21	5600/12400	1015-261-2,3	TRUCK FARMING MISCELLANEOUS VEGETABLES
			1015-253-9	
5	6	5400/12450	1015-281-21	BERRY
6	7	4000/13000	1019-071-20,21	CHRISTMAS TREE GROWER
			1019-081-2,11	
7	38	4800/13250	1019-191-1,2,5	RANCHING DOMESTIC SERVICE ONLY - OTHER USES WELL
			1019-201-1,3	
8	10	3600/13650	1019-611-28,39,40	RANCHING DOMESTIC SERVIE ONLY UNDER DEVELOPMENT
			1019-611-41,42,43,49	
9	21	3700/13750	1022-041-4	LANDSCAPE NURSERY
			1022-05-3,4	
10	31	3900/14000	1022-031-2	GREEN FEED
			1022-26-4	
			1022-27-4	
			1022-082-1,2,8,9,10	
11	58	4000/14200	1022-38-3	GREEN FEED
			1022-39-4	
			1022-40-3	
			1022-58-2	
12	54	4150/13900	1022-10-5,6,7,8	DAIRY
			1022-24-3	
13	142	4300/14300	1022-42-6,7,8	GREEN FEED
			1022-41-5	
			1022-58-2	
			1022-53-11,12,13	
			1022-431-8	
			1022-441-8	
			1022-541-3	
14	18	4200/14550	1022-55-3	GREEN FEED
			1025-10-5,7,8,9	
15	51	4350/14700	1025-09-1	GREEN FEED
			1025-12-1,2,5,6,7	
			1025-21-8,9,12 thru 23	
16	40	4800/14400	1022-50-1,2,3	DAIRY DOMESTIC SERVICE ONLY
			1022-49-1,3,4	
17	320	4900/14700	1025-13-1 thru 6	DAIRY & FARMING GREEN FEED
			1025-20-5,6	
			1025-19-6,7	
			1025-15-1 thru 8	
			1021-471-3,4,6,8	
			1021-461-2,3,4,6,7,8	
			1021-481-1,2,3	
			1024-491-1,2	
			1021-511-1,2,3	
			1021-501-1,2	
			1021-521-1,2,3,4	
			1021-531-1,2	
18	70	5300/15400	1028-201-13,17	DOMESTIC SERVICE ONLY
			1028-511-1 thru 20	
			1028-501-1 thru 25	
			1028-491-1 thru 9	
19	10	6200/12800	1015-511-27	BERRY
20	29	6200/13000	1020-131-1,2	BERRY
			1020-121-21,24	
21	18	6000/14050	1021-291-1,2	GREEN FEED
22	38	6200/14000	1021-261-1,2,3,4	RANCHING DOMESTIC SERVICE ONLY
			1021-231-2	
			1021-101-2,3,4	
23	26	6400/13900	1021-251-1,20	DAIRY
			1021-241-2,3	
24	17	6850/12850	1051-502-31	CORN/BERRY
			1051-631-2	

Chino
AGRICULTURAL LAND - WATER SUPPLY STUDY
OUTSIDE CONVERSION AREA NO. 1 - LIST B

Property No.	Acreage	ADDRESS N/S - E/W	APN	GENERAL NOTES
25	11	6800/13200	1052-301-1,3,4	DAIRY
26	64	6600/13500	1052-331-1,2,3	DAIRY
			1052-341-1,2,3,4	
			1052-631-1,2,3	
27	28	6800/13500	1052-611-1,2	GREEN FEED
			1052-601-2	
28	15	6800/13900	1053-261-3,4,41,71	GREEN FEED
			1053-231-4,31	
29	39.5	6600/13900	1053-251-1,2,3,4	NURSERY
			1053-241-68	
			1053-011-2 thru 5	
30	99	5700/14150	1021-351-1,2	AYALA PARK
			1021-321-1,2	
			1021-311-1,2	
			1021-281-1	
			1026-011-1	
31	80	6800/14300	1053-621-1,2	DAIRY
			1053-491-1 thru 11,13,14,17	
			1053-461-1,2,3	
			1053-451-1,2	
32	61	6950/13100	1052-051-1 thru 18	DOMESTIC SERVICE ONLY
			1052-051-20 thru 25	
33	61	6950/13500	1052-361-1,2,3,4	DAIRY
			1052-371-1,2,3	
			1052-591-1,2	
			1052-581-1,2	
34	61	6950/13900	1053-051-3,4	DAIRY
			1053-061-3,4	
			1053-221-1,2	
			1053-271-1 thru 8	
35	61	6950/14300	1053-441-1 thru 9,12,13	DAIRY
			1053-431-1,2	
			1053-501-1,2,3,4	
			1053-611-1,2,3	
36	10	5250/11550	1014-301-3,4,5	NURSERY & CHRISTMAS TREES
37	20	5350/11600	1014-271-1	NURSERY & CHRISTMAS TREES
			1014-281-4	
40	32	4400/13000	1019-111-27 thru 73	RECENTLY CONVERTED BERRY FARMING TO RESIDENTIAL
			1019-122-1 thru 48	
			1019-123-1 thru 54	
41	30	4600/13500	1019-441-3,4	RANCHING
			1019-511-6,7	
			1019-501-1	
42	10	5250/14150	1021-361-21,22	NURSERY
43	18	5350/13600	1020-571-3,4,6	BERRY
			1020-461-1,2,3	
44	80	5600/13900	1021-041-1 thru 4,6,9	DAIRY DOMESTIC SERVICE ONLY - OTHER USES WELL
			1021-131-1,2	
			1021-201-1,2	
			1021-331-1	
			1021-301-1	
45	10	5950/13750	1021-061-1,2	DAIRY
46	5	6450-13350	1021-381-5	BERRY
TOTAL	1857.5			

Table 2B

THE CITY OF CHINO HILLS PROPOSED PARCELS FOR LAND USE CONVERSION

THE CITY OF CHINO HILLS
PUBLIC WORKS DEPARTMENT
GEOGRAPHIC INFORMATION SYSTEM
101 GRAND AVENUE
CHINO HILLS CA 91711
(909)

ID	APN	OWNER	ACREAGE
1	1022-291-09	Boys Republic	4.63
2	1022-291-10	Boys Republic	44.49
3	1022-291-05	Boys Republic	2.32
4	1022-591-02	Boys Republic	28.46
5	1022-291-08	Boys Republic	118.04
6	1025-461-01	De Groot	8.92
7	1025-461-02	De Groot	2.01
8	1025-461-03	De Groot	7.12
9	1025-481-02	De Groot	8.23
10	1025-471-04	De Groot	4.12
11	1025-471-03	De Groot	1.72
12	1025-481-01	De Groot	9.62
13	1025-511-01	De Groot	6.66
14	1025-471-01	City of Chino Hills	6.38
15	1025-471-02	Greening	1.00
16	1025-561-04	Greening	47.24
17	1028-471-01	Greening	66.82
18	1028-351-01	Kramer	1.54
20	1028-351-13	Higgins	4.04
21	1028-351-23	Higgins	38.24
22	1028-351-11	Higgins	7.64
23	1028-201-03	Von Lusk	1.91
24	1028-201-02	Von Lusk	77.57
25	1028-201-74	Von Lusk	54.77
26	1028-201-75	Von Lusk	37.57
27	1028-351-07	Bahan	28.27
28	1017-231-21	Amato	1.79
29	1017-231-22	Trapani	5.65
30	1017-241-14	Richland Pinehurst LP	82.37
31	1017-491-01	Richland Pinehurst LP	78.63
32	1027-492-01	Richland Pinehurst LP	43.31
33	1027-121-07	Richland Pinehurst LP	15.94
34	1057-261-06	Abacherli	128.26
35	1057-261-05	Abercherli	10.00
36	1021-561-01	Van Klavern	13.62
	1021-591-01	Van Klavern	9.50
	1021-591-03	Van Klavern	11.60
	1021-601-04	Van Klavern	8.28
	1021-601-01	Van Klavern	9.16
37	1028-351-16	Higgins	2.60
38	1028-351-14	Higgins	11.21
39	1028-351-18	Weeda	12.16
		TOTAL:	**1053.40**

CONVERSION

CUCAMONGA COUNTY WATER DISTRICT
West gate specific plan property west of Cherry

APN	Acreage	
226-112-08	7.07	
228-012-05	108.62	
06	7.54	
00 (adjacent to Cherry)	110.00	(estimated)
228-092-03	37.36	
14	9.61	
15	9.61	
16	9.61	
17	7.57	
20	11.54	
19	9.73	
22	25.40	
228-091-12	18.68	
24	5.43	
25	9.00	
28	35.51	
07	38.00	(estimated)
Totals	460.28	

APN maps attached

JT:dc(CCWDCOVS.DOC)
6/26/95

CONVERSION

FONTANA WATER COMPANY
West gate specific plan property east of Cherry

APN		Acreage
228-021-28		142.35
27		8.50
226-121-21		12.50
18		137.83
226-091-46		45.78
62		70.04
	Total	417.00

JT:dc(FWCCONVR.DOC)
6/26/95

Jurupa Community Services District
LAND CONVERSION REQUESTS FY 94-95
OUTSIDE OF CONVERSION AREA NO. 1

PARCEL NUMBER	PARCEL ADDRESS		NUMBER OF ACRES	MAP NO	LOT NO
156020026	12400	PHILADELPHIA	10.25	A	1
156020027	12350	PHILADELPHIA	15.41	A	2
156020030			8.79	A	3
156160018	3791	DE FOREST	10.75	B	1
156160035	3065	DULLES	5.21	B	2
156160036	3058	DULLES	9.42	B	3
156160037			7.31	B	4
156160038			5.03	B	5
156160039	3178	DULLES	5.11	B	6
156160046	3431	DE FOREST	5.10	B	7
156160058			2.45	B	8
156160059			1.60	B	9
156160060			0.19	B	10
156160061			0.22	B	11
156160065	3450	DULLES	5.50	B	12
156160066	3204	DE FOREST	5.20	B	13
156160067			5.37	B	14
156160068			5.00	B	15
156160069	3384	DE FOREST	5.00	B	16
156160070			5.21	B	17
156160071	3725	NOBEL	7.88	B	18
156160072			3.55	B	19
156160073	3444	DE FOREST	1.20	B	20
156160074	3590	DE FOREST	10.66	B	21
156160080			5.16	B	22
156160081			6.25	B	23
156160082	10885	INLAND	11.43	B	24
156160084	10980	INLAND	2.51	B	25
156160087	3305	DULLES	20.47	B	26
156160088	3305	DULLES	44.37	B	27
156160089	3305	DULLES	8.40	B	28
156160095	3038	DEERE	12.94	B	29
156160096	3371	DE FOREST	25.03	B	30
156160097			23.97	B	31
183030007	7545	JURUPA	9.90	C	3
183030008	7585	JURUPA	1.99	C	2
183030033	7491	JURUPA	5.69	C	1
183080010	7371	JURUPA	7.55	D	1
		TOTAL ACRES	327.07		

Jurupa Community Services District
LAND CONVERSION REQUESTS FY 95-96
AFTER WATERMASTER VERIFICATION

PARCEL NUMBER	PARCEL ADDRESS		NUMBER OF ACRES	MAP NO	LOT NO
162200006	9894	60TH	5.00	A	1
162200007		60TH	5.00	A	2
162200008		LIMONITE	5.00	A	3
162200009		LIMONITE	4.95	A	4
162200010	9951	LIMONITE	9.65	A	5
162210011	10001	LIMONITE	9.76	A	6
162210001	9709	60TH	5.00	B	1
162210002	6067	BEACH	5.00	B	2
162210003		LIMONITE	5.00	B	3
162210004		LIMONITE	5.00	B	4
165050001	8618	54TH	2.50	C	1
165050002	8646	54TH	2.50	C	2
165050005	5424	PEDLEY	5.00	C	3
165050006	5494	PEDLEY	5.00	C	4
165060001	5419	PEDLEY	5.00	D	1
165060002	5455	PEDLEY	2.86	D	2
165060003	5489	PEDLEY	2.86	D	3
165060013	5511	PEDLEY	3.01	D	4
165080003	5723	PEDLEY	3.25	E	1
165080004	5733	PEDLEY	3.25	E	2
165080005	5793	PEDLEY	7.00	E	3
165080007	5760	PEDLEY	3.00	E	4
165080009	8705	58TH	5.00	E	5
165080010	8695	58TH	2.39	E	6
165080012	8696	56TH	5.00	E	7
165091015	5685	PEDLEY	3.85	F	1
165092004	5690	5685	1.82	F	2
165140008	5935	5685	5.89	G	1
165140029	5831	5685	4.50	G	2
165140030	5853	5685	2.16	G	3
165160001	8626	58TH	3.82	H	1
165160002	8662	58TH	2.50	H	2
165160003	8710	58TH	2.50	H	3
166030025	8238	JURUPA	9.22	I	1
166030023	4800	STONE	14.52	I	2
166030011	4992	STONE	4.63	I	3
166050008	4695	TYROLITE	3.36	J	1
166060005	4911	TYROLITE	8.93	K	1
166060006	4799	TYROLITE	6.19	K	2
166070001	5040	AGATE	4.85	L	1
166070030	5070	AGATE	2.33	L	2
166070009	5025	STONE	2.69	L	3
166070011	5065	STONE	3.63	L	4
166090001	5289	STONE	9.82	M	1
166090002	5250	STONE	5.28	M	2
166090004	5256	AGATE	12.88	M	3
166090023	8440	54TH	2.26	M	4
166090026	5340	AGATE	4.67	M	5
166190017	8600	58TH	10.00	N	1
167020002		GALENA	33.71	O	1

Jurupa Community Services District
LAND USE CONVERSION REQUESTS FY 95-96
AFTER WATERMASTER VERIFICATION

PARCEL NUMBER	PARCEL ADDRESS		NUMBER OF ACRES	MAP NO	LOT NO
167020006		GALENA	9.70	O	2
167020007		GALENA	29.20	O	3
167020008		GALENA	33.70	O	4
167110008	9440	GALENA	10.93	P	1
167160042	4777	FELSPAR	9.37	Q	1
169070006	8705	MISSION	2.57	R	1
169210008	8721	GALENA	1.40	S	1
169270018	4930	AGATE	4.71	T	1
169280020	4945	PEDLEY	2.45	U	1
169280022	8864	PEDLEY	2.71	U	2
169290011	5015	PEDLEY	5.00	V	1
169290020	5071	PEDLEY	4.77	V	2
169290021	5151	PEDLEY	4.77	V	3
169300003	5339	PEDLEY	7.50	W	1
169300005	5355	PEDLEY	8.35	W	2
169300007	5335	PEDLEY	2.39	W	3
169300008	5261	PEDLEY	2.39	W	4
169300009	5235	PEDLEY	2.39	W	5
169300010	5205	PEDLEY	2.38	W	6
169310002	5074	PEDLEY	3.01	X	1
169310003	5071	AGATE	2.72	X	2
169310026	5329	AGATE	2.48	X	3
169310028	5271	AGATE	2.48	X	4
170310041	9200	MISSION	4.14	X	1
171040027	3851	PYRITE	15.41	Y	1
171050013	4100	AGATE	7.69	Z	1
171090011	8531	MISSION	3.22	AA	1
171190004	7868	MISSION	10.96	BB	1
171220002	7837	GALENA	9.64	CC	1
173160020	9150	GRANITE HILL	4.03	DD	1
173160024	8931	GRANITE HILL	2.06	DD	2
173160032	8951	HIGHWAY	4.13	DD	3
183030014	7586	JURUPA	6.92	EE	1
		TOTAL ACRES	508.56		

Monte Vista Water District
P.O. Box 71
Montclair, CA 91763-0071

Proposed Conversion Acres
Submitted by Gil Martinez, August 2, 1995

Property No.	Approximate Acreage	APN (Lot No.)
A	4.3	1013-131-15,17,19
A1	2.4	1013-131-15,17,19 (Lot 1 & 6)
C	8.0	1013-171-1 thru 5
E	9.6	1013-271-1
		1013-531-5
G	9.0	1013-291- 6 & 7
I	10.0	1013-521-4 (Lot 1)
N	.5	1016-101-1
	43.66	

Prepared by J.R. Theirl
August 14, 1995
Based on information provided by Gil Martinez of MVWD on August 2, 1995.

City of Ontario
Existing Agricultural Uses
Exhibit A

Identification	APN	Address	Acreage
1	11335102	1348 S GROVE AV	11.500
2	11336103	1550 S PARCO AV	7.231
3	11336104	1460 S PARCO AV	0.904
4	11336105	1442 S PARCO AV	0.454
5	11336106	1436 S PARCO AV	0.232
6	11336107	1410 S PARCO AV	5.518
7	11336116	1551 S GROVE AV	12.255
8	11336118	1405 S GROVE AV	11.642
9	11341421	1704 S VINEYARD AV	3.677
10	11343105	1160 S MILDRED AV	51.026
11	11351208	O E AIRPORT--OIA	8.524
12	11351210	O E AIRPORT --OIA	7.400
13	21019210	572 N TURNER AV	22.343
14	21121104	3000 E JURUPA ST	20.039
15	21121109	1200 S ARCHIBALD AV	19.395
16	21121111	2900 E JURUPA ST	65.765
17	21131203	O E MISSION BL	4.020
18	21131204	O E MISSION BL	2.022
19	21134101	O S SEAGULL AV	0.615
20	21134102	O E JURUPA ST	0.782
21	21134103	O E JURUPA ST	0.534
22	21134104	O E JURUPA ST	0.530
23	21134105	O E JURUPA ST	0.532
24	21134106	O S AVIATION DR	0.786
25	21134107	O S AVIATION DR	1.016
26	21808103	2300 S MILLIKEN AV	46.266
27	21808105	O E MISSION BL	0.263
28	21808108	O E MISSION BL	49.657
61	21809124	O S MILLIKEN AV	15.280
29	23801131	1000 N ROCHESTER AV	2.270
30	23801219	O E INLAND EMPIRE BL	10.664
31	23801223	O E FOURTH ST	13.856
32	23808140	O S WINEVILLE AV	2.655
33	23824110	5010 E AIRPORT DR	0.000
34	101120109	1241 W STATE ST	0.000
35	101120110	1211 W STATE ST	2.434
36	101120111	520 S MAGNOLIA AV	2.409
37	101122102	616 OAKS AV	0.000
38	101142109	O S ELDERBERRY AV	0.942
39	101142111	O S ELDERBERRY AV	1.942
40	101152112	O S ELDERBERRY AV	1.005
41	101153103	O S BENSON AV	2.566
42	101153104	O S BENSON AV	1.860
43	101143105	O S BENSON AV	4.781
44	101412103	O S OAKS AV	0.063
45	101412104	O S OAKS AV	1.705
46	101421112	1320 W FRANCIS ST	7.281
47	104921105	720 E SUNKIST ST	0.000
48	104930105	752 W PARK ST	2.668
49	104930106	720 W PARKS ST	2.685
50	104942104	1310 S CUCAMONGA AV	4.694
51	104950102	1125 S SULTANA AV	0.207

City of Ontario
Existing Agricultural Uses
Exhibit A

Identification	APN	Address	Acreage
52	105013102	1518 S CUCAMONGA AV	0.000
53	105013103	1558 S CUCAMONGA AV	6.028
53	105016103	1556 S GRPVE AV	0.000
55	105017102	1642 S GROVE AV	9.563
56	105018103	1743 S CUCAMONGA AV	8.970
57	105020101	1687 S BON VIEW AV	9.547
58	105036108	1844 S FERN AV	0.000
59	105045104	1921 S BON VIEW AV	4.740
60	105046109	1056 E FRANCIS ST	9.064
61	011340102	1533 S PARCO AVE	29.000
62	101121106	1300 W MISSION BLVD	1.000
63	101138204	1055 W MISSION BLVD	1.000
64	101446205	1951 S PALMETTO AVE	1.000
65	105115103	1256 E PHILADELPHIA ST	6.000
66	105157177	NW CORNER GROVE AVE & RIVERSIDE DR	1.000
67	104947204	CAMPUS (N OF FRANCIS, S OF PHILLIPS)	6.000
68	011008107	1633 E HOLT BLVD	5.000
69	105144103	NW CORNER EUCLID AVE & RIVERSIDE DR	10.000
		Total	**544 Acres**

City of Chino
CHINO BASIN LAND USE CONVERSION
PARCELS TO BE CONVERTED IN FY 94/95

PROPERTY No.	ACREAGE	ADDRESS N/S - E/S	APN	GENERAL NOTES
8	10	3600/13650	1019-611-28,39,40	IRRIGATED LANDSCAPE/UNDER DEVELOPMENT
			1019-611-41,42,43,49	
10	31	3900/14000	1022-031-2	ENTERTAINMENT COMPLEX
			1022-26-4	
			1022-27-4	
			1022-082-1,2,8,9,10	
13	142	4300/14300	1022-42-6,7,8	COMM/IND - WAREHOUSE
			1022-41-5	
			1022-56-2	
			1022-53-11,12,13	
			1022-431-8	
			1022-441-8	
			1022-541-3	
18	70	5300-15400	1028-201-13,17	COMM/IND (MISSION LAUNDRY)
			1028-511-1 thru 20	
			1028-501-1 thru 25	
			1028-491-1 thru 9	
23	26	6400/13900	1021-251-1,20	RESIDENTIAL DEVELOPMENT/COMMERCIAL PARK
			1021-241-2,3	
29	39.5	6600/13900	1053-251-1,2,3,4	RESIDENTIAL DEVELOPMENT
			1053-241-68	
			1053-011-2 thru 5	
30	99	5700/14150	1021-351-1,2	AYALA PARK
			1021-321-1,2	
			1021-311-1,2	
			1021-281-1	
			1026-011-1	
32	61	6950/13100	1052-051-1 thru 18	DOMESTIC SERVICE ONLY/RESIDENTIAL
			1052-051-20 thru 25	
*	41	3950/13900	1022-082-1 thru 11	COMMERCIAL DEVELOPMENT
			1022-251-3 thru 14	
TOTAL	519.5			

*** acreage above property number 11 (MAJESTIC SPECTRUM POWER CENTER)**

Jurupa Community Services District
LAND CONVERSION REQUESTS FY 94-95
OUTSIDE OF CONVERSION AREA NO. 1

PARCEL NUMBER	PARCEL ADDRESS		NUMBER OF ACRES	MAP NO	LOT NO
156020026	12400	PHILADELPHIA	10.25	A	1
156020027	12350	PHILADELPHIA	15.41	A	2
156020030			8.79	A	3
156160018	3791	DE FOREST	10.75	B	1
156160035	3065	DULLES	5.21	B	2
156160036	3058	DULLES	9.42	B	3
156160037			7.31	B	4
156160038			5.03	B	5
156160039	3178	DULLES	5.11	B	6
156160046	3431	DE FOREST	5.10	B	7
156160058			2.45	B	8
156160059			1.60	B	9
156160060			0.19	B	10
156160061			0.22	B	11
156160065	3450	DULLES	5.50	B	12
156160066	3204	DE FOREST	5.20	B	13
156160067			5.37	B	14
156160068			5.00	B	15
156160069	3384	DE FOREST	5.00	B	16
156160070			5.21	B	17
156160071	3725	NOBEL	7.88	B	18
156160072			3.55	B	19
156160073	3444	DE FOREST	1.20	B	20
156160074	3590	DE FOREST	10.66	B	21
156160080			5.16	B	22
156160081			6.25	B	23
156160082	10885	INLAND	11.43	B	24
156160084	10980	INLAND	2.51	B	25
156160087	3305	DULLES	20.47	B	26
156160088	3305	DULLES	44.37	B	27
156160089	3305	DULLES	8.40	B	28
156160095	3038	DEERE	12.94	B	29
156160096	3371	DE FOREST	25.03	B	30
156160097			23.97	B	31
183030007	7545	JURUPA	9.90	C	3
183030008	7585	JURUPA	1.99	C	2
183030033	7491	JURUPA	5.69	C	1
183080010	7371	JURUPA	7.55	D	1
		TOTAL ACRES	327.07		

City of Ontario
Existing Agricultural Uses
Exhibit A

Identification	APN	Address	Acreage
1	11335102	1348 S GROVE AV	11.500
2	11336103	1550 S PARCO AV	7.231
3	11336104	1460 S PARCO AV	0.904
4	11336105	1442 S PARCO AV	0.454
5	11336106	1436 S PARCO AV	0.232
6	11336107	1410 S PARCO AV	5.518
7	11336116	1551 S GROVE AV	12.255
8	11336118	1405 S GROVE AV	11.642
9	11341421	1704 S VINEYARD AV	3.677
10	11343105	1160 S MILDRED AV	51.026
11	11351208	O E AIRPORT--OIA	8.524
12	11351210	O E AIRPORT --OIA	7.400
13	21019210	572 N TURNER AV	22.343
14	21121104	3000 E JURUPA ST	20.039
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68	011008107	1633 E HOLT BLVD	5.000
69	105144103	NW CORNER EUCLID AVE & RIVERSIDE DR	10.000
		Total	544 Acres

****** NOTICE OF HEARING ******

TO - ALL ACTIVE CHINO BASIN PARTIES, CASE NO. 164327

WHEN - JANUARY 5, 1979, 1:30 P.M.

WHERE - SAN BERNARDINO SUPERIOR COURT, DEPARTMENT 2
351 NORTH ARROWHEAD AVENUE, SAN BERNARDINO, CALIF.

WHAT - THE FOLLOWING ITEMS ARE FOR APPROVAL.

1. FIRST ANNUAL WATERMASTER REPORT.
2. 1977/78 PRODUCTION SUMMARY.
3. FORM OF LOCAL STORAGE AGREEMENT.
4. M.W.D. CYCLIC STORAGE AGREEMENT.
5. INTERVENTIONS AND ASSIGNMENTS.

YOUR PRESENCE AT THIS HEARING IS NOT REQUIRED, BUT YOUR ATTENDANCE IS WELCOME.

NOTE - FILING WITH THE DIVISION OF WATERRIGHTS IS NO LONGER NECESSARY, JUST RETURN THEIR FORMS INDICATING YOU REPORT TO THE CHINO BASIN WATERMASTER.

FRAN BROMMENSCHENKEL
987-1712

Exhibit A

DONALD D. STARK
A Professional Corporation
Suite 201 Airport Plaza
2061 Business Center Drive
Irvine, California 92715
Telephone: (714) 752-8971

CLAYSON, ROTHROCK & MANN
601 South Main Street
Corona, California 91720
Telephone: (714) 737-1910
Attorneys for Plaintiff

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

CHINO BASIN MUNICIPAL WATER DISTRICT, Plaintiff, v. CITY OF CHINO, et al. Defendants.	No. 164327 JUDGMENT

I. INTRODUCTION

1. Pleadings, Parties and Jurisdiction. The complaint herein was filed on January 2, 1975, seeking an adjudication of water rights, injunctive relief and the imposition of a physical solution. A first amended complaint was filed on July 16, 1976. The defaults of certain defendants have been entered, and certain other defendants dismissed. Other than defendants who have been dismissed or whose defaults have been entered, all defendants have appeared herein. By answers and order of this Court, the issues have been made those of a full inter se adjudication between the

parties. This Court has jurisdiction of the subject matter of this action and of the parties herein.

2. Stipulation For Judgment. Stipulation for entry of judgment has been filed by and on behalf of a majority of the parties, representing a majority of the quantitative rights herein adjudicated.

3. Trial; Findings and Conclusions. Trial was commenced on December 16, 1977, as to the non-stipulating parties, and findings of fact and conclusions of law have been entered disposing of the issues in the case.

4. Definitions. As used in this Judgment, the following terms shall have the meanings herein set forth:

(a) Active Parties. All parties other than those who have filed with Watermaster a written waiver of service of notices, pursuant to Paragraph 58.

(b) Annual or Year -- A fiscal year, July 1 through June 30, following, unless the context shall clearly indicate a contrary meaning.

(c) Appropriative Right -- The annual production right of a producer from the Chino Basin other than pursuant to an overlying right.

(d) Basin Water -- Ground water within Chino Basin which is part of the Safe Yield, Operating Safe Yield, or replenishment water in the Basin as a result of operations under the Physical Solution decreed herein. Said term does not include Stored Water.

(e) CBMWD -- Plaintiff Chino Basin Municipal Water District.

(f) Chino Basin or Basin -- The ground water basin underlying the area shown as such on Exhibit "B" and within the boundaries described in Exhibit "K".

(g) Chino Basin Watershed -- The surface drainage area tributary to and overlying Chino Basin.

(h) Ground Water -- Water beneath the surface of the ground and within the zone of saturation, i.e., below the existing water table.

(i) Ground Water Basin -- An area underlain by one or more permeable formations capable of furnishing substantial water storage.

(j) Minimal Producer -- Any producer whose production does not exceed five acre-feet per year.

(k) MWD -- The Metropolitan Water District of Southern California.

(l) Operating Safe Yield -- The annual amount of ground water which Watermaster shall determine, pursuant to criteria specified in Exhibit "I", can be produced from Chino Basin by the Appropriative Pool parties free of replenishment obligation under the Physical Solution herein.

(m) Overdraft -- A condition wherein the total annual production from the Basin exceeds the Safe Yield thereof.

(n) Overlying Right -- The appurtenant right of an owner of lands overlying Chino Basin to produce water from the Basin for overlying beneficial use on such lands.

(o) Person. Any individual, partnership, association, corporation, governmental entity or agency, or other organization.

(p) PVMWD -- Defendant Pomona Valley Municipal Water District.

(q) Produce or Produced -- To pump or extract ground water from Chino Basin.

(r) Producer -- Any person who produces water from Chino Basin.

(s) Production -- Annual quantity, stated in acre feet, of water produced.

(t) Public Hearing -- A hearing after notice to all parties and to any other person legally entitled to notice.

(u) Reclaimed Water -- Water which, as a result of processing of waste water, is suitable for a controlled use.

(v) Replenishment Water -- Supplemental water used to recharge the Basin pursuant to the Physical Solution, either directly by percolating 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.

(w) Responsible Party -- The owner, co-owner, lessee or other person designated by multiple parties interested in a well as the person responsible for purposes of filing reports hereunder.

(x) Safe Yield -- The long-term average annual quantity of ground water (excluding replenishment or stored water but including return flow to the Basin from use of replenishment or stored water) which can be produced from the Basin under cultural conditions of a particular year without causing an undesirable result.

(y) SBVMWD -- San Bernardino Valley Municipal Water

District.

(z) State Water -- Supplemental Water imported through the State Water Resources Development System, pursuant to Chapter 8, Division 6, Part 6 of the Water Code.

(aa) Stored Water -- Supplemental water held in storage, as a result of direct spreading, in lieu delivery, or otherwise, for subsequent withdrawal and use pursuant to agreement with Watermaster.

(bb) Supplemental Water -- Includes both water imported to Chino Basin from outside Chino Basin Watershed, and reclaimed water.

(cc) WMWD --Defendant Western Municipal Water District of Riverside County.

5. List of Exhibits. The following exhibits are attached to this Judgment and made a part hereof:

"A" -- "Location Map of Chino Basin" showing boundaries of Chino Basin Municipal Water District, and other geographic and political features.

"B" -- "Hydrologic Map of Chino Basin" showing hydrologic features of Chino Basin.

"C" -- Table Showing Parties in Overlying (Agricultural) Pool.

"D" -- Table Showing Parties in Overlying (Non-agricultural Pool and Their Rights.

"E" -- Table Showing Appropriators and Their Rights.

"F" -- Overlying (Agricultural) Pool Pooling Plan.

"G" -- Overlying (Non-agricultural) Pool Pooling Plan.

"H" -- Appropriative Pool Pooling Plan.

"I" -- Engineering Appendix.

"J" -- Map of In Lieu Area No. 1.

"K" -- Legal Description of Chino Basin.

II. DECLARATION OF RIGHTS

A. HYDROLOGY

6. Safe Yield. The Safe Yield of Chino Basin is 140,000 acre feet per year.

7. Overdraft and Prescriptive Circumstances. In each year for a period in excess of five years prior to filing of the First Amended Complaint herein, the Safe Yield of the Basin has been exceeded by the annual production therefrom, and Chino Basin is and has been for more than five years in a continuous state of overdraft. The production constituting said overdraft has been open, notorious, continuous, adverse, hostile and under claim of right. The circumstances of said overdraft have given notice to all parties of the adverse nature of such aggregate over-production.

B. WATER RIGHTS IN SAFE YIELD

8. Overlying Rights. The parties listed in Exhibits "C" and "D" are the owners or in possession of lands which overlie Chino Basin. As such, said parties have exercised overlying water rights in Chino Basin. All overlying rights owned or exercised by parties listed in Exhibits "C" and "D" have, in the aggregate, been limited by prescription except to the extent such rights have been preserved by self-help by said parties. Aggregate preserved overlying rights in the Safe Yield for agricultural pool use, including the rights of the State of California, total 82,800 acre feet per year. Overlying rights for non-agricultural pool use

total 7,366 acre feet per year and are individually decreed for each affected party in Exhibit "D". No portion of the Safe Yield of Chino Basin exists to satisfy unexercised overlying rights, and such rights have all been lost by prescription. However, uses may be made of Basin Water on overlying lands which have no preserved overlying rights pursuant to the Physical Solution herein. All overlying rights are appurtenant to the land and cannot be assigned or conveyed separate or apart therefrom.

9. Appropriative Rights. The parties listed in Exhibit "E" are the owners of appropriative rights, including rights by prescription, in the unadjusted amounts therein set forth, and by reason thereof are entitled under the Physical Solution to share in the remaining Safe Yield, after satisfaction of overlying rights and rights of the State of California, and in the Operating Safe Yield in Chino Basin, in the annual shares set forth in Exhibit "E".

(a) Loss of Priorities. By reason of the long continued overdraft in Chino Basin, and in light of the complexity of determining appropriative priorities and the need for conserving and making maximum beneficial use of the water resources of the State, each and all of the parties listed in Exhibit "E" are estopped and barred from asserting special priorities or preferences, inter se. All of said appropriative rights are accordingly deemed and considered of equal priority.

(b) Nature and Quantity. All rights listed in Exhibit "E" are appropriative and prescriptive in nature. By reason of the status of the parties, and the provisions of Section

1007 of the Civil Code, said rights are immune from reduction or limitation by prescription.

10. Rights of the State of California. The State of California, by and through its Department of Corrections, Youth Authority and Department of Fish and Game, is a significant producer of ground water from and the State is the largest owner of land overlying Chino Basin. The precise nature and scope of the claims and rights of the State need not be, and are not, defined herein. The State, through said departments, has accepted the Physical Solution herein decreed, in the interests of implementing The mandate of Section 2 of Article X of the California Constitution. For all purposes of this Judgment, all future production by the State or its departments or agencies for overlying use on State-owned lands shall be considered as agricultural pool use.

C. RIGHTS TO AVAILABLE GROUND WATER STORAGE CAPACITY

11. Available Ground Water Storage Capacity. There exists in Chino Basin a substantial amount of available ground water storage capacity which is not utilized for storage or regulation of Basin Waters. Said reservoir capacity can appropriately be utilized for storage and conjunctive use of supplemental water with Basin Waters. It is essential that said reservoir capacity utilization for storage and conjunctive use of supplemental water be undertaken only under Watermaster control and regulation, in order to protect the integrity of both such Stored Water and Basin Water in storage and the Safe Yield of Chino Basin.

12. Utilization of Available Ground Water Capacity. Any person or public entity, whether a party to this action or not, may make reasonable beneficial use of the available ground water

storage capacity of Chino Basin for storage of supplemental water; provided that no such use shall be made except pursuant to written agreement with Watermaster, as authorized by Paragraph 28. In the allocation of such storage capacity, the needs and requirements of lands overlying Chino Basin and the owners of rights in the Safe Yield or Operating Safe Yield of the Basin shall have priority and preference over storage for export.

III. INJUNCTION

13. Injunction Against Unauthorized Production of Basin Water. Each party in each of the respective pools is enjoined, as follows:

(a) Overlying (Agricultural) Pool. Each party in the Overlying (Agricultural) Pool, its officers, agents, employees, successors and assigns, is and they each are ENJOINED AND RESTRAINED from producing ground water from Chino Basin in any year hereafter in excess of such party's correlative share of the aggregate of 82,800 acre feet allocated to said Pool, except pursuant to the Physical Solution or a storage water agreement.

(b) Overlying (Non-Agricultural) Pool. Each party in the Overlying (Non-agricultural) Pool, its officers, agents, employees, successors and assigns, is and they each are ENJOINED AND RESTRAINED from producing ground water of Chino Basin in any year hereafter in excess of such party's decreed rights in the Safe Yield, except pursuant to the provisions of the Physical Solution or a storage water agreement.

(c) Appropriative Pool. Each party in the

Appropriative Pool, its officers, agents, employees, successors and assigns, is and they are each ENJOINED AND RESTRAINED from producing ground water of Chino Basin in any year hereafter in excess of such party's decreed share of Operating Safe Yield, except pursuant to the provisions of the Physical Solution or a storage water agreement.

14. Injunction Against Unauthorized Storage or Withdrawal of Stored Water. Each party, its officers, agents, employees, successors and assigns is and they each are ENJOINED AND RESTRAINED from storing supplemental water in Chino Basin for withdrawal, or causing withdrawal of, water stored by that party, except pursuant to the terms of a written agreement with Watermaster and in accordance with Watermaster regulations. Any supplemental water stored or recharged in the Basin, except pursuant to such a Water-master agreement, shall be deemed abandoned and not classified as Stored Water. This paragraph has no application, as such, to supplemental water spread or provided in lieu by Watermaster pur-suant to the Physical Solution.

IV. CONTINUING JURISDICTION

15. Continuing Jurisdiction. Full jurisdiction, power and authority are retained and reserved to the Court as to all matters contained in this judgment, except:

(a) The redetermination of Safe Yield, as set forth in Paragraph 6, during the first ten (10) years of operation of the Physical Solution;

(b) The allocation of Safe Yield as between the several pools as set forth in Paragraph 44 of the Physical Solution;

(c) The determination of specific quantitative rights and shares in the declared Safe Yield or Operating Safe Yield herein declared in Exhibits "D" and "E"; and

(d) The amendment or modification of Paragraphs 7 (a) and (b) of Exhibit "H", during the first ten (10) years of operation of the Physical Solution, and thereafter only upon affirmative recommendation of at least 67% of the voting power (determined pursuant to the formula described in Paragraph 3 of Exhibit "H"), but not less than one-third of the members of the Appropriative Pool Committee representatives of parties who produce water within CBMWD or WMWD; after said tenth year the formula set forth in said Paragraph 7 (a) and 7 (b) of Exhibit "H" for payment of the costs of replenishment water may be changed to 100% gross or net, or any percentage split thereof, but only in response to recommendation to the Court by affirmative vote of at least 67% of said voting power of the Appropriative Pool representatives of parties who produce ground water within CBMWD or WMWD, but not less than one-third of their number. In such event, the Court shall act in conformance with such recommendation unless there are compelling reasons to the contrary; and provided, further, that the fact that the allocation of Safe Yield or Operating Safe Yield shares may be rendered moot by a recommended change in the formula for replenishment assessments shall not be deemed to be such a "compelling reason."

Said continuing jurisdiction is provided for the purpose of enabling the Court, upon application of any party, the Watermaster, the Advisory Committee or any Pool Committee, by motion and, upon

at least 30 days' notice thereof, and after hearing thereon, to make such further or supplemental orders or directions as may be necessary or appropriate for interpretation, enforcement or carrying out of this Judgment, and to modify, amend or amplify any of the provisions of this Judgment.

V. WATERMASTER

A. APPOINTMENT

16. Watermaster Appointment. CBMWD, acting by and through a majority of its board of directors, is hereby appointed Watermaster, to administer and enforce the provisions of this Judgment and any subsequent instructions or orders of the Court hereunder. The term of appointment of Watermaster shall be for five (5) years. The Court will by subsequent orders provide for successive terms or for a successor Watermaster. Watermaster may be changed at any time by subsequent order of the Court, on its own motion, or on the motion of any party after notice and hearing. Unless there are compelling reasons to the contrary, the Court shall act in conformance with a motion requesting the Watermaster be changed if such motion is supported by a majority of the voting power of the Advisory Committee.

B. POWERS AND DUTIES

17. Powers and Duties. Subject to the continuing supervision and control of the Court, Watermaster shall have and may exercise the express powers, and shall perform the duties, as provided in this Judgment or hereafter ordered or authorized by the Court in the exercise of the Court's continuing jurisdiction.

18. Rules and Regulations. Upon recommendation by the

Advisory Committee, Watermaster shall make and adopt, after public hearing, appropriate rules and regulations for conduct of Watermaster affairs, including meeting schedules and procedures, and compensation of members of Watermaster at not to exceed $25 per member per meeting, or $300 per member per year, whichever is less, plus reasonable expenses related to activities within the Basin. Thereafter, Watermaster may amend said rules from time to time upon recommendation, or with approval of the Advisory Committee after hearing noticed to all active parties. A copy of said rules and regulations, and of any amendments thereof, shall be mailed to each active party.

19. Acquisition of Facilities. Watermaster may purchase, lease, acquire and hold all necessary facilities and equipment; provided, that it is not the intent of the Court that Watermaster acquire any interest in real property or substantial capital assets.

20. Employment of Experts and Agents. Watermaster may employ or retain such administrative, engineering, geologic, accounting, legal or other specialized personnel and consultants as may be deemed appropriate in the carrying out of its powers and shall require appropriate bonds from all officers and employees handling Watermaster funds. Watermaster shall maintain records for purposes of allocation of costs of such services as well as of all other expenses of Watermaster administration as between the several pools established by the Physical Solution.

21. Measuring Devices. Watermaster shall cause parties, pursuant to uniform rules, to install and maintain in good operating condition, at the cost of each party, such necessary measuring

devices or meters as Watermaster may deem appropriate. Such measuring devices shall be inspected and tested as deemed necessary by Watermaster, and the cost thereof shall constitute an expense of Watermaster.

22. Assessments. Watermaster is empowered to levy and collect all assessments provided for in the pooling plans and Physical Solution.

23. Investment of Funds. Watermaster may hold and invest any and all Watermaster funds in investments authorized from time to time for public agencies of the State of California.

24. Borrowing. Watermaster may borrow from time to time amounts not exceeding the annual anticipated receipts of Watermaster during such year.

25. Contracts. Watermaster may enter into contracts for the performance of any powers herein granted; provided, however, that Watermaster may not contract with or purchase materials, supplies or services from CBMWD, except upon the prior recommendation and approval of the Advisory Committee and pursuant to written order of the Court.

26. Cooperation With Other Agencies. Subject to prior recommendation or approval of the Advisory Committee, Watermaster may act jointly or cooperate with agencies of the United States and the State of California or any political subdivisions, municipalities or districts or any person to the end that the purpose of the Physical Solution may be fully and economically carried out.

27. Studies. Watermaster may, with concurrence of the Advisory Committee or affected Pool Committee and in accordance with Paragraph 54 (b), undertake relevant studies of hydrologic

conditions, both quantitative and qualitative, and operating aspects of implementation of the management program for Chino Basin.

28. Ground Water Storage Agreements. Watermaster shall adopt, with the approval of the Advisory Committee, uniformly applicable rules and a standard form of agreement for storage of supplemental water, pursuant to criteria therefore set forth in Exhibit "I". Upon appropriate application by any person, Watermaster shall enter into such a storage agreement; provided that all such storage agreements shall first be approved by written order of the Court, and shall by their terms preclude operations which will have a substantial adverse impact on other producers.

29. Accounting for Stored Water. Watermaster shall calculate additions, extractions and losses and maintain an annual account of all Stored Water in Chino Basin, and any losses of water supplies or Safe Yield of Chino Basin resulting from such Stored Water.

30. Annual Administrative Budget. Watermaster shall submit to Advisory Committee an administrative budget and recommendation for each fiscal year on or before March 1. The Advisory Committee shall review and submit said budget and their recommendations to Watermaster on or before April 1, following. Watermaster shall hold a public hearing on said budget at its April quarterly meeting and adopt the annual administrative budget which shall include the administrative items for each pool committee. The administrative budget shall set forth budgeted items in sufficient detail as necessary to make a proper allocation of the expense among the several pools, together with Watermaster's proposed allocation. The budget shall contain such additional comparative information

or explanation as the Advisory Committee may recommend from time to time. Expenditures within budgeted items may thereafter be made by Watermaster in the exercise of powers herein granted, as a matter of course. Any budget transfer in excess of 20% of a budget category during any budget year or modification of such administrative budget during any year shall be first submitted to the Advisory Committee for review and recommendation.

31. Review Procedures. All actions, decisions or rules of Watermaster shall be subject to review by the Court on its own motion or on timely motion by any party, the Watermaster (in the case of a mandated action), the Advisory Committee, or any Pool Committee, as follows:

(a) Effective Date of Watermaster Action. Any action, decision or rule of Watermaster shall be deemed to have occurred or been enacted on the date on which written notice thereof is mailed. Mailing of copies of approved Watermaster minutes to the active parties shall constitute such notice to all parties.

(b) Noticed Motion. Any party, the Watermaster (as to any mandated action), the Advisory Committee, or any Pool Committee may, by a regularly noticed motion, apply to the Court for review of any Watermaster's action, decision or rule. Notice of such motion shall be served personally or mailed to Watermaster and to all active parties. Unless otherwise ordered by the Court, such motion shall not operate to stay the effect of such Watermaster action, decision or rule.

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(c) Time for Motion. Notice of motion to review any Watermaster action, decision or rule shall be served and filed within ninety (90) days after such Watermaster action, decision or rule, except for budget actions, in which event said notice period shall be sixty (60) days.

(d) De Novo Nature of Proceedings. Upon the filing of any such motion, the Court shall require the moving party to notify the active parties, the Watermaster, the Advisory Committee, and each Pool Committee, of a date for taking evidence and argument, and on the date so designated shall review de novo the question at issue. Watermaster's findings or decision, if any, may be received in evidence at said hearing, but shall not constitute presumptive or prima facie proof of any fact in issue.

(e) Decision. The decision of the Court in such proceeding shall be an appealable supplemental order in this case. When the same is final, it shall be binding upon the Watermaster and all parties.

C. ADVISORY AND POOL COMMITTEES

32. Authorization. Watermaster is authorized and directed to cause committees of producer representatives to be organized to act as Pool Committees for each of the several pools created under the Physical Solution. Said Pool Committees shall, in turn, jointly form an Advisory Committee to assist Watermaster in performance of its functions under this judgment. Pool Committees shall be composed as specified in the respective pooling plans, and the Advisory Committee shall be composed of not to exceed ten (10) voting representatives from each pool, as designated by the

respective Pool Committee. WMWD, PVMWD and SBVMWD shall each be entitled to one non-voting representative on said Advisory Committee.

33. Term and Vacancies. Members of any Pool Committee, shall serve for the term, and vacancies shall be filled, as specified in the respective pooling plan. Members of the Advisory Committee shall serve at the will of their respective Pool Committee.

34. Voting Power. The voting power on each Pool Committee shall be allocated as provided in the respective pooling plan. The voting power on the Advisory Committee shall be one hundred (100) votes allocated among the three pools in proportion to the total assessments paid to Watermaster during the preceding year; provided, that the minimum voting power of each pool shall be

(a) Overlying (Agricultural) Pool 20,

(b) Overlying (Non-agricultural) Pool 5, and

(c) Appropriative Pool 20.

In the event any pool is reduced to its said minimum vote, the remaining votes shall be allocated between the remaining pools on said basis of assessments paid to Watermaster by each such remaining pool during the preceding year. The method of exercise of each pool's voting power on the Advisory Committee shall be as determined by the respective pool committees.

35. Quorum. A majority of the voting power of the Advisory Committee or any Pool Committee shall constitute a quorum for the transaction of affairs of such Advisory or Pool Committee; provided, that at least one representative of each Pool Committee shall be required to constitute a quorum of the Advisory Committee. No Pool Committee representative may purposely absent himself or

herself, without good cause, from an Advisory Committee meeting to deprive it of a quorum. Action by affirmative vote of a majority of the entire voting power of any Pool Committee or the Advisory Committee shall constitute action by such committee. Any action or recommendation of a Pool Committee or the Advisory Committee shall be transmitted to Watermaster in writing, together with a report of any dissenting vote or opinion.

36. Compensation. Pool or Advisory Committee members may receive compensation, to be established by the respective pooling plan, but not to exceed twenty-five dollars ($25.00) for each meeting of such Pool or Advisory Committee attended, and provided that no member of a Pool or Advisory Committee shall receive compensation of more than three hundred ($300.00) dollars for service on any such committee during any one year. All such compensation shall be a part of Watermaster administrative expense. No member of any Pool or Advisory Committee shall be employed by Watermaster or compensated by Watermaster for professional or other services rendered to such Pool or Advisory Committee or to Watermaster, other than the fee for attendance at meetings herein provided, plus reimbursement of reasonable expenses related to activities within the Basin.

37. Organization.

(a) Organizational Meeting. At its first meeting in each year, each Pool Committee and the Advisory Committee shall elect a chairperson and a vice chairperson from its membership. It shall also select a secretary, a treasurer and such assistant secretaries and treasurers as may be appropriate, any of whom may, but need not, be members of

such Pool or Advisory Committee.

(b) Regular Meetings. All Pool Committees and the Advisory Committee shall hold regular meetings at a place and time to be specified in the rules to be adopted by each Pool and Advisory Committee. Notice of regular meetings of any Pool or Advisory Committee, and of any change in time or place thereof, shall be mailed to all active parties in said pool or pools.

(c) Special Meetings. Special meetings of any Pool or Advisory Committee may be called at any time by the Chairperson or by any three (3) members of such Pool or Advisory Committee by delivering notice personally or by mail to each member of such Pool or Advisory Committee and to each active party at least 24 hours before the time of each such meeting in the case of personal delivery, and 96 hours in the case of mail. The calling notice shall specify the time and place of the special meeting and the business to be transacted. No other business shall be considered at such meeting.

(d) Minutes. Minutes of all Pool Committee, Advisory Committee and Watermaster meetings shall be kept at Watermaster's offices. Copies thereof shall be mailed or otherwise furnished to all active parties in the pool or pools concerned. Said copies of minutes shall constitute notice of any Pool or Advisory Committee action therein reported, and shall be available for inspection by any party.

(e) Adjournments. Any meeting of any Pool or Advisory Committee may be adjourned to a time and place specified in the order of adjournment. Less than a quorum may so adjourn

from time to time. A copy of the order or notice of adjournment shall be conspicuously posted forthwith on or near the door of the place where the meeting was held.

38. Powers and Functions. The powers and functions of the respective Pool Committees and the Advisory Committee shall be as follows:

(a) Pool Committees. Each Pool Committee shall have the power and responsibility for developing policy recommendations for administration of its particular pool, as created under the Physical Solution. All actions and recommendations of any Pool Committee which require Watermaster implementation shall first be noticed to the other two pools. If no objection is received in writing within thirty (30) days, such action or recommendation shall be transmitted directly to Watermaster for action. If any such objection is received, such action or recommendation shall be reported to the Advisory Committee before being transmitted to Watermaster.

(b) Advisory Committee. The Advisory Committee shall have the duty to study, and the power to recommend, review and act upon all discretionary determinations made or to be made hereunder by Watermaster.

[1] Committee Initiative. When any recommendation or advice of the Advisory Committee is received by Watermaster, action consistent therewith may be taken by Watermaster; provided, that any recommendation approved by 80 votes or more in the Advisory Committee shall constitute a mandate for action by Watermaster consistent therewith. If Watermaster is unwilling or unable to act

pursuant to recommendation or advice from the Advisory Committee (other than such mandatory recommendations), Watermaster shall hold a public hearing, which shall be followed by written findings and decision. Thereafter, Watermaster may act in accordance with said decision, whether consistent with or contrary to said Advisory Committee recommendation. Such action shall be subject to review by the Court, as in the case of all other Watermaster determinations.

[2]. Committee Review. In the event Watermaster proposes to take discretionary action, other than approval or disapproval of a Pool Committee action or recommendation properly transmitted, or execute any agreement not theretofore within the scope of an Advisory Committee recommendation, notice of such intended action shall be served on the Advisory Committee and its members at least thirty (30) days before the Watermaster meeting at which such action is finally authorized.

(c) Review of Watermaster Actions. Watermaster (as to mandated action), the Advisory Committee or any Pool Committee shall be entitled to employ counsel and expert assistance in the event Watermaster or such Pool or Advisory Committee seeks Court review of any Watermaster action or failure to act. The cost of such counsel and expert assistance shall be Water-master expense to be allocated to the affected pool or pools.

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VI. PHYSICAL SOLUTION

A. GENERAL

39. Purpose and Objective. Pursuant to the mandate of Section 2 of Article X of the California Constitution, the Court hereby adopts and orders the parties to comply with a Physical Solution. The purpose of these provisions is to establish a legal and practical means for making the maximum reasonable beneficial use of the waters of 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 dependent upon Chino Basin.

40. Need for Flexibility. It is essential that this Physical solution provide maximum flexibility and adaptability in order that Watermaster and the Court may be free to use existing and future technological, social, institutional and economic options, in order to maximize beneficial use of the waters of Chino Basin. To that end, the Court's retained jurisdiction will be utilized, where appropriate, to supplement the discretion herein granted to the Watermaster.

41. Watermaster Control. Watermaster, with the advice of the Advisory and Pool Committees, is granted discretionary powers in order to develop an optimum basin management program for Chino Basin, including both water quantity and quality considerations. Withdrawals and supplemental water replenishment of Basin Water, and the full utilization of the water resources of Chino Basin, must be subject to procedures established by and administered through Watermaster with the advice and assistance of the Advisory and Pool Committees composed of the affected producers. Both the

quantity and quality of said water resources may thereby be preserved and the beneficial utilization of the Basin maximized.

42. General Pattern of Operations. It is contemplated that the rights herein decreed will be divided into three (3) operating pools for purposes of Watermaster administration. A fundamental premise of the Physical Solution is that all water users dependent upon Chino Basin will be allowed to pump sufficient waters from the Basin to meet their requirements. To the extent that pumping exceeds the share of the Safe Yield assigned to the Overlying Pools, or the Operating Safe Yield in the case of the Appropriative Pool, each pool will provide funds to enable Watermaster to replace such overproduction. The method of assessment in each pool shall be as set forth in the applicable pooling plan.

B. POOLING

43. Multiple Pools Established. There are hereby established three (3) pools for Watermaster administration of, and for the allocation of responsibility for, and payment of, costs of replenishment water and other aspects of this Physical Solution.

(a) Overlying (Agricultural) Pool. The first pool shall consist of the State of California and all overlying producers who produce water for other than industrial or commercial purposes. The initial members of the pool are listed in Exhibit "C".

(b) Overlying (Non-agricultural) Pool. The second pool shall consist of overlying producers who produce water for industrial or commercial purposes. The initial members of this pool are listed in Exhibit "D".

(c) Appropriative Pool. A third and separate pool shall

consist of owners of appropriative rights. The initial members of the pool are listed in Exhibit "E".

Any party who changes the character of his use may, by subsequent order of the Court, be reassigned to the proper pool; but the allocation of Safe Yield under Paragraph 44 hereof shall not be changed. Any non-party producer or any person who may hereafter commence production of water from Chino Basin, and who may become a party to this physical solution by intervention, shall be assigned to the proper pool by the order of the Court authorizing such intervention.

44. Determination and Allocation of Rights to Safe Yield of Chino Basin. The declared Safe Yield of Chino Basin is hereby allocated as follows:

Pool	Allocation
Overlying (Agricultural) Pool	414,000 acre feet in any five (5) consecutive years.
Overlying (Non-agricultural) Pool.	7,366 acre feet per year.
Appropriative Pool	49,834 acre feet per year.

The foregoing acre foot allocations to the overlying pools are fixed. Any subsequent change in the Safe Yield shall be debited or credited to the Appropriative Pool. Basin Water available to the Appropriative Pool without replenishment obligation may vary from year to year as the Operating Safe Yield is determined by Watermaster pursuant to the criteria set forth in Exhibit "I".

45. Annual Replenishment. 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 that

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.

46. Initial Pooling Plans. The initial pooling plans, which are hereby adopted, are set forth in Exhibits "F", "G" and "H", respectively. Unless and until modified by amendment of the judgment pursuant to the Court's continuing jurisdiction, each such plan shall control operation of the subject pool.

C. REPORTS AND ACCOUNTING

47. Production Reports. Each party or responsible party shall file periodically with Watermaster, pursuant to Watermaster rules, a report on a form to be prescribed by Watermaster showing the total production of such party during the preceding reportage period, and such additional information as Watermaster may require, including any information specified by the affected Pool Committee.

48. Watermaster Report and Accounting. Watermaster's annual report, which shall be filed on or before November 15 of each year and shall apply to the preceding year's operation, shall contain details as to operation of each of the pools and a certified audit of all assessments and expenditures pursuant to this Physical Solution and a review of Watermaster activities.

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D. REPLENISHMENT

49. Sources of Supplemental Water. Supplemental water may be obtained by Watermaster from any available source. Watermaster shall seek to obtain the best available quality of supplemental water at the most reasonable cost for recharge in the Basin. To the extent that costs of replenishment water may vary between pools, each pool shall be liable only for the costs attributable to its required replenishment. Available sources may include, but are not limited to:

(a) Reclaimed Water. There exist a series of agreements generally denominated the Regional Waste Water Agreements between CBMWD and owners of the major municipal sewer systems within the basin. Under those agreements, which are recognized hereby but shall be unaffected and unimpaired by this judgment, substantial quantities of reclaimed water may be made available for replenishment purposes. There are additional sources of reclaimed water which are, or may become, available to Watermaster for said purposes. Maximum beneficial use of reclaimed water shall be given high priority by Watermaster.

(b) State Water. State water constitutes a major available supply of supplemental water. In the case of State Water, Watermaster purchases shall comply with the water service provisions of the State's water service contracts. More specifically, Watermaster shall purchase State Water from MWD for replenishment of excess production within CBMWD, WMWD and PVMWD, and from SBVMWD to replenish excess production within SBVMWD's boundaries in Chino Basin, except to the

extent that MWD and SBVMWD give their consent as required by such State water service contracts.

(c) Local Import. There exists facilities and methods for importation of surface and ground water supplies from adjacent basins and watersheds.

(d) Colorado River Supplies. MWD has water supplies available from its Colorado River Aqueduct.

50. Methods of Replenishment. Watermaster may accomplish replenishment of overproduction from the Basin by any reasonable method, including:

(a) Spreading and percolation or Injection of water in existing or new facilities, subject to the provisions of Paragraphs 19, 25 and 26 hereof.

(b) In Lieu Procedures. Watermaster may make, or cause to be made, deliveries of water for direct surface use, in lieu of ground water production.

E. REVENUES

51. Production Assessment. Production assessments, on whatever basis, may be levied by Watermaster pursuant to the pooling plan adopted for the applicable pool.

52. Minimal Producers. Minimal Producers shall be exempted from payment of production assessments, upon filing of production reports as provided in Paragraph 47 of this Judgment, and payment of an annual five dollar ($5.00) administrative fee as specified by Watermaster rules.

53. Assessment Proceeds -- Purposes. Watermaster shall have the power to levy assessments against the parties (other than minimal pumpers) based upon production during the preceding period

of assessable production, whether quarterly, semi-annually or annually, as may be determined most practical by Watermaster or the affected Pool Committee.

54. Administrative Expenses. The expenses of administration of this Physical Solution shall be categorized as either (a) general Watermaster administrative expense, or (b) special project expense.

(a) General Watermaster Administrative Expense shall include office rental, general personnel expense, supplies and office equipment, and related incidental expense and general overhead.

(b) Special Project Expense shall consist of special engineering, economic or other studies, litigation expense, meter testing or other major operating expenses. Each such project shall be assigned a Task Order number and shall be separately budgeted and accounted for.

General Watermaster administrative expense shall be allocated and assessed against the respective pools based upon allocations made by the Watermaster, who shall make such allocations based upon generally accepted cost accounting methods. Special Project Expense shall be allocated to a specific pool, or any portion there of, only upon the basis of prior express assent and finding of benefit by the Pool Committee, or pursuant to written order of the Court.

55. Assessments -- Procedure. Assessments herein provided for shall be levied and collected as follows:

(a) Notice of Assessment. Watermaster shall give written notice of all applicable assessments to each party on

or before ninety (90) days after the end of the production period to which such assessment is applicable.

(b) Payment. Each assessment shall be payable on or before thirty (30) days after notice, and shall be the obligation of the party or successor owning the water production facility at the time written notice of assessment is given, unless prior arrangement for payment by others has been made in writing and filed with Watermaster.

(c) Delinquency. Any delinquent assessment shall bear interest at 10% per annum (or such greater rate as shall equal the average current cost of borrowed funds to the Watermaster) from the due date thereof. Such delinquent assessment and interest may be collected in a show-cause proceeding herein instituted by the Watermaster, in which case the Court may allow Watermaster its reasonable costs of collection, including attorney's fees.

56. Accumulation of Replenishment Water Assessment Proceeds. In order to minimize fluctuation in assessment and to give Watermaster flexibility in purchase and spreading of replenishment water, Watermaster may make reasonable accumulations of replenishment water assessment proceeds. Interest earned on such retained funds shall be added to the account of the pool from which the funds were collected and shall be applied only to the purchase of replenishment water.

57. Effective Date. The effective date for accounting and operation under this Physical Solution shall be July 1, 1977, and the first production assessments hereunder shall be due after July 1, 1978. Watermaster shall, however, require installation of

meters or measuring devices and establish operating procedures immediately, and the cost of such Watermaster activity (not including the cost of such meters and measuring devices) may be recovered in the first administrative assessment in 1978.

VII. MISCELLANEOUS PROVISIONS

58. Designation of Address for Notice and Service. Each party shall designate the name and address to be used for purposes of all subsequent notices and service herein, either by its endorsement on the Stipulation for Judgment or by a separate designation to be filed within thirty (30) days after Judgment has been served. Said designation may be changed from time to time by filing a written notice of such change with the Watermaster. Any party desiring to be relieved of receiving notices of Watermaster or committee activity may file a waiver of notice on a form to be provided by Watermaster. Thereafter such party shall be removed from the Active Party list. Watermaster shall maintain at all times a current list of all active parties and their addresses for purposes of service. Watermaster shall also maintain a full current list of names and addresses of all parties or their successors, as filed herein. Copies of such lists shall be available, without cost, to any party, the Advisory Committee or any Pool Committee upon written request therefor.

59. Service of Documents. Delivery to or service upon any party or active party by the Watermaster, by any other party, or by the Court, of any item required to be served upon or delivered to such party or active party under or pursuant to the Judgment shall be made personally or by deposit in the United States mail, first

class, postage prepaid, addressed to the designee and at the address in the latest designation filed by such party or active party.

60. Intervention After Judgment. Any non-party assignee of the adjudicated appropriative rights of any appropriator, or any other person newly proposing to produce water from Chino Basin, may become a party to this judgment upon filing a petition in intervention. Said intervention must be confirmed by order of this Court. Such intervenor shall thereafter be a party bound by this judgment and entitled to the rights and privileges accorded under the Physical Solution herein, through the pool to which the Court shall assign such intervenor.

61. Loss of Rights. Loss, whether by abandonment, forfeiture or otherwise, of any right herein adjudicated shall be accomplished only (1) by a written election by the owner of the right filed with Watermaster, or (2) by order of the Court upon noticed motion and after hearing.

62. Scope of Judgment. Nothing in this Judgment shall be deemed to preclude or limit any party in the assertion against a neighboring party of any cause of action now existing or hereafter arising based upon injury, damage or depletion of water supply available to such party, proximately caused by nearby pumping which constitutes an unreasonable interference with such complaining party's ability to extract ground water.

63. Judgment Binding on Successors. This Judgment and all provisions thereof are applicable to and binding upon not only the parties to this action, but also upon their respective heirs, executors, administrators, successors, assigns, lessees and

licensees and upon the agents, employees and attorneys in fact of all such persons.

64. Costs. No party shall recover any costs in this proceeding from any other party.

Dated: 1/27/78.

/s/ Howard B. Wiener

Judge

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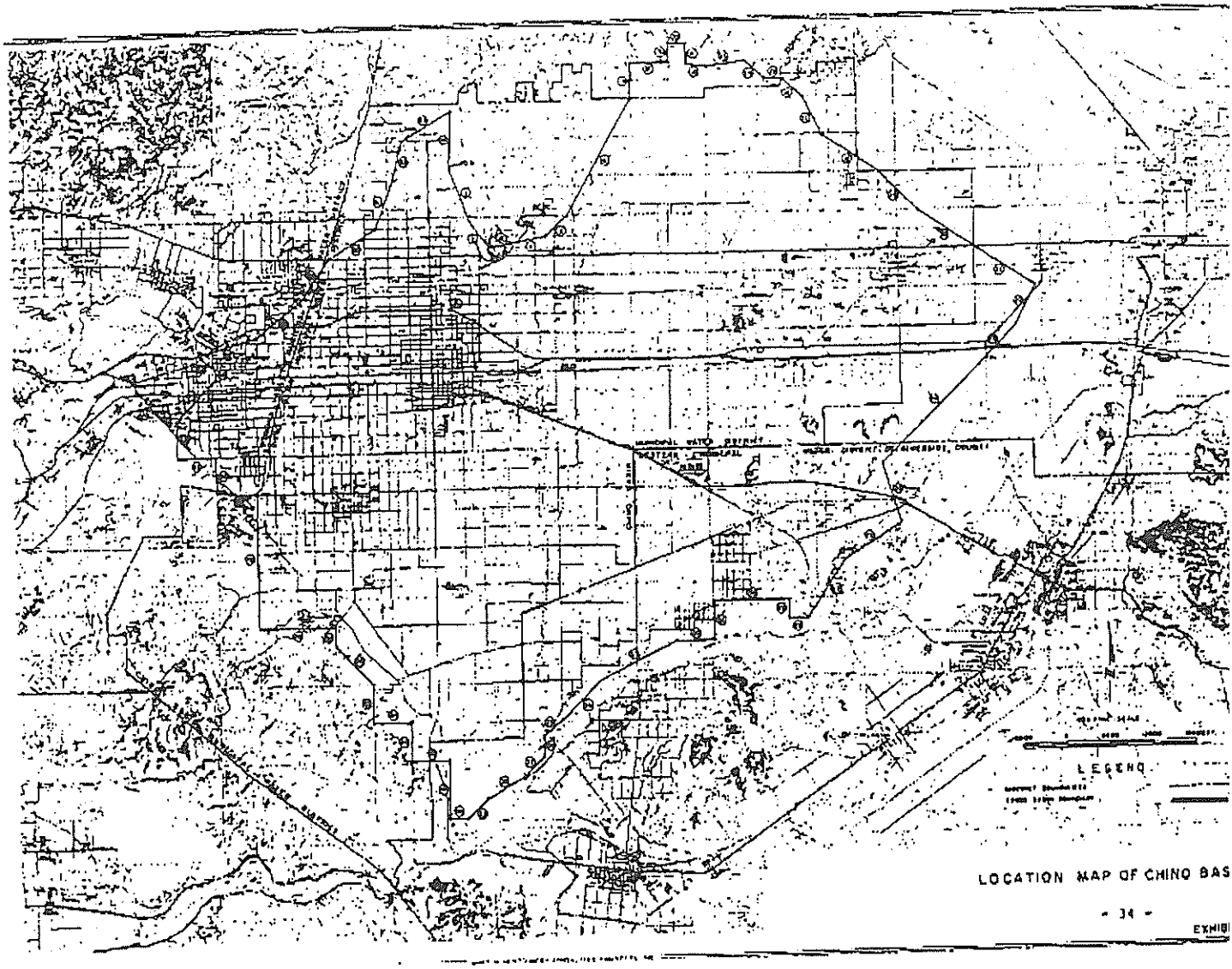
Attorneys for Plaintiff

SUPERIOR COURT OF THE STATE OF CALIFORNIA

FOR THE COUNTY OF SAN BERNARDINO

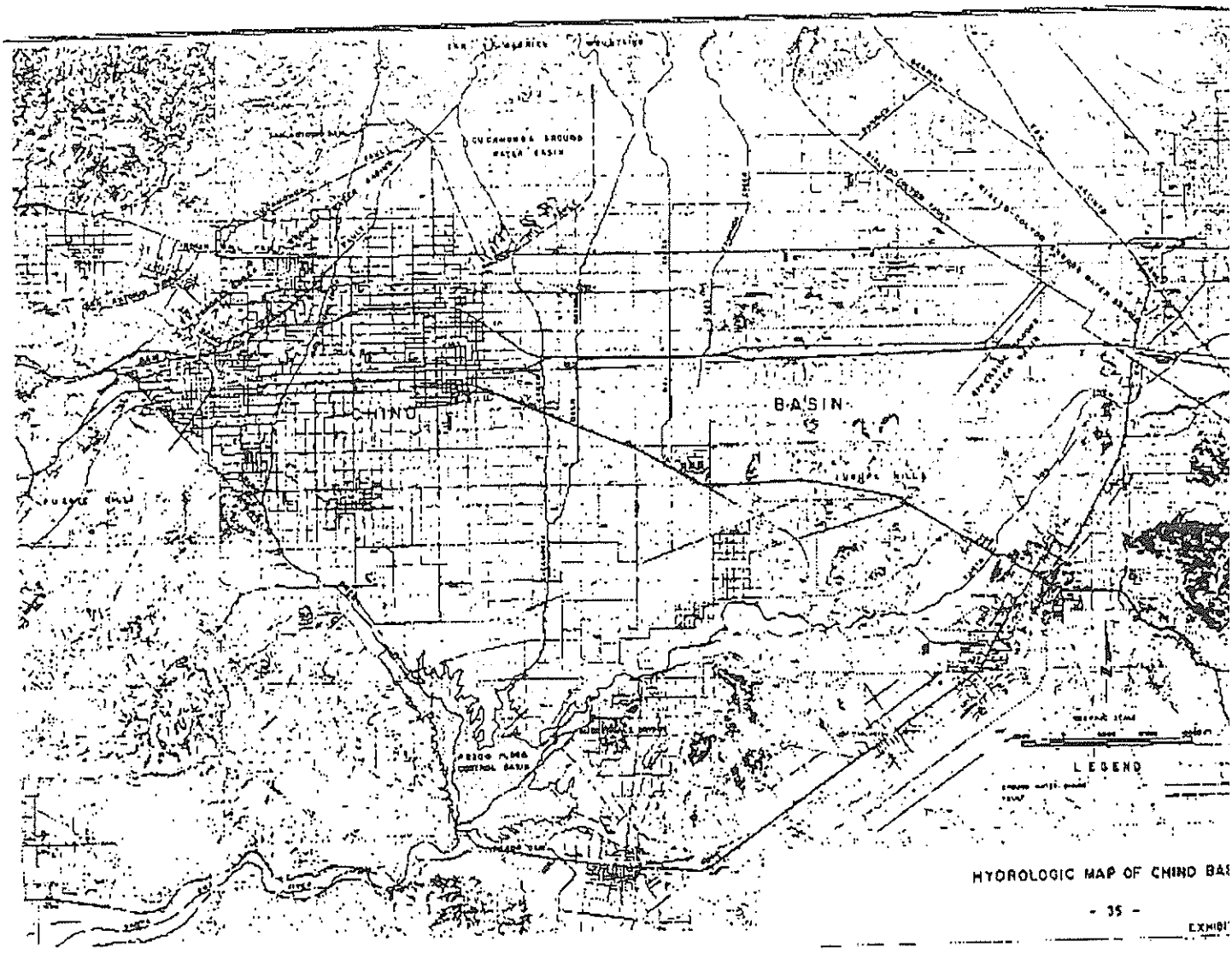
CHINO BASIN MUNICIPAL WATER DISTRICT, Plaintiff, v. CITY OF CHINO, et al. Defendants.	)	No. 164327

JUDGMENT



LOCATION MAP OF CHINO BAS

EXHIB



HYDROLOGIC MAP OF CHINO BAS

EXHIBI

STIPULATING OVERLYING AGRICULTURAL PRODUCERS

STATE OF CALIFORNIA
COUNTY OF SAN BERNARDINO
Abacherli, Dairy, Inc.
Abacherli, Frank
Abacherli, Shirley
Abbona, Anna
Abbona, James
Abbona, Jim
Abbona, Mary
Agliani, Amelia H.
Agman, Inc.
Aguerre, Louis B.
Ahmanson Trust Co.
Akiyama, Shizuye
Akiyama, Tomoo
Akkerman, Dave
Albers, J.N.
Albers, Nellie
Alewyn, Jake J.
Alewyn, Normalee
Alger, Mary D.
Alger, Raymond
Allen, Ben F.
Allen, Jane F.
Alta-Dena Dairy
Anderson Farms
Anguiano, Sarah L.S.
Anker, Gus
Aphessetche, Xavier
Arena Mutual Water Assn.
Armstrong Nurseries, Inc.
Arretche, Frank
Arretche, Jean Pierre
Arvidson, Clarence F.
Arvidson, Florence
Ashley, George W.
Ashley, Pearl E.
Atlas Farms
Atlas Ornamental Iron Works, Inc.
Aukeman, Carol
Aukeman, Lewis
Ayers, Kenneth C., aka
Kelley Ayers
Bachoc, Raymond
Baldwin, Edgar A.
Baldwin, Lester
Banbury, Carolyn
Bangma Dairy
Bangma, Arthur
Bangma, Ida
Bangma, Martin
Bangma, Sam
Barba, Anthony B.
Barba, Frank
Barcellos, Joseph
Barnhill, Maurine W.

EXHIBIT "C"

Barnhill, Paul

Bartel, Dale

Bartel, Ursula

Bartel, Willard

Barthelemy, Henry

Barthelemy, Roland

Bassler, Donald V., M.D.

Bates, Lowell R.

Bates, Mildred L.

Beahm, James W.

Beahm, Joan M.

Bekendam, Hank

Bekendam, Pete

Bello, Eugene

Bello, Olga

Beltman, Evelyn

Beltman, Tony

Bergquist Properties, Inc.

Bevacqua, Joel A.

Bevacqua, Marie B.

Bidart, Bernard

Bidart, Michael J.

Binnell, Wesley

Black, Patricia E.

Black, Victor

Bodger, John & Sons Co.

Boer, Adrian

Boersma and Wind Dairy

Boersma, Angie

Boersma, Berdina

Boersma, Frank

Boersma, Harry

Boersma, Paul

Boersma, Sam

Boersma, William L.

Bohlander & Holmes, Inc.

Bokma, Peter

Bollema, Jacob

Boonstoo, Edward

Bootsma, Jim

Borba, Dolene

Borba, Dolores

Borba, Emily

Borba, George

Borba, John

Borba, John & Sons

Borba, John Jr.

Borba, Joseph A.

Borba, Karen E.

Borba, Karen M.

Borba, Pete, Estate of

Borba, Ricci

Borba, Steve

Borba, Tom

Bordisso, Alleck

Borges, Angelica M.

EXHIBIT "C"

Borges, Bernadette

Borges, John O.

Borges, Linda L.

Borges, Manual Jr.

Borges, Tony

Bos, Aleid

Bos, Gerrit

Bos, John

Bos, John

Bos, Margaret

Bos, Mary

Bos, Mary Beth

Bos, Tony

Bosch, Henrietta

Bosch, Peter T.

Boschma, Betty

Boschma, Frank

Boschma, Greta

Boschma, Henry

Bosma, Dick

Bosma, Florence G.

Bosma, Gerrit

Bosma, Jacob J.

Bosma, Jeanette Thea

Bosman, Frank

Bosman, Nellie

Bosnyak, Goldie M.

Bosnyak, Martin

Bothof, Roger W.

Bouma, Cornie

Bouma, Emma

Bouma, Henry P.

Bouma, Martin

Bouma, Peter G. & Sons Dairy

Bouma, Ted

Bouman, Helen

Bouman, Sam

Bower, Mabel E.

Boys Republic

Breedyk, Arie

Breedyk, Jessie

Briano Brothers

Briano, Albert

Briano, Albert Trustee for
Briano, Albert Frank

Briano, Lena

Brink, Russell N.

Brinkerhoff, Margaret

Brinkerhoff, Robert L.

Britschgi, Florence

Britschgi, Magdalena Garetto

Britschgi, Walter P.

Brommer, Marvin

Brookside Enterprizes, dba
Brookside Vineyard Co.

Brothers Three Dairy

EXHIBIT "C"

Brown, Eugene

Brun, Martha M.

Brun, Peter Robert

Buma, Duke

Buma, Martha

Bunse, Nancy

Bunse, Ronnie L.

Caballero, Bonnie L.

Caballero, Richard F.

Cable Airport Inc.

Cadlini, Donald

Cadlini, Jesse R.

Cadlini, Marie Edna

Cambio, Anna

Cambio, Charles, Estate of

Cambio, William V.

Cardoza, Florence

Cardoza, Olivi

Cardoza, Tony

Carnesi, Tom

Carver, Robt M., Trustee

Cauffman, John R.

Chacon Bros.

Chancon, Elvera P.

Chacon, Joe M.

Chacon, Robert M.

Chacon, Virginia L.

Chez, Joseph C.

Chino Corona Investment

Chino Water Co.

Christensen, Leslie

Christensen, Richard G.

Christian, Ada R.

Christian, Harold F.

Christy, Ella J.

Christy, Ronald S.

Cihigoyenetche, Jean

Cihigoyenetche, Leona

Cihigoyenetche, Martin

Clarke, Arthur B.

Clarke, Nancy L.

Clarke, Phyllis J.

Coelho, Isabel

Coelho, Joe A. Jr.

Collins, Howard E.

Collins, Judith F.

Collinsworth, Ester L.

Collinsworth, John E.

Collinsworth, Shelby

Cone Estate (05-2-00648/649)

Consolidated Freightways Corp.
of Delaware

Corona Farms Co.

Corra, Rose

Costa, Dimas S.

Costa, Laura

EXHIBIT "C"

Costa, Myrtle

Costamagna, Antonio

Costamagna, Joseph

Cousyn, Claus B.

Cramer, Carole F.

Cramer, William R.

Crossroads Auto Dismantlers, Inc.

Crouse, Beatrice I.

Crouse, Roger

Crowley, Juanita C.

Crowley, Ralph

Cucamonga Vintners

D'Astici, Teresa

Da Costa, Cecilia B.

Da Costa, Joaquim F.

Daloisio, Norman

De Berard Bros.

De Berard, Arthur, Trustee

De Berard, Charles

De Berard, Chas., Trustee

De Berard, Helan J.

De Berard, Robert

De Berard, Robert Trustee

De Bie, Adrian

De Bie, Henry

De Bie, Margaret M.

De Bie, Marvin

De Boer, Fred

De Boer, L.H.

De Boer, Sidney

De Bos, Andrew

De Graaf, Anna Mae

De Graaf, Gerrit

De Groot, Dick

De Groot, Dorothy

De Groot, Ernest

De Groot, Henrietta

De Groot, Jake

De Groot, Pete Jr.

De Haan, Bernadena

De Haan, Henry

De Hoog, Adriana

De Hoog, Joe

De Hoog, Martin

De Hoog, Martin L.

De Hoog, Mitch

De Hoog, Tryntje

De Jager, Cobi

De Jager, Edward D.

De Jong Brothers Dairy

De Jong, Cornelis

De Jong, Cornelius

De Jong, Grace

De Jong, Jake

De Jong, Lena

De Leeuw, Alice

EXHIBIT "C"

De Leeuw, Sam

De Soete, Agnes

De Soete, Andre

De Vries, Abraham

De Vries, Case

De Vries, Dick

De Vries, Evelyn

De Vries, Henry, Estate of

De Vries, Hermina

De Vries, Jack H.

De Vries, Jane

De Vries, Janice

De Vries, John

De Vries, John J.

De Vries, Neil

De Vries, Ruth

De Vries, Theresa

De Wit, Gladys

De Wit, Peter S.

De Wyn, Evert

De Zoete, Hattie V.

Do Zoete, Leo A.

Decker, Hallie

Decker, Henry A.

Demmer, Ernest

Di Carlo, Marie

Di Carlo, Victor

Di Tommaso, Frank

Dirkse, Catherine

Dirkse, Charles C.

Dixon, Charles E.

Dixon, Geraldine A.

Doesberg, Hendrica

Doesburg, Theodorus, P.

Dolan, Marion

Dolan, Michael H.

Dominguez, Helen

Dominguez, Manual

Donkers, Henry A.

Donkers, Nellie G.

Dotta Bros.

Douma Brothers Dairy

Douma, Betty A.

Douma, Fred A.

Douma, Hendrika

Douma, Herman G.

Douma, Narleen J.

Douma, Phillip M.

Dow Chemical Co.

Dragt, Rheta

Dragt, William

Driftwood Dairy Farm

Droogh, Case

Duhalde, Marian

Duhalde, Lauren

Duits, Henrietta

EXHIBIT "C"

Duits, John

Dunlap, Edna Kraemer,
Estate of

Durrington, Glen

Durrington, William F.

Dusi, John Sr.

Dykstra, Dick

Dykstra, John

Dykstra, John & Sons

Dykstra, Wilma

Dyt, Cor

Dyt, Johanna

E and S Grape Growers

Eaton, Thomas, Estate of

Echeverria, Juan

Echeverria, Carlos

Echeverria, Pablo

Eilers, E. Myrle

Eilers, Henry W.

El Prado Golf Course

Ellsworth, Rex C.

Engelsma, Jake

Engelsma, Susan

Escojeda, Henry

Etiwanda Grape Products Co.

Euclid Ave. Investment One

Euclid Ave. Investment Four

Euclid Ave. Three Investment

Excelsior Farms

F.D.I.C.

Fagundes, Frank M.

Fagundes, Mary

Fernandes, Joseph Jr.

Fernandes, Velma C.

Ferraro, Ann

Ferreira, Frank J.

Ferreira, Joe C. Jr.

Ferreira, Narcie

Fillippi, J. Vintage Co.

Filippi, Joseph

Filippi, Joseph A.

Filippi, Mary E.

Fitzgerald, John R.

Flameling Dairy Inc.

Flamingo Dairy

Foss, Douglas E.

Foss, Gerald R.

Foss, Russel

Fred & John Troost No. 1 Inc.

Fred & Maynard Troost No. 2 Inc.

Freitas, Beatriz

Freitas, Tony T.

Gakle, Louis L.

Galleano Winery, Inc.

Galleano, Bernard D.

Galleano, D.

Galleano, Mary M.

EXHIBIT "C"

Garcia, Pete
Gardner, Leland V.
Gardner, Lola M.
Garrett, Leonard E.
Garrett, Patricia T.
Gastelluberry, Catherine
Gastelluberry, Jean
Gilstrap, Glen E.
Gilstrap, Marjorie J.
Godinho, John
Godinho, June
Gonsalves, Evelyn
Gonsalves, John
Gorzeman, Geraldine
Gorzeman, Henry A.
Gorzeman, Joe
Govea, Julia
Goyenetche, Albert
Grace, Caroline E.
Grace, David J.
Gravatt, Glenn W.
Gravatt, Sally Mae
Greydanus Dairy, Inc.
Greydanus, Rena
Griffin Development Co.
Haagsma, Dave
Haagsma, John
Hansen, Mary D.
Hansen, Raymond F.
Hanson, Ardeth W.
Harada, James T.
Harada, Violet A.
Haringa, Earl and Sons
Haringa, Herman
Haringa, Rudy
Haringa, William
Harper, Cecilia de Mille
Harrington, Winona
Harrison, Jacqueline A.
Hatanaka, Kenichi
Heida, Annie
Heida, Don
Heida, Jim
Heida, Sam
Helms, Addison D.
Helms, Irma A.
Hermans, Alma I.
Hermans, Harry
Hettinga, Arthur
Hettinga, Ida
Hettinga, Judy
Hettinga, Mary
Hettinga, Wilbur
Heublein, Inc., Grocery Products Group
Hibma, Catherine M.

EXHIBIT "C"

Hibma, Sidney

Hicks, Kenneth I.

Hicks, Minnie M.

Higgins Brick Co.

Highstreet, Alfred V.

Highstreet, Evada V.

Hilarides, Bertha as Trustee

Hilarides, Frank

Hilarides, John as Trustee

Hindelang, Tillie

Hindelang, William

Hobbs, Bonnie C.

Hobbs, Charles W.

Hobbs, Hazel I.

Hobbs, Orlo M.

Hoekstra, Edward

Hoekstra, George

Hoekstra, Grace

Hoekstra, Louie

Hofer, Paul B.

Hofer, Phillip F.

Hofstra, Marie

Hogeboom, Jo Ann M.

Hogeboom, Maurice D.

Hogg, David V.

Hogg, Gene P.

Hogg, Warren G.

Hohberg, Edith J.

Hohberg, Harold C.

Hohberg, Harold W.

Holder, Arthur B.

Holder, Dorothy F.

Holmes, A. Lee

Holmes, Frances P.

Hoogeboom, Gertrude

Hoogeboom, Pete

Hoogendam, John

Hoogendam, Tena

Houssels, J. K. Thoroughbred Farm

Hunt Industries

Idsinga, Ann

Idsinga, William W.

Imbach Ranch, Inc.

Imbach, Kenneth E.

Imbach, Leonard K.

Imbach, Oscar K.

Imbach, Ruth M.

Indaburu, Jean

Indaburu, Marceline

Iseli, Kurt H.

Ito, Kow

J & B Dairy Inc.

Jaques, Johnny C. Jr.

Jaques, Mary

Jaques, Mary Lou

EXHIBIT "C"

Jay Em Bee Farms

Johnson Bro's Egg Ranches, Inc.

Johnston, Ellwood W.

Johnston, George F. Co.

Johnston, Judith H.

Jones, Leonard P.

Jongsma & Sons Dairy

Jongsma, Diana A.

Jongsma, Dorothy

Jongsma, George

Jongsma, Harold

Jongsma, Henry

Jongsma, John

Jongsma, Nadine

Jongsma, Tillie

Jordan, Marjorie G.

Jordan, Troy O.

Jorritsma, Dorothy

Juliano, Albert

Kamper, Cornelis

Kamstra, Wilbert

Kaplan, Lawrence J.

Kasbergen, Martha

Kasbergen, Neil

Kazian, Angelen Estate of

Kingsway, Const. Corp.

Klapps Market

Kline, James K.

Knevelbaard, John

Knudsen, Ejnar

Knudsen, Karen M.

Knudsen, Kenneth

Knudson, Robert

Knudson, Darlene

Koel, Helen S.

Koetsier, Gerard

Koetsier, Gerrit J.

Koetsier, Jake

Koning, Fred W.

Koning, Gloria

Koning, J. W. Estate

Koning, James A.

Koning, Jane

Koning, Jane C.

Koning, Jennie

Koning, John

Koning, Victor A.

Kooi Holstein Corporation

Koolhaas, Kenneth E.

Koolhaas, Simon

Koolhaas, Sophie Grace

Koopal, Grace

Koopal, Silas

Koopman, Eka

Koopman, Gene T.

Koopman, Henry G.

EXHIBIT "C"

Koopman, Ted

Koopman, Tena

Koot, Nick

Koster, Aart

Koster, Frances

Koster, Henry B.

Koster, Nellie

Kroes, Jake R.

Kroeze, Bros

Kroeze, Calvin E.

Kroeze, John

Kroeze, Wesley

Kruckenberg, Naomi

Kruckenberg, Perry

L. D. S. Welfare Ranch

Labrucherie, Mary Jane

Labrucherie, Raymond F.

Lako, Samuel

Landman Corp.

Lanting, Broer

Lanting, Myer

Lass, Jack

Lass, Sandra L.

Lawrence, Cecelia, Estate of

Lawrence, Joe H., Estate of

Leal, Bradley W.

Leal, John C.

Leal, John Craig

Leck, Arthur A.

Leck, Evelyn M.

Lee, Harold E.

Lee, Helen J.

Lee, Henrietta C.

Lee, R. T. Construction Co.

Lekkerkerk, Adriana

Lekkerkerk, L. M.

Lekkerkerker, Nellie

Lekkerkerker, Walt

Lewis Homes of California

Livingston, Dorothy M.

Livingston, Rex E.

Lokey, Rosemary Kraemer

Lopes, Candida A.

Lopes, Antonio S.

Lopez, Joe D.

Lourenco, Carlos, Jr.

Lourenco, Carmelina P.

Lourenco, Jack C.

Lourenco, Manual H.

Lourenco, Mary

Lourenco, Mary

Luiten, Jack

Luiz, John M.

Luna, Christine I.

Luna, Ruben T.

Lusk, John D. and Sons
A California corporation

EXHIBIT "C"

Lyon, Gregory E.

Lyon, Paula E.

M & W Co. #2

Madole, Betty M.

Madole, Larry B.

Marquez, Arthur

Marquine, Jean

Martin, Lelon O.

Martin, Leon O.

Martin, Maria D.

Martin, Tony J.

Martins, Frank

Mathias, Antonio

Mc Cune, Robert M.

Mc Masters, Gertrude

Mc Neill, J. A.

Mc Neill, May F.

Mees, Leon

Mello and Silva Dairy

Mello and Sousa Dairy

Mello, Emilia

Mello, Enos C.

Mello, Mercedes

Mendiondo, Catherine

Mendiondo, Dominique

Meth. Hosp. - Sacramento

Metzger, R. S.

Metzger, Winifred

Mickel, Louise

Miersma, Dorothy

Meirsma, Harry C.

Minaberry, Arnaud

Minaberry, Marie

Mistretta, Frank J.

Mocho and Plaa Inc.

Mocho, Jean

Mocho, Noeline

Modica, Josephine

Montes, Elizabeth

Montes, Joe

Moons, Beatrice

Moons, Jack

Moramarco, John A. Enterprise

Moreno, Louis W.

Moss, John R.

Motion Pictures Associates, Inc.

Moynier, Joe

Murphy, Frances V.

Murphy, Myrl L.

Murphy, Naomi

Nanne, Martin Estate of

Nederend, Betty

Nederend, Hans

Norfolk, James

Norfolk, Martha

Notrica, Louis

EXHIBIT "C"

Nyberg, Lillian N.

Nyenhuis, Annie

Nyenhuis, Jim

Occidental Land Research

Okumura, Marion

Okumura, Yuiche

Oldengarm, Effie

Oldengarm, Egbert

Oldengarm, Henry

Oliviera, Manuel L.

Oliviera, Mary M.

Olson, Albert

Oltmans Construction Co.

Omlin, Anton

Omlin, Elsie L.

Ontario Christian School Assn.

Oord, John

Oostdam, Jacoba

Oostdam, Pete

Oosten, Agnes

Oosten, Anthonia

Oosten, Caroline

Oosten, John

Oosten, Marinus

Oosten, Ralph

Orange County Water District

Ormonde, Manuel

Ormonde, Pete, Jr.

Ormonde, Viva

Ortega, Adeline B.

Ortega, Bernard Dino

Osterkamp, Joseph S.

Osterkamp, Margaret A.

P I E Water Co.

Palmer, Eva E.

Palmer, Walter E.

Parente, Luis S.

Parente, Mary Borba

Parks, Jack B.

Parks, Laura M.

Patterson, Lawrence E. Estate of

Payne, Clyde H.

Payne, Margo

Pearson, Athelia K.

Pearson, William C.

Pearson, William G.

Pene, Robert

Perian, Miller

Perian, Ona E.

Petrissans, Deanna

Petrissans, George

Petrissans, Jean P.

Petrissans, Marie T.

Pickering, Dora M.

(Mrs. A. L. Pickering)

Pierce, John

EXHIBIT "C"

Pierce, Sadie

Pietszak, Sally

Pine, Joe

Pine, Virginia

Pires, Frank

Pires, Marie

Plaa, Jeanne

Plaa, Michel

Plantenga, Agnes

Plantenga, George

Poe, Arlo D.

Pomona Cemetery Assn.

Porte, Cecelia, Estate of

Porte, Garritt, Estate of

Portsmouth, Vera McCarty

Ramella, Mary M.

Ramirez, Concha

Rearick, Hildegard H.

Rearick, Richard R.

Reinalda, Clarence

Reitsma, Greta

Reitsma, Louis

Rice, Bernice

Rice, Charlie E.

Richards, Karin

(Mrs. Ronnie Richards)

Richards, Ronald L.

Ridder, Jennie Wassenaar

Righetti, A. T.

Riley, George A.

Riley, Helen C.

Robbins, Jack K.

Rocha, John M.

Rocha, Jose C.

Rodrigues, John

Rodrigues, Manuel

Rodrigues, Manuel, Jr.

Rogrigues, Mary L.

Rodriquez, Daniel

Rogers, Jack D.

Rohrer, John A.

Rohrer, Theresa D.

Rohrs, Elizabeth H.

Rossetti, M. S.

Roukema, Angeline

Roukema, Ed.

Roukema, Nancy

Roukema, Siebren

Ruderian, Max J.

Russell, Fred J.

Rusticus, Ann

Rusticus, Charles

Rynsburger, Arie

Rynsburger, Berdena, Trust

Rynsburger, Joan Adele

Rynsburger, Thomas

EXHIBIT "C"

S. P. Annex, Inc.

Salisbury, Elinor J.

Sanchez, Edmundo

Sanchez, Margarita O.

Santana, Joe Sr.

Santana, Palmira

Satragni, John B. Jr.

Scaramella, George P.

Schaafsma Bros.

Schaafsma, Jennie

Schaafsma, Peter

Schaafsma, Tom

Schaap, Andy

Schaap, Ids

Schaap, Maria

Schacht, Sharon C.

Schakel, Audrey

Schakel, Fred

Schmid, Olga

Schmidt, Madeleine

Schoneveld, Evert

Schoneveld, Henrietta

Schoneveld, John

Schoneveld, John Allen

Schug, Donald E.

Schug, Shirley A.

Schuh, Bernatta M.

Schuh, Harold H.

Scott, Frances M.

Scott, Linda F.

Scott, Stanley A.

Scritsmier, Lester J.

Serl, Charles A.

Serl, Rosalie P.

Shady Grove Dairy, Inc.

Shamel, Burt A.

Shelby, Harold E.

Shelby, John A.

Shelby, Velma M.

Shelton, Alice A.

Sherwood, Robert W.

Sherwood, Sheila J.

Shue, Eva

Shue, Gilbert

Sieperda, Anne

Sieperda, James

Sigrist, Hans

Sigrist, Rita

Silveira, Arline L.

Silveira, Frank

Silveira, Jack

Silveira, Jack P. Jr.

Simas, Dolores

Simas, Joe

Singleton, Dean

Singleton, Elsie R.

EXHIBIT "C"

Sinnott, Jim
Sinnott, Mildred B.
Slegers, Dorothy
Slegers, Hubert J.
Slegers, Jake
Slegers, Jim
Slegers, Lenwood M.
Slegers, Martha
Slegers, Tesse J.
Smith, Edward S.
Smith, Helen D.
Smith, James E.
Smith, Keith J.
Smith, Lester W.
Smith, Lois Maxine
Smith, Marjorie W.
Soares, Eva
Sogioka, Mitsuyoshi
Sogioka, Yoshimato
Sousa, Sam
Southern Pacific Land Co.
Southfield, Eddie
Souza, Frank M.
Souza, Mary T.
Spickerman, Alberta
Spickerman, Florence
Spickerman, Rudolph
Spyksma, John
Staal, John
Stahl, Zippora P.
Stampfl, Berta
Stampfl, William
Stanley, Robert E.
Stark, Everett
Stellingwerf, Andrew
Stellingwerf, Henry
Stellingwerf, Jenette
Stellingwerf, Shana
Stellingwerf, Stan
Stelzer, Mike C.
Sterk, Henry
Stiefel, Winifred
Stiefel, Jack D.
Stigall, Richard L.
Stigall, Vita
Stockman's Inn
Stouder, Charlotte A.
Stouder, William C.
Struikmans, Barbara
Struikmans, Gertie
Struikmans, Henry Jr.
Struikmans, Henry Sr.
Struikmans, Nellie
Swager, Edward
Swager, Gerben
Swager, Johanna

EXHIBIT "C"

Swager, Marion

Swierstra, Donald

Swierstra, Fanny

Sybrandy, Ida

Sybrandy, Simon

Sytsma, Albert

Sytsma, Edith

Sytsma, Jennie

Sytsma, Louie

Te Velde, Agnes

Te Velde, Bay

Te Velde, Bernard A.

Te Velde, Bonnie

Te Velde, Bonnie G.

Te Velde, George

Te Velde, George, Jr.

Te Velde, Harm

Te Velde, Harriet

Te Velde, Henry J.

Te Velde, Jay

Te Velde, Johanna

Te Velde, John H.

Te Velde, Ralph A.

Te Velde, Zwaantina, Trustee

Ter Maaten, Case

Ter Maaten, Cleone

Ter Maaten, Steve

Terpstra, Carol

Terpstra, Theodore G.

Teune, Tony

Teunissen, Bernard

Teunissen, Jane

Thomas, Ethel M.

Thommen, Alice

Thommen, Fritz

Tillema, Allie

Tillema, Harold

Tillema, Klaas D.

Timmons, William R.

Tollerup, Barbara

Tollerup, Harold

Trapani, Louis A.

Trimlett, Arlene R.

Trimlett, George E.

Tristant, Pierre

Tuinhout, Ale

Tuinhout, Harry

Tuinhout, Hilda

Tuls, Elizabeth

Tuls, Jack S.

Tuls, Jake

Union Oil Company of California

United Dairyman's Co-op.

Urquhart, James G.

Usle, Cathryn

Usle, Faustino

EXHIBIT "C"

V & Y Properties

Vaile, Beryl M.

Valley Hay Co.

Van Beek Dairy Inc.

Van Canneyt Dairy

Van Canneyt, Maurice

Van Canneyt, Wilmer

Van Dam, Bas

Van Dam, Isabelle

Van Dam, Nellie

Van Den Berg, Gertrude

Van Den Berg, Joyce

Van Den Berg, Marinus

Van Den Berg, Marvin

Van Der Linden, Ardith

Van Der Linden, John

Van Der Linden, Stanley

Van Der Veen, Kenneth

Van Diest, Anna T.

Van Diest, Cornelius

Van Diest, Ernest

Van Diest, Reha

Van Dyk, Bart

Van Dyk, Jeanette

Van Foeken, Martha

Van Foeken, William

Van Hofwegen, Steve

Van Hofwegen, Adrian A.

Van Hofwegen, Clara

Van Hofwegen, Jessie

Van Klaveren, A.

Van Klaveren, Arie

Van Klaveren, Wilhelmina

Van Klaveren, William

Van Leeuwen, Arie C.

Van Leeuwen, Arie C.

Van Leeuwen, Arlan

Van Leeuwen, Clara G.

Van Leeuwen, Cornelia L.

Van Leeuwen, Harriet

Van Leeuwen, Jack

Van Leeuwen, John

Van Leeuwen, Letie

Van Leeuwen, Margie

Van Leeuwen, Paul

Van Leeuwen, William A.

Van Ravenswaay, Donald

Van Ryn Dairy

Van Ryn, Dick

Van Surksum, Anthonetta

Van Surksum, John

Van Veen, John

Van Vliet, Effie

Van Vliet, Hendrika

Van Vliet, Hugo

Van Vliet, Klaas

EXHIBIT "C"

Vande Witte, George

Vanden Berge, Gertie

Vanden Berge, Gertie

Vanden Berge, Jack

Vanden Berge, Jake

Vanden Brink, Stanley

Vander Dussen, Agnes

Vander Dussen, Cor

Vander Dussen, Cornelius

Vander Dussen, Edward

Vander Dussen, Geraldine Marie

Vander Dussen, James

Vander Dussen, John

Vander Dussen, Nelvina

Vander Dussen, Rene

Vander Dussen, Sybrand Jr.

Vander Dussen, Sybrand Sr.

Vander Dussen Trustees

Vander Eyk, Case Jr.

Vander Eyk, Case Sr.

Vander Feer, Peter

Vander Feer, Rieka

Vander Laan, Ann

Vander Laan, Ben

Vander Laan, Bill

Vander Laan, Corrie

Vander Laan, Henry

Vander Laan, James

Vander Laan, Katie

Vander Laan, Martin Jr.

Vander Laan, Tillie

Vander Leest, Anna

Vander Leest, Ann

Vander Meer, Alice

Vander Meer, Dick

Vander Poel, Hank

Vander Poel, Pete

Vander Pol, Irene

Vander Pol, Margie

Vander Pol, Marines

Vander Pol, William P.

Vander Schaaf, Earl

Vander Schaaf, Elizabeth

Vander Schaaf, Henrietta

Vander Schaaf, John

Vander Schaaf, Ted

Vander Stelt, Catherine

Vander Stelt, Clarence

Vander Tuig, Arlene

Vander Tuig, Sylvester

Vander Veen, Joe A.

Vandervlag, Robert

Vander Zwan, Peter

Vanderford, Betty W.

Vanderford, Claud R.

Vanderham, Adrian

EXHIBIT "C"

Vanderham, Cornelius

Vanderham, Cornelius P.

Vanderham, Cory

Vanderham, E. Jane

Vanderham, Marian

Vanderham, Martin

Vanderham, Pete C.

Vanderham, Wilma

Vasquez, Eleanor

Veenendaal, Evert

Veenendaal, John H.

Veiga, Dominick, Sr.

Verbree, Jack

Verbree, Tillie

Verger, Bert

Verger, Betty

Verhoeven, Leona

Verhoeven, Martin

Verhoeven, Wesley

Vermeer, Dick

Vermeer, Jantina

Vernola Ranch

Vernola, Anthonietta

Vernola, Anthony

Vernola, Frank

Vernola, Mary Ann

Vernola, Pat F.

Vestal, Frances Lorraine

Vestal, J. Howard

Visser, Gerrit

Visser, Grace

Visser, Henry

Visser, Jess

Visser, Louie

Visser, Neil

Visser, Sam

Visser, Stanley

Visser, Tony D.

Visser, Walter G.

Von Der Ahe, Fredric T.

Von Euw, George

Von Euw, Majorie

Von Lusk, a limited partnership

Voortman, Anna Marie

Voortman, Edward

Voortman, Edwin J.

Voortman, Gertrude Dena

Wagner, Richard H.

Walker, Carole R.

Walker, Donald E.

Walker, Wallace W.

Wardle, Donald M.

Warner, Dillon B.

Warner, Minnie

Wassenaar, Peter W.

Waters, Michael

EXHIBIT "C"

Weeda, Adriana

Weeda, Daniel

Weeks, O. L.

Weeks, Verona E.

Weidman, Maurice

Weidman, Virginia

Weiland, Adaline I.

Weiland, Peter J.

Wesselink, Jules

West, Katharine R.

West, Russel

West, Sharon Ann

Western Horse Property

Westra, Alice

Westra, Henry

Westra, Hilda

Westra, Jake J.

Weststeyn, Freida

Weststeyn, Pete

Whitehurst, Louis G.

Whitehurst, Pearl L.

Whitmore, David L.

Whitmore, Mary A.

Whitney, Adolph M.

Wiersema, Harm

Wiersema, Harry

Wiersma, Ellen H.

Wiersma, Gladys J.

Wiersma, Jake

Wiersma, Otto

Wiersma, Pete

Winchell, Verne H., Trustee

Wind, Frank

Wind, Fred

Wind, Hilda

Wind, Johanna

Woo, Frank

Woo, Sem Gee

Wybenga, Clarence

Wybenga, Gus

Wybenga, Gus K.

Wybenga, Sylvia

Wynja, Andy

Wynja, Iona F.

Yellis, Mildred

Yellis, Thomas E.

Ykema-Harmsen Dairy

Ykema, Floris

Ykema, Harriet

Yokley, Betty Jo

Yokley, Darrell A.

Zak, Zan

Zivelonghi, George

Zivelonghi, Margaret

Zwaagstra, Jake

Zwaagstra, Jessie M.

Zwart, Case

EXHIBIT "C"

NON-PRODUCER WATER DISTRICTS

Chino Basin Municipal Water District

Chino Basin Water Conservation District

Pomona Valley Municipal Water District

Western Municipal Water District of Riverside County

EXHIBIT "C"

DEFAULTING OVERLYING AGRICULTURAL PRODUCERS

Cheryl L. Bain
Warren Bain
John M. Barcelona
Letty Bassler
John Brazil
John S. Briano
Lupe Briano
Paul A. Briano
Tillie Briano
Arnie B. Carlson
John Henry Fikse
Phyllis S. Fikse
Lewellyn Flory
Mary I. Flory
L. H. Glazer
Dorothy Goodman
Sidney D. Goodman
Frank Grossi
Harada Brothers
Ellen Hettinga
Hein Hettinga
Dick Hofstra, Jr.
Benjamin M. Hughey
Frieda L. Hughey
Guillaume Indart
Ellwood B. Johnston, Trustee
Perry Kruckenberg, Jr.
Roy W. Lantis
Sharon I. Lantis
Frank Lorenz
Dagney H. MacDonald
Frank E. Martin
Ruth C. Martin
Connie S. Mello
Naldiro J. Mello
Felice Miller
Ted Miller
Masao Nerio
Tom K. Nerio
Toyo Nerio
Yuriko Nerio
Harold L. Rees
Alden G. Rose
Claude Rouleau, Jr.
Patricia M. Rouleau
Schultz Enterprises
Albert Shaw
Lila Shaw
Cathy M. Stewart
Marvin C. Stewart
Betty Ann Stone
John B. Stone
Vantoll Cattle Co., Inc.
Catherine Verburg

EXHIBIT "C"

Martin Verburg

Donna Vincent

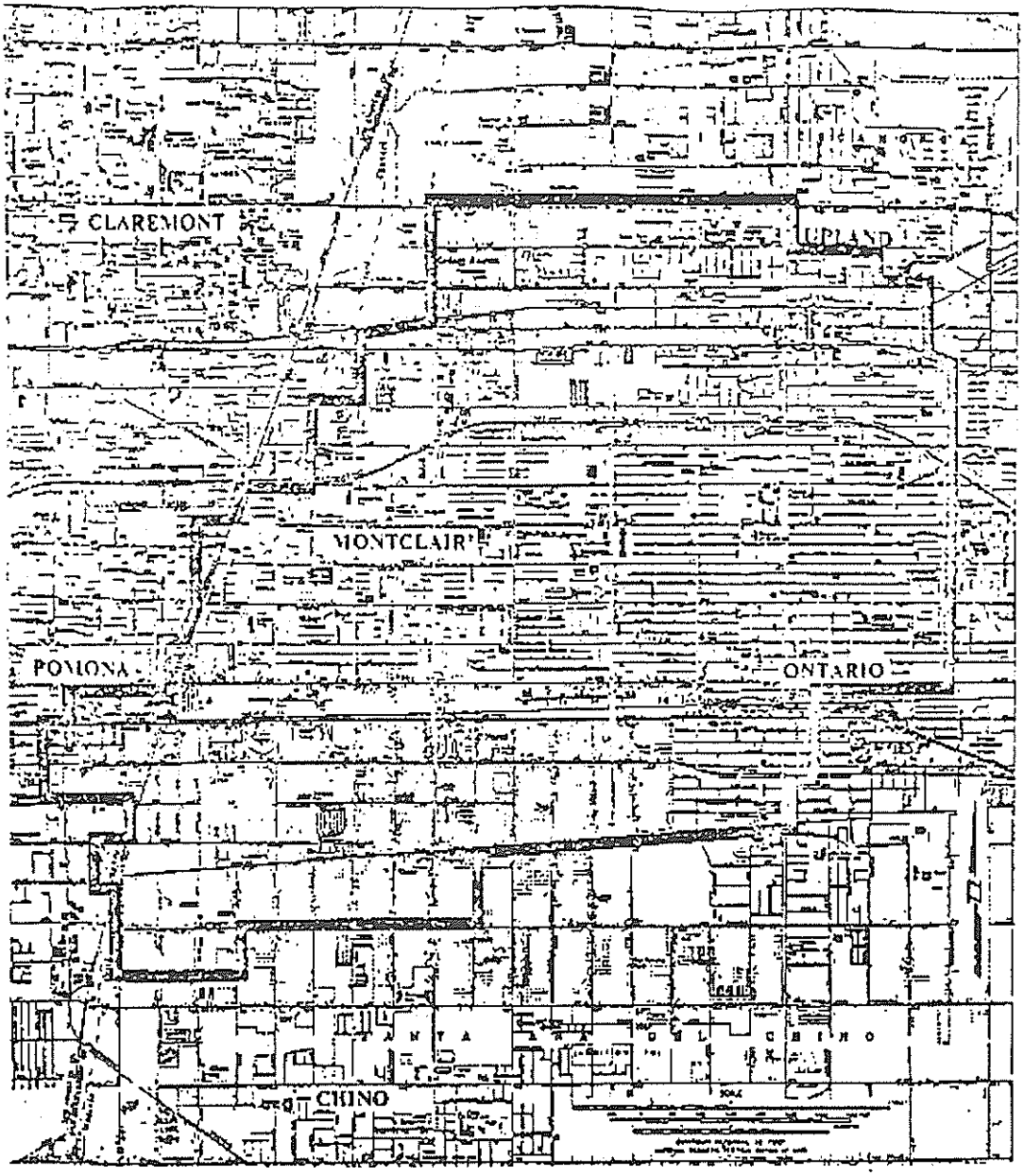
Larry Vincent

Cliff Wolfe & Associates

Ada M. Woll

Zarubica Co.

EXHIBIT "C"



CHINO BASIN

IN LIEU AREA NO. 1

EXHIBIT "J"

EXHIBIT "D"

OVERLYING NON-AGRICULTURAL RIGHTS

Party	Total Overlying Non-Agricultural Rights (Acre Feet)	Share of Safe Yield (Acre Feet)
Ameron Steel Producers	125	97.858
County Of San Bernardino	171	133.870
Conrock Company	406	317.844
Kaiser Steel Corporation	3,743	2,930.274
Red Star Fertilizer	20	15.657
Southern California Edison Co.	1,255	982.499
Space Center, Mira Loma	133	104.121
Southern Service Co., dba Blue Seal Linen	24	18.789
Sunkist, Orange Products Division	2,393	1,873.402
Carlsberg Mobile Home Properties, Ltd. '73	593	464.240
Union Carbide Corporation	546	427.446
Quaker Chemical Co.	0	0
Totals	9,409	7,366.00

EXHIBIT "E"

APPROPRIATIVE RIGHTS

Party	Appropriative Right (Acre Feet)	Share of Initial Operating Safe Yield (Acre Feet)	Share of Operating Safe Yield (Percent)
City of Chino	5,271.7	3,670.067	6.693
City of Norco	289.5	201.545	0.368
City of Ontario	16,337.4	11,373.816	20.742
City of Pomona	16,110.5	11,215.852	20.454
City of Upland	4,097.2	2,852.401	5.202
Cucamonga County Water District	4,431.0	3,084.786	5.626
Jurupa Community Services District	1,104.1	768.655	1.402
Monte Vista County Water District	5,958.7	4,148.344	7.565
West San Bernardino County Water District	925.5	644.317	1.175
Etiwanda Water Company	768.0	534.668	0.975
Felspar Gardens Mutual Water Company	68.3	47.549	0.087
Fontana Union Water Co.	9,188.3	6,396.736	11.666
Marygold Mutual Water Co.	941.3	655.317	1.195
Mira Loma Water Co.	1,116.0	776.940	1.417
Monte Vista Irr. Co.	972.1	676.759	1.234
Mutual Water Company of Glen Avon Heights	672.2	467.974	0.853
Park Water Company	236.1	164.369	0.300
Pomona Valley Water Co.	3,106.3	2,162.553	3.944
San Antonio Water Co.	2,164.5	2,506.888	2.748
Santa Ana River Water Company	1,869.3	1,301.374	2.373
Southern California Water Company	1,774.5	1,235.376	2.253
West End Consolidated Water Company	1,361.3	947.714	1.728
TOTAL	78,763.8	54,834.000	100.000

EXHIBIT 'E'

EXHIBIT "F"
OVERLYING (AGRICULTURAL) POOL
POOLING PLAN

1. Membership in Pool. The State of California and all producers listed in Exhibit "C" shall be the initial members of this pool, which shall include all producers of water for overlying uses other than industrial or commercial purposes.

2. Pool Meetings. The members of the pool shall meet annually, in person or by proxy, at a place and time to be designated by Watermaster for purposes of electing members of the Pool Committee and conducting any other business of the pool. Special meetings of the membership of the pool may be called and held as provided in the rules of the pool.

3. Voting. All voting at meetings of pool members shall be on the basis of one vote for each 100 acre feet or any portion thereof of production from Chino Basin during the preceding year, as shown by the records of Watermaster.

4. Pool Committee. The Pool Committee for this pool shall consist of not less than nine (9) representatives selected at large by members of the pool. The exact number of members of the Pool Committee in any year shall be as determined by majority vote of the voting power of members of the pool in attendance at the annual pool meeting. Each member of the Pool Committee shall have one vote and shall serve for a two-year term. The members first elected shall classify themselves by lot so that approximately one-half serve an initial one-year term. Vacancies during any term shall be filled by a majority of the remaining members of the Pool Committee.

5. Advisory Committee Representatives. The number of

representatives of the Pool Committee on the Advisory Committee shall be as provided in the rules of the pool from time to time but not exceeding ten (10). The voting power of the pool on the Advisory Committee shall be apportioned and exercised as determined from time to time by the Pool Committee.

6. Replenishment Obligation. The pool shall provide funds for replenishment of any production by persons other than members of the Overlying (Non-agricultural) Pool or Appropriator Pool, in excess of the pool's share of Safe Yield. During the first five (5) years of operations of the Physical Solution, reasonable efforts shall be made by the Pool Committee to equalize annual assessments.

7. Assessments. All assessments in this pool (whether for replenishment water cost or for pool administration or the allocated share of Watermaster administration) shall be in an amount uniformly applicable to all production in the pool during the preceding year or calendar quarter. Provided, however, that the Agricultural Pool Committee, may recommend to the Court modification of the method of assessing pool members, inter se, if the same is necessary to attain legitimate basin management objectives, including water conservation and avoidance of undesirable socio-economic consequences. Any such modification shall be initiated and ratified by one of the following methods:

(a) Excess Production. - In the event total pool production exceeds 100,000 acre feet in any year, the Pool Committee shall call and hold a meeting, after notice to all pool members, to consider remedial modification of the assessment formula.

(b) Producer Petition. - At any time after the fifth full year of operation under the Physical Solution, a petition by ten percent (10%) of the voting power or membership of the Pool shall compel the holding of a noticed meeting to consider revision of said formula of assessment for replenishment water.

In either event, a majority action of the voting power in attendance at such pool members' meeting shall be binding on the Pool Committee.

8. Rules. The Pool Committee shall adopt rules for conducting meetings and affairs of the committee and for administering its program and in amplification of the provisions, but not inconsistent with, this pooling plan.

EXHIBIT "G"
OVERLYING (NON-AGRICULTURAL) POOL
POOLING PLAN

1. Membership in Pool. The initial members of the pool, together with the decreed share of the Safe Yield of each, are listed in Exhibit "D". Said pool includes producers of water for overlying industrial or commercial (non-agricultural) purposes, or such producers within the Pool who may hereafter take water pursuant to Paragraph 8 hereof.

2. Pool Committee. The Pool Committee for this pool shall consist of one representative designated by each member of the pool. Voting on the committee shall be on the basis of one vote for each member, unless a volume vote is demanded, in which case votes shall be allocated as follows:

The volume voting power on the Pool Committee shall be 1,484 votes. Of these, 742 votes shall be allocated on the basis of one vote for each ten (10) acre feet or fraction thereof of decreed shares in Safe Yield. (See Exhibit "D") The remaining 742 votes shall be allocated proportionally on the basis of assessments paid to Watermaster during the preceding year.*

3. Advisory Committee Representatives. At least three (3) members of the Pool Committee shall be designated by said committee to serve on the Advisory Committee. The exact number of such representatives at any time shall be as determined by the Pool Committee. The voting power of the pool shall be exercised in the

*Or production assessments paid under Water Code Section 72140 et seq., as to years prior to the second year of operation under the Physical Solution hereunder.

Advisory Committee as a unit, based upon the vote of a majority of said representatives.

4. Replenishment Obligation. The pool shall provide funds for replenishment of any production in excess of the pool's share of Safe Yield in the preceding year.

5. Assessment. Each member of this pool shall pay an assessment equal to the cost of replenishment water times the number of acre feet of production by such producer during the preceding year in excess of (a) his decreed share of the Safe Yield, plus (b) any carry-over credit under Paragraph 7 hereof. In addition, the cost of the allocated share of Watermaster administration expense shall be recovered on an equal assessment against each acre foot of production in the pool during such preceding fiscal year or calendar quarter; and in the case of Pool members who take substitute ground water as set forth in Paragraph 8 hereof, such producer shall be liable for its share of administration assessment, as if the water so taken were produced, up to the limit of its decreed share of Safe Yield.

6. Assignment. Rights herein decreed are appurtenant to the land and are only assignable with the land for overlying use thereon; provided, however, that any appropriator who may, directly or indirectly, undertake to provide water service to such overlying lands may, by an appropriate agency agreement on a form approved by Watermaster, exercise said overlying right to the extent, but only to the extent necessary to provide water service to said overlying lands.

7. Carry-over. Any member of the pool who produces less than its assigned water share of Safe Yield may carry such unexercised

right forward for exercise in subsequent years. The first water produced during any such subsequent year shall be deemed to be an exercise of such carry-over right. In the event the aggregate carry-over by any pool member exceeds its share of Safe Yield, such member shall, as a condition of preserving such surplus carry-over, execute a storage agreement with Watermaster.

8. Substitute Supplies. To the extent that any Pool member, at the request of Watermaster and with the consent of the Advisory Committee, takes substitute surface water in lieu of producing ground water otherwise subject to production as an allocated share of Safe Yield, said party shall nonetheless remain a member of this Pool.

9. Rules. The Pool Committee shall adopt rules for administering its program and in amplification of the provisions, but not inconsistent with, this pooling plan.

EXHIBIT "H"
APPROPRIATIVE POOL
POOLING PLAN

1. Qualification for Pool. Any city, district or other public entity and public utility -- either regulated under Public Utilities Commission jurisdiction, or exempt therefrom as a non-profit mutual water company (other than those assigned to the Overlying (Agricultural) Pool) -- shall be a member of this pool. All initial members of the pool are listed in Exhibit "E", together with their respective appropriative rights and acre foot allocation and percentage shares of the initial and subsequent Operating Safe Yield.

2. Pool Committee. The Pool Committee shall consist of one (1) representative appointed by each member of the Pool.

3. Voting. The total voting power on the Pool Committee shall be 1,000 votes. Of these, 500 votes shall be allocated in proportion to decreed percentage shares in Operating Safe Yield. The remaining 500 votes shall be allocated proportionally on the basis of assessments paid to Watermaster during the preceding year.* Routine business of the Pool Committee may be conducted on the basis of one vote per member, but upon demand of any member a weighted vote shall be taken. Affirmative action of the Committee shall require a majority of the voting power of members in attendance, provided that it includes concurrence by at least one-third of its total members.

4. Advisory Committee Representatives. Ten (10) members of

---

*Or production assessments paid under Water Code Section 72140 et seq., as to years prior to the second year of operation under the Physical Solution hereunder.

the Pool Committee shall be designated to represent this pool on the Advisory Committee. Each major appropriator, i.e., the owner of an adjudicated appropriative right in excess of 3,000 acre feet, shall be entitled to one representative. The remaining members representing the Appropriative Pool on the Advisory Committee shall be elected at large by the remaining members of the pool. The voting power of the Appropriative Pool on the Advisory Committee shall be apportioned between the major appropriator representatives in proportion to their respective voting power in the Pool Committee. The remaining two representatives shall exercise equally the voting power proportional to the Pool Committee voting power of all remaining appropriators; provided, however, that if any representative fails to attend an Advisory Committee meeting, the voting power of that representative shall be allocated among the representatives of the Appropriator Pool in attendance in the same proportion as their own respective voting powers.

5. Replenishment Obligation. The pool shall provide funds for purchase of replenishment water to replace any production by the pool in excess of Operating Safe Yield during the preceding year.

6. Administrative Assessment. Costs of administration of this pool and its share of general Watermaster expense shall be recovered by a uniform assessment applicable to all production during the preceding year.

7. Replenishment Assessment. The cost of replenishment water required to replace production from Chino Basin in excess of Operating Safe Yield in the preceding year shall be allocated and recovered as follows:

(a) For production, other than for increased export, within CBMWD or WMWD:

(1) Gross Assessment. 15% of such replenishment water costs shall be recovered by a uniform assessment against all production of each appropriator producing in said area during the preceding year.

(2) Net Assessment. The remaining 85% of said costs shall be recovered by a uniform assessment on each acre foot of production from said area by each such appropriator in excess of his allocated share of Operating Safe Yield during said preceding year.

(b) For production which is exported for use outside Chino Basin in excess of maximum export in any year through 1976, such increased export production shall be assessed against the exporting appropriator in an amount sufficient to purchase replenishment water from CBMWD or WMWD in the amount of such excess.

(c) For production within SBVMWD or PVMWD:

By an assessment on all production in excess of an appropriator's share of Operating Safe Yield in an amount sufficient to purchase replenishment water through SBVMWD or MWD in the amount of such excess.

8. Socio-Economic Impact Review. The parties have conducted certain preliminary socio-economic impact studies. Further and more detailed socio-economic impact studies of the assessment formula and its possible modification shall be undertaken for the Appropriator Pool by Watermaster no later than ten (10) years from the effective date of this Physical Solution, or whenever total

production by this pool has increased by 30% or more over the decreed appropriative rights, whichever is first.

9. Facilities Equity Assessment. Watermaster may, upon recommendation of the Pool Committee, institute proceedings for levy and collection of a Facilities Equity Assessment for the purposes and in accordance with the procedures which follow:

(a) Implementing Circumstances. - There exist several sources of supplemental water available to chino Basin, each of which has a differential cost and quantity available. The optimum management of the entire Chino Basin water resource favors the maximum use of the lowest cost supplemental water to balance the supplies of the Basin, in accordance with the Physical Solution. The varying sources of supplemental water include importations from MWD and SBVMWD, importation of surface and ground water supplies from other basins in the immediate vicinity of Chino Basin, and utilization of reclaimed water. In order to fully utilize any of such alternate sources of supply, it will be essential for particular appropriators having access to one or more of such supplies to have invested, or in the future to invest, directly or indirectly, substantial funds in facilities to obtain and deliver such water to an appropriate point of use. To the extent that the use of less expensive alternative sources of supplemental water can be maximized by the inducement of a Facilities Equity Assessment, as herein provided, it is to the long-term benefit of the entire basin that such assessment be authorized and levied by Watermaster.

(b) Study and Report. - At the request of the Pool

Committee, Watermaster shall undertake a survey study of the utilization of alternate supplemental supplies by members of the Appropriative Pool which would not otherwise be utilized and shall prepare a report setting forth the amount of such alternative supplies being currently utilized, the amount of such supplies which could be generated by activity within the pool, and the level of cost required to increase such uses and to optimize the total supplies available to the basin. Said report shall contain an analysis and recommendation for the levy of a necessary Facilities Equity Assessment to accomplish said purpose.

(c) Hearing. - If the said report by Watermaster contains a recommendation for imposition of a Facilities Equity Assessment, and the Pool Committee so requests, Watermaster shall notice and hold a hearing not less than 60 days after distribution of a copy of said report to each member of the pool, together with a notice of the hearing date. At such hearing, evidence shall be taken with regard to the necessity and propriety of the levy of a Facilities Equity Assessment and full findings and decision shall be issued by Watermaster.

(d) Operation of Assessment. - If Watermaster determines that it is appropriate that a Facilities Equity Assessment be levied in a particular year, the amount of additional supplemental supplies which should be generated by such assessment shall be estimated. The cost of obtaining such supplies, taking into consideration the investment in necessary facilities shall then be determined and spread equitably among the producers within the pool in a manner so that those

producers not providing such additional lower cost supplemental water, and to whom a financial benefit will result, may bear a proportionate share of said costs, not exceeding said benefit; provided that any producer furnishing such supplemental water shall not thereby have its average cost of water in such year reduced below such producer's average cost of pumping from the Basin. In so doing, Watermaster shall establish a percentage of the total production by each party which may be produced without imposition of a Facilities Equity Assessment. Any member of the pool producing more water than said percentage shall pay such Facilities Equity Assessment on any such excess production. Watermaster is authorized to transmit and pay the proceeds of such Facilities Equity Assessment to those producers who take less than their share of Basin water by reason of furnishing a higher percentage of their requirements through use of supplemental water.

10. Unallocated Safe Yield Water. To the extent that, in any five years, any portion of the share of Safe Yield allocated to the Overlying (Agricultural) Pool is not produced, such water shall be available for reallocation to members of the Appropriative Pool, as follows:

(a) Priorities. - Such allocation shall be made in the following sequence:

(1) to supplement, in the particular year, water available from Operating Safe Yield to compensate for any reduction in the Safe Yield by reason of recalculation thereof after the tenth year of operation hereunder.

(2) pursuant to conversion claims as defined in Subparagraph (b) hereof.

(3) as a supplement to Operating Safe Yield, without regard to reductions in Safe Yield.

(b) Conversion Claims. - The following procedures may be utilized by any appropriator:

(1) Record of Land Use Conversion. Any appropriator who undertakes, directly or indirectly, during any year, to permanently provide water service to lands which during the immediate preceding five (5) consecutive years was devoted to irrigated agriculture may report such change in land use or water service to Watermaster. Watermaster shall thereupon verify such change in water service and shall maintain a record and account for each appropriator of the total acreage involved and the average annual water use during said five-year period.

(2) Establishment of Allocation Percentage. In any year in which unallocated Safe Yield water from the Overlying (Agricultural) Pool is available for such conversion claims, Watermaster shall establish allocable percentages for each appropriator based upon the total of such converted acreage recorded to each such appropriator's account.

(3) Allocation and Notice. Watermaster shall thereafter apply the allocated percentage to the total unallocated Safe Yield water available for special allocation to derive the amount thereof allocable to

each appropriator; provided that in no event shall the allocation to any appropriator as a result of such conversion claim exceed 50% of the average annual amount of water actually applied to the areas converted by such appropriator prior to such conversion. Any excess water by reason of such limitation on any appropriator's right shall be added to Operating Safe Yield. Notice of such special allocation shall be given to each appropriator and shall be treated for purposes of this Physical Solution as an addition to such appropriator's share of the Operating Safe Yield for the particular year only.

(4) Administrative Costs. Any costs of Watermaster attributable to administration of such special allocations and conversion claims shall be assessed against appropriators participating in such reporting.

11. In Lieu Procedures. There are, or any develop, certain areas within Chino Basin where good management practices dictate that recharge of the basin be accomplished, to the extent practical, by taking surface supplies of supplemental water in lieu of ground water otherwise subject to production as an allocated share of Operating Safe Yield.

(a) Method of Operation. - An appropriator producing water within such designated in lieu area who is willing to abstain for any reason from producing any portion of such producer's share of Operating Safe Yield in any year may offer such unpumped water to Watermaster. In such event, Watermaster shall purchase said water in place, in lieu of spreading replenishment water, which is otherwise required to

make up for over production. The purchase price for in lieu water shall be the lesser of:

(1) Watermaster's current cost of replenishment water, whether or not replenishment water is currently then obtainable, plus the cost of spreading; or

(2) The cost of supplemental surface supplies to the appropriator, less

a. said appropriator's average cost of ground water production, and

b. the applicable production assessment were the water produced.

Where supplemental surface supplies consist of MWD or SBVMWD supplies, the cost of treated, filtered State water from such source shall be deemed the cost of supplemental surface supplies to the appropriator for purposes of such calculation.

In any given year in which payments may be made pursuant to a Facilities Equity Assessment, as to any given quantity of water the party will be entitled to payment under this section or pursuant to the Facilities Equity Assessment, as the party elects, but not under both.

(b) Designation of In Lieu Areas. - The first in lieu area is designated as the "In Lieu Area No. 1" and consists of an area wherein nitrate levels in the ground water generally exceed 45 mg/l, and is shown on Exhibit "J" hereto. Other in lieu areas may be designated by subsequent order of Watermaster upon recommendation or approval by Advisory Committee. Said in lieu areas may be enlarged, reduced or

eliminated by subsequent orders; provided, however, that designation of In Lieu Areas shall be for a minimum fixed term sufficient to justify necessary capital investment. In Lieu Area No. 1 may be enlarged, reduced or eliminated in the same manner, except that any reduction of its original size or elimination thereof shall require the prior order of Court.

12. Carry-over. Any appropriator who produces less than his assigned share of Operating Safe Yield may carry such unexercised right forward for exercise in subsequent years. The first water produced during any such subsequent year shall be deemed to be an exercise of such carry-over right. In the event the aggregate carry-over by any appropriator exceeds its share of Operating Safe Yield, such appropriator shall, as a condition of preserving such surplus carry-over, execute a storage agreement with Watermaster. Such appropriator shall have the option to pay the gross assessment applicable to such carry-over in the year in which it accrued.

13. Assignment, Transfer and Lease. Appropriative rights, and corresponding shares of Operating Safe Yield, may be assigned or may be leased or licensed to another appropriator for exercise in a given year. Any transfer, lease or license shall be ineffective until written notice thereof is furnished to and approved as to form by Watermaster, in compliance with applicable Watermaster rules. Watermaster shall not approve transfer, lease or license of a right for exercise in an area or under conditions where such production would be contrary to sound basin management or detrimental to the rights or operations of other producers.

14. Rules. The Pool Committee shall adopt rules for

administering its program and in amplification of the provisions, but not inconsistent with, this pooling plan.

EXHIBIT "I"

ENGINEERING APPENDIX

1. Basin Management Parameters. In the process of implementing the physical solution for Chino Basin, Watermaster shall consider the following parameters:

(a) Pumping Patterns. - Chino Basin is a common supply for all persons and agencies utilizing its waters. It is an objective in management of the Basin's waters that no producer be deprived of access to said waters by reason of unreasonable pumping patterns, nor by regional or localized recharge of replenishment water, insofar as such result may be practically avoided.

(b) Water Quality. - Maintenance and improvement of water quality is a prime consideration and function of management decisions by Watermaster.

(c) Economic Considerations. - Financial feasibility, economic impact and the cost and optimum utilization of the Basin's resources and the physical facilities of the parties are objectives and concerns equal in importance to water quantity and quality parameters.

2. Operating Safe Yield. Operating Safe Yield in any year shall consist of the Appropriative Pool's hare of Safe Yield of the Basin, plus any controlled overdraft of the Basin which Watermaster may authorize. In adopting the Operating Safe Yield for any year, Watermaster shall be limited as follows:

(a) Accumulated Overdraft. - During the operation of this Judgment and Physical Solution, the overdraft accumulated from and after the effective date of the Physical

Solution and resulting from an excess of Operating Safe Yield over Safe Yield shall not exceed 200,000 acre feet.

(b) Quantitative Limits. - In no event shall Operating Safe Yield in any year be less than the Appropriative Pool's share of Safe Yield, nor shall it exceed such share of Safe Yield by more than 10,00 acre feet. The initial Operating Safe Yield is hereby set at 54,834 acre feet per year. Operating Safe Yield shall not be changed upon less than five (5) years' notice by Watermaster.

Nothing contained in this paragraph shall be deemed to authorize, directly or indirectly, any modification of the allocation of shares in Safe Yield to the overlying pools, as set forth in Paragraph 44 of the Judgment.

3. Ground Water Storage Agreements. Any agreements authorized by Watermaster for storage of supplemental water in the available ground water storage capacity of Chino Basin shall include, but not be limited to:

(a) The quantities and term of the storage right.

(b) A statement of the priority or relation of said right, as against overlying or Safe Yield uses, and other storage rights.

(c) The procedure for establishing delivery rates, schedules and procedures which may include:

[1] spreading or injection, or

[2] in lieu deliveries of supplemental water for direct use.

(d) The procedures for calculation of losses and annual accounting for water in storage by Watermaster.

(e) The procedures for establishment and administration of withdrawal schedules, locations and methods.

CHINO BASIN

IN LIEU ARE NO. 1 (MAP)

EXHIBIT "J"

LEGAL DESCRIPTION

OF CHINO BASIN

Preamble

All of the townships and ranges referred to in the following legal description are the San Bernardino Base and Meridian. Certain designated sections are implied as the System of Government Surveys may be extended where not established. Said sections are identified as follows:

Section 20, T1N, R8W is extended across Rancho Cucamonga;

Section 36, T1N, R8W is extended across the City of Upland;

Sections 2,3, and 4, T1S, R7W are extended across Rancho Cucamonga;

Section 10, T1S, R8W is extended across the City of Claremont;

Sections 19, 20, 21, 30, 31 and 32, T1S, R8W are extended across the City of Pomona;

Sections 4, 5, and 28, T2S, R8W are extended across Rancho Santa Ana Del Chino;

Sections 15 and 16, T3S, R7W are extended across Rancho La Sierra; and

Sections 17 and 20, T3S, R7W are extended across Rancho El Rincon.

Description

Chino Basin is included within portions of the Counties of San Bernardino, Riverside and Los Angeles, State of California, bounded by a continuous line described as follows:

BEGINNING at the Southwest corner of Lot 241 as shown on Map of Ontario Colony Lands, recorded in Map Book 11, page 6, Office of the County Recorder of San Bernardino County, said corner being the Point of Beginning;

1. Thence Southeasterly to the Southeast corner

of Lot 419 of said Ontario Colony Lands;

2. Thence Southeasterly to a point 1300 feet North of the South line and 1300 feet East of the West line of Section 4, T1S, R7W;

3. Thence Easterly to a point on the East line of Section 4, 1800 feet North of the Southeast corner of said Section 4;

4. Thence Easterly to the Southeast corner of the Southwest quarter of the Northeast quarter of Section 3, T1S, R7W;

5. Thence Northeasterly to a point on the North line of Section 2, T1S, R7W, 1400 feet East of the West line of said Section 2;

6. Thence Northeasterly to the Southwest corner of Section 18, T1N, R6W;

7. Thence Northerly to the Northwest corner of said Section 18;

8. Thence Easterly to the Northeast corner of said Section 18;

9. Thence Northerly to the Northwest corner of the Southwest Quarter of Section 8, T1N, R6W;

10. Thence Easterly to the Northeast corner of said Southwest quarter of said Section 8;

11. Thence Southerly to the Southeast corner of said Southwest Quarter of said Section 8;

12. Thence Easterly to the Northeast corner of Section 17, T1N, R6W;

13. Thence Easterly to the Northeast corner of Section 16, T1N, R6W;

14. Thence Southeasterly to the Northwest corner of the Southeast quarter of Section 15, T1N, R6W;

15. Thence Easterly to the Northeast corner of said Southeast quarter of said Section 15;

16. Thence Southeasterly to the Northwest corner of the Northeast quarter of Section 23, T1N, R6W;

17. Thence Southeasterly to the Northwest corner of Section 25, T1N, R6W;

EXHIBIT "K"

18. Thence Southeasterly to the Northwest corner of the Northeast quarter of Section 31, T1N, R5W;

19. Thence Southeasterly to the Northeast corner of the Northwest quarter of Section 5, T1S, R5W;

20. Thence Southeasterly to the Southeast corner of Section 4, T1S, R5W;

21. Thence Southeasterly to the Southeast corner of the Southwest quarter of Section 11, T1S, R5W;

22. Thence Southwesterly to the Southwest corner of Section 14, T1S, R5W;

23. Thence Southwest to the Southwest corner of Section 22, T1S, R5W;

24. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 6, T2S, R5W;

25. Thence Southeasterly to the Northeast corner of Section 18, T2S, R5W;

26. Thence Southwesterly to the Southwest corner of the Southeast quarter of Section 13, T2S, R6W;

27. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 26, T2S, R6W;

28. Thence Westerly to the Southwest corner of the Northwest quarter of said Section 26;

29. Thence Northerly to the Northwest corner of said Section 26;

30. Thence Westerly to the Southwest corner of Section 21, T2S, R6W;

31. Thence Southerly to the Southeast corner of Section 29, T2S, R6W;

32. Thence Westerly to the Southeast corner of Section 30, T2S, R6W;

33. Thence Southwesterly to the Southwest corner of Section 36, T2S, R7W;

34. Thence Southwesterly to the Southeast corner of Section 3, T3S, R7W;

35. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 10, T3S, R7W;

36. Thence Southerly to the Northeast corner of the Northwest quarter of Section 15, T3S, R7W;

37. Thence Southwesterly to the Southeast corner of the Northeast quarter of Section 16, T3S, R7W;

38. Thence Southwesterly to the Southwest corner of said Section 16;

39. Thence Southwesterly to the Southwest corner of the Northeast quarter of Section 20, T3S, R7W;

40. Thence Westerly to the Southwest corner of the Northwest quarter of said Section 20;

41. Thence Northerly to the Northwest corner of Section 17, T3S, R7W;

42. Thence Westerly to the Southwest corner of Section 7, T3S, R7W;

43. Thence Northerly to the Southwest corner of Section 6, T3S, R7W;

44. Thence Westerly to the Southwest corner of Section 1, T3S, R8W;

45. Thence Northerly to the Southeast corner of Section 35, T2S, R8W;

46. Thence Northwesterly to the Northwest corner of said Section 35;

47. Thence Northerly to the Southeast corner of Lot 33, as shown on Map of Tract 3193, recorded in Map Book 43, pages 46 and 47, Office of the County Recorder of San Bernardino County;

48. Thence Westerly to the Northwest corner of the Southwest quarter of Section 28, T2S, R8W;

49. Thence Northerly to the Southwest corner of Section 4, T2S, R8W;

50. Thence Westerly to the Southwest corner of Section 5, T2S, R8W;

51. Thence Northerly to the Southwest corner of Section 32, T1S, R8W;

52. Thence Westerly to the Southwest corner of Section 31, T1S, R8W;

53. Thence Northerly to the Southwest corner of Section 30, T1S, R8W;

54. Thence Northeasterly to the Southwest corner of Section 20, T1S, R8W;

55. Thence Northerly to the Northwest corner of the Southwest quarter of the Southwest quarter of said Section 20;

56. Thence Northwesterly to the Northeast corner of the Southeast quarter of the Southeast quarter of the Northwest quarter of Section 19, T1S, R8W;

57. Thence Easterly to the Northwest corner of Section 21, T1S, R8W;

58. Thence Northeasterly to the Southeast corner of the Southwest quarter of the Southwest quarter of Section 10, T1S, R8W;

59. Thence Northeasterly to the Southwest corner of Section 2, T1S, R8W;

60. Thence Northeasterly to the Southeast corner of the Northwest quarter of the Northwest quarter of Section 1, T1S, R8W;

61. Thence Northerly to the Northeast corner of the Northwest quarter of the Northeast quarter of Section 36, T1N, R8W;

62. Thence Northerly to the Southeast corner of Section 24, T1N, R8W;

63. Thence Northeasterly to the Southeast corner of the Northwest quarter of the Northwest quarter of Section 20, T1N, R7W; and

64. Thence Southerly to the Point of Beginning.

EXHIBIT "K"

Sections Included

Said perimeter description includes all or portions of the following Townships, Ranges and Sections of San Bernardino Base and Meridian:

T1N, R5W - Sections:	30, 31 and 32
T1N, R6W - Sections:	8, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36
T1N, R7W - Sections:	19, 20, 24, 25, 26, 29, 30, 31, 32, 35 and 36
T1N, R8W - Sections:	25 and 36
T1S, R5W - Sections:	4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 18, 19, 20, 21, 22, 28, 29, 30, 31 and 32
T1S, R6W - Sections:	1 through 36, inclusive
T1S, R7W - Sections:	1 through 36, inclusive
T1S, R8W - Sections:	1, 2, 10, 11, 12, 13, 14, 15, 16, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and 36
T2S, R5W - Sections:	6, 7 and 18
T2S, R6W - Sections:	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 29, 30 and 31
T2S, R7W - Sections:	1 through 36, inclusive
T2S, R8W - Sections:	1, 2, 3, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 35 and 36
T3S, R7W - Sections:	2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17 and 20
T3S, R8W - Sections:	1.

EXHIBIT "K"

APPENDIX J

INLAND EMPIRE UTILITIES AGENCY LETTER
OF MARCH 19, 2003 TO THE
CITY OF CHINO
TITLED
"ASSURANCE OF IMPORTED WATER SUPPLY RELIABILITY"

Inland Empire
UTILITIES AGENCY

9400 Cherry Ave., Bldg. A • Fontana, CA 92335
P.O. Box 697 • Rancho Cucamonga, CA 91729
TEL (909) 993-1600 • FAX (909) 357-3884
www.ieua.org
A Municipal Water District

Richard W. Atwater
Chief Executive Officer
General Manager

March 19, 2003

Mr. Glen Rojas, City Manager
City of Chino
P.O. Box 667
Chino, CA 91708-0667

Subject: Assurances of Imported Water Supply Reliability

Dear Mr. Rojas:

This letter will add clarification and amplification of background information and analysis of the availability of the City of Chino's supply of imported water from IEUA provided in my attached letter from IEUA, dated November 15, 2002 and the related Water Supply Assessment Update prepared by Psomas for the City. Certain comments received about the Draft EIR for the Preserve Project questioned the reliability of the future water supply to meet the needs of the Preserve Project. As noted in the Water Supply Assessment prepared by Psomas, as well as in the Draft EIR, the Preserve Project would not increase the City's demand for imported potable water. Instead, the City's demand for imported water would remain relatively constant, with the water necessary for the Preserve Project being supplied from other sources, such as local groundwater, desalinated water and recycled water.

IEUA's Imported Water Supplies and Reliability

The IEUA is a member agency of the Metropolitan Water District ("MWD") and receives its imported water from the MWD. Water availability from the MWD is governed by MWD's Water Surplus and Drought Management Plan adopted in April 1998. Member agencies, such as the IEUA, do not have entitlements to specific amounts of water from the MWD. Instead, the Water Surplus and Drought Management Plan provides for regional storage of water during wet years in the numerous surface water reservoirs and groundwater basins available to the MWD in the San Joaquin Valley, Mojave Desert, and within the MWD's service area (e.g. Chino Basin). During times of water shortages of the basic State Water project ("SWP") Table A water entitlement or Colorado River Aqueduct deliveries, then MWD would utilize the water stored in these reservoirs to avoid any reduction in deliveries to its member agencies. MWD has prepared the attached February 11, 2002 report on its water supplies which updates the overall reliability of MWD's water supplies consistent with the requirements of SB 221 and SB 610.

Neither MWD nor IEUA based their water supply estimates and projections of future supplies upon the SWP Table A water entitlements. Instead, IEUA and MWD projections are based upon a managed supply of all sources of imported water, which include the Colorado River, water transfers, and surface and groundwater storage accounts as outlined in the February 11, 2002 MWD report. MWD has for over twenty years developed water transfers, exchange supply contracts and storage programs to augment and ensure 100 percent reliability to its member agencies, such as IEUA, for the imported water supplied to them by MWD.

Nonetheless, the record should reflect that MWD has a SWP Table A water entitlement of 2,011,500 acre feet, plus water entitlement arrangements with the Desert Water Agency, Coachella Valley Water District and San Bernardino Municipal Water District. During the severe drought year of 1991, the MWD received approximately 400,000 acre feet of its SWP entitlement deliveries, which was less than 20% of its Table A entitlement. However, the IEUA and MWD are not relying solely on the SWP Table A entitlements for the City's supply of imported water. The IEUA's Urban Water Management Plan fully evaluated shortages in supplies from the MWD during a three dry year period. In addition, the MWD Regional Urban Water Management Plan (2000) and the February 11, 2002 Report analyzed MWD's regional supplies and concluded that MWD would be able to reliably meet projected supplemental demands beyond the next 20 years and meet its member agencies' supplemental water demands through 2030 with the addition of new water supplies that are under development by MWD with 100% retail reliability. As part of that analysis, MWD reviewed the State Department of Water Resources' SWP computer model runs of SWP deliveries to the 30 state water contractors which receive water from the SWP. MWD is one of those 30 state water contractors. The reliability of the water MWD receives from the SWP is evaluated in the August 2002 "State Water Project Delivery Reliability Report" which was prepared by the Department of Water Resources. That report documents the SWP's assumptions and computer modeling projections of delivery estimates for each of the 30 state water contractors, including MWD. A copy of that August 2002 DWR report is attached to this letter.

In turn, MWD's adopted Water Surplus and Drought Management Plan and the MWD Report of February 11, 2002, provide documentation that IEUA and the City of Chino will have adequate supplemental water supplies available from the MWD to meet the City's current and future projected imported water needs.

A question also has been raised about the long term and short term impacts resulting from the 800,000 acre-feet reduction in imported water supplies the MWD will experience from its Colorado River sources. The MWD updated its February 11, 2002 Report in February of 2003 to take this reduction in supplies into account. That update by the MWD staff (Steve Arakawa) basically concluded that with the increased storage, conservation, water recycling and desalination projects, plus transfers on the SWP, that the MWD's imported water supply reliability would remain adequate to serve anticipated demand through 2025. The environmental impacts arising from any potential reductions in the SWP imported water deliveries were analyzed in the DWR's State Water Project Delivery Reliability Report and in the EIR/EIS for the CALFED Bay-Delta program.

Notwithstanding the above, the Draft EIR for the Preserve Project (Table 5.12-5) has indicated that the City is not relying on any increases in the imported water supply to meet the increased potable water demands of the new development taking place at the Preserve Project. Instead, the City simply will be continuing its current level of imported water use. As noted in the Psomas report and the City's updated Water Supply Assessment, the additional potable water demand arising from the Preserve Project will be met by the use of local groundwater and desalinated water supplies.

IEUA Allocations During Supply Shortages

An issue has arisen concerning the impacts a water supply shortage would have on the City's ability to obtain water from IEUA. The IEUA does not have a shortage allocation policy. However, based upon the historical policy followed by the IEUA and MWD during the 1990 - 1992 drought periods, which was the worst drought period of record, an allocation of water during shortages would likely be based upon recent historic use in years previous to the shortage.

Augmentation of Water Supplies

Reliability of the City of Chino's water supply will be enhanced and augmented by the MWD's 100,000 acre-feet water storage and recovery project during any shortage of the MWD's imported water supplies. That enhancement to the City's water supply reliability will provide a minimum of 1,200 acre feet of water. All future storage and water recovery projects likewise will have similar benefits of "drought proofing" the City of Chino and all other appropriative pool members in the Chino groundwater basin from imported water shortages. Attached to this letter is a copy of the IEUA staff memo and presentation made on February 5, 2002, concerning this issue.

Recycled Water

On June 28, 2002, the IEUA Board certified the final Program EIR for its Recycled Water Feasibility Study. That EIR describes in detail the $120 million capital improvement program being implemented by IEUA to develop 70,000 acre feet per year of new, recycled water supplies by year 2020. This capital improvement program will provide new recycled water supplies to the regional sewage contract agencies, one of which is the City of Chino. In January 2003, the SWRCB provided funding and approval for Phase I of the Recycled Water Feasibility Study projects. As one of the regional sewage contract agencies, the City of Chino has copies of all documents pertaining to IEUA's recycled water program. Consequently, as a result of the regional recycled water distribution system, the City of Chino would have access to sufficient recycled water supplies to meet the estimated future demand for recycled water arising from the Preserve Project. IEUA is prepared to deliver greater supplies of recycled water to the City of Chino than the amounts identified as being needed in the City's updated Water Supply Assessment.

I trust this letter has clarified any lingering questions about IEUA's ability to supply the City of Chino with the potable and recycled water needed for the Preserve Project.

Sincerely,
INLAND EMPIRE UTILITIES AGENCY

Richard W. Atwater
Chief Executive Officer
General Manager

L.2 - 2012 Water Master Plan

CITY OF ONTARIO
Water Master Plan

Submitted to:

CITY OF ONTARIO

Ontario, California

APRIL 2012

CITY OF ONTARIO

WATER MASTER PLAN

Date of Signing: 4/30/12

Date of Signing: 4/30/12

Submitted to:
City of Ontario
1425 S. Bon View Avenue
Ontario, California 91761

Submitted by:
AKM Consulting Engineers
553 Wald
Irvine, California 92618
(949) 753-7333

April 2012

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Water Master Plan

April 2012

CITY OF ONTARIO
Water Master Plan

April 2012

SECTION 1

EXECUTIVE SUMMARY

1-1 Purpose

The City of Ontario provides domestic water service to a population of approximately 175,000 residents. The City recognizes its responsibility to meet the customers' needs with long range planning efforts. By reviewing its existing water system and future needs, the City can continue to maintain a high service level and reliability in its water system in a cost effective and fiscally responsible manner. This report is intended to update the domestic water analysis of the *2006 Water and Recycled Water Master Plan* and to provide a comprehensive planning guide for improving and upgrading the City's domestic water system through 2035. As a planning document, it is general in nature and is predicated upon the best information available at this time.

1-2 Study Area

The study area coincides with the City of Ontario boundary with the exception of two small areas in the north central and northeastern portion of the City that are served by Cucamonga Valley Water District (CVWD). It is located approximately 35 miles east of downtown Los Angeles and encompasses approximately 50 square miles of residential, commercial, industrial, public and agricultural lands and the Ontario International Airport. It is bordered by the Cities of Chino and Montclair on the west; the Cities of Upland and Rancho Cucamonga on the north; the City of Fontana and Riverside County on the east; and Riverside County, and the City of Chino on the south.

Topographical Description and Geology

The topography of the region generally slopes in a southwesterly direction from 1180 to 633 feet above mean sea level (amsl).

Due to the presence of predominantly dairy industries over a long period of time, prime agricultural soils, high in salts and nitrates, cover approximately 2,999 acres or 36 percent of the total area in the NMC (SOI General Plan Amendment, 1998). Organic materials (manure and feed) are reportedly present in thickness of up to six feet.

The NMC is located within the Chino Groundwater Basin, which has been found to maintain a relatively shallow water table. The SOI General Plan Amendment reported findings of groundwater elevations ranging from 530 to 590 feet in 1991. Water depths observed in 1991 were about 100 feet (SOI General Plan Amendment).

Climate

The climate in the study area is Mediterranean-like with generally moderate temperatures and low humidity year-round. The average median temperature is approximately 83^{o} F. The average annual days of sunshine is 312. The historical average annual rainfall is about 11.3 inches. Most of the rainfall typically occurs between October and April.

Land Use

The existing City is a well planned urban community with a balance of residential, commercial, and industrial land uses. Within the service area (total of 31,345 Ac), the primary land use in the City is residential (8,762 Ac or 28.0%). Industrial use also makes up a significant portion of the total existing land use (4,671 Ac or 14.9%). Approximately 3,290 acres or 10.5 percent of the total is currently undeveloped. The total number of housing units in the City is estimated at 47,795.

The ultimate land uses are based upon the City's latest general plan document entitled *The Ontario Plan (2010).* The residential area increases to 10,915 acres (34.2 percent of total). The employment area, including business parks and industrial uses, is expected to entail about 8,103 acres (25.4 percent of total).

Population

Since its incorporation in 1890, the City of Ontario has grown from a population of 683 to approximately 174,536 in 2010 (*Ref: California Department of Finance, Table E-5, 2010*). . With a population of 174,536 and a 3.67 percent vacancy rate, the average number of persons per household is estimated at 3.766 (Ref: *California Department of Finance, Demographic Research Unit, Table E-5, 2010*).

The ultimate population in New Model Colony is expected to be approximately 162,518 (*Ref: 2010 General Plan Approved Landuse Buildout Estimate Table*). The ultimate population in Old Model Colony is estimated at 195,752. The total ultimate population is estimated at 358,270 which will more than double the existing population. The service area population will be 352,500.

1-3 Water Use

Historical Water Production and Purchase

The City obtains its potable water supply from groundwater wells in Chino Basin and imported water from the Water Facilities Authority (WFA) and the Chino Basin Desalter Authority (CDA). The City currently owns 32 wells. Four wells are either abandoned or destroyed, five (5) of the wells are inactive, while the other 23 wells are operational.

Over the last ten years, the annual production has averaged a total of 43,340 AFY (38.7 mgd). The average production from Chino Basin is 30,605 AFY (27.3 mgd). The average amount of imported water purchased is 12,735 AFY (11.4 mgd).

Water Consumption versus Water Production/Purchase

The City typically purchases/produces more water than the quantity measured by the customer meters. Table 1-1 summarizes the difference between the measured consumption and production from 2000 to 2009. On average, 2.4 percent of the water supply is unaccounted for each year. The discrepancy is partly due to the differences in the accuracies of the few large meters which measure purchases and production, and the thousands of small customer meters which measure sales. Unaccounted for water can also be due to unmeasured uses such as water main flushing and other maintenance related tasks. The remainder may be due to leaks from the system. The average unaccounted for water rate of 2.4 is well within the industry standard.

Table 1-1
Water Consumption versus Water Production/Purchase

Calendar Year	Water Consumption[1] (AFY)	Water Production/ Purchase[1] (AFY)	Percent Unaccounted For Water	Population[2]	Per Capita Production/ Purchase (GPD/Person)	Per Capita Consumption (GPD/Person)
2000	42,998	Data Incomplete	-	152,524	-	252
2001	43,108	43,951	1.9	153,951	255	250
2002	44,193	44,709	1.2	157,752	253	250
2003	41,772	43,447	3.9	160,641	241	232
2004	42,087	42,967	2.0	162,528	236	231
2005	42,097	42,205	0.3	164,308	229	229
2006	42,780	43,901	2.6	164,763	238	232
2007	44,286	44,806	1.2	166,058	241	238
2008	42,072	43,301	2.8	166,760	232	225
2009	37,708	39,538	4.6	167,138	211	201
Average	**42,310**	**43,173[3]**	**2.4[4]**	**161,642**	**237[3]**	**234**

[1] Consumption and Production/Purchase data extracted from annual Department of Water Resources Public Water System Statistics Report. Consumption data for 2005 provided by City staff.

[2] Population data from California Department of Finance, E-5 Population and Housing Estimates for Cities 2000-2010, excluding estimate of population for areas in Ontario served by CVWD.

[3] Water production/purchase and per capita production/purchase averages do not include calendar year 2000 because the data was not available on the DWR report.

[4] Percent unaccounted for water average does not include calendar year 2000 data, because the data was not available.

Water Demand Variations

Demand variations through a year are influenced by seasonal effects such as temperature, humidity, and precipitation. System demand variations throughout a day are influenced by the customer base and the daily lifestyles of the customers. In primarily residential areas, the peak demands within a day typically occur in the morning hours between 6:00 am and 9:00 am, when customers wake to begin their daily routine. In largely commercial and industrial areas, the peaks may occur mid-day or the demand may even remain relatively constant throughout the work day. For this study, the variations are expressed as a ratio to the average demand, with the average demand being equal to one.

Monthly Demand Variations

Typical of most Southern California communities, the City's water consumption exhibits a distinct seasonal pattern. Peak and low monthly consumption occur during the dry summer months and wet winter months, respectively. Peak demands in Ontario typically occur in August and September. Low demands typically occur in February, March, or April. The highest and lowest monthly demand factors between 2000 and 2009 were 1.43 and 0.53, respectively.

Daily Demand Variations

Maximum day demand for this study was based upon a review of daily production/purchase reports for 2007 and 2008. The maximum day production/purchase for both years was approximately 1.5 times the average day demand for the year. A maximum day demand factor of 1.6 was selected for the Master Plan work to account for the limited data currently available.

Hourly Demand Variations

Knowledge of accurate demand variations over a 24-hour period is essential for proper analysis of water systems. For this study, hourly demand variations were represented by the development of a diurnal demand curve for each potable water usage type. The diurnal demand curves are employed in determining the adequacy of the sources of supply, pumping facilities, reservoirs, and the transmission / distribution facilities.

The diurnal curves developed in the City's Water and Recycled Water Master Plan, dated April 2006 were implemented in this study, which did not include diurnal curve development in its scope. The diurnal curves were generally based upon tank level information from the Supervisory Control and Data Acquisition (SCADA) system. Graphs of the diurnal curves can be seen in Section 4-6 of this report.

System Demands and Peaking Factors

It is important to evaluate a water system during various incremental peak demands. Typically, a water system is designed to meet the maximum demands placed on it. The system components must be designed to cope with these demands as they occur. Maximum month and maximum day demands are important factors in sizing a system's supply capability. Maximum day demands usually dictate the design criteria for both system transmission and storage needs. Peak hour criterion is a measure of the system's overall adequacy with respect to its transmission and distribution elements, as well as its operational storage capacity.

The relationships between the peaking factors developed for this study with respect to the average day demand estimate are displayed graphically on Figure 1-1.

Existing Demands

Existing water demands by zone are shown in Table 1-2. These are estimates based upon the distribution of demands used in the hydraulic model. The model utilized water meter records from 2008.

Figure 1-1
Water Demand Peaking Factors

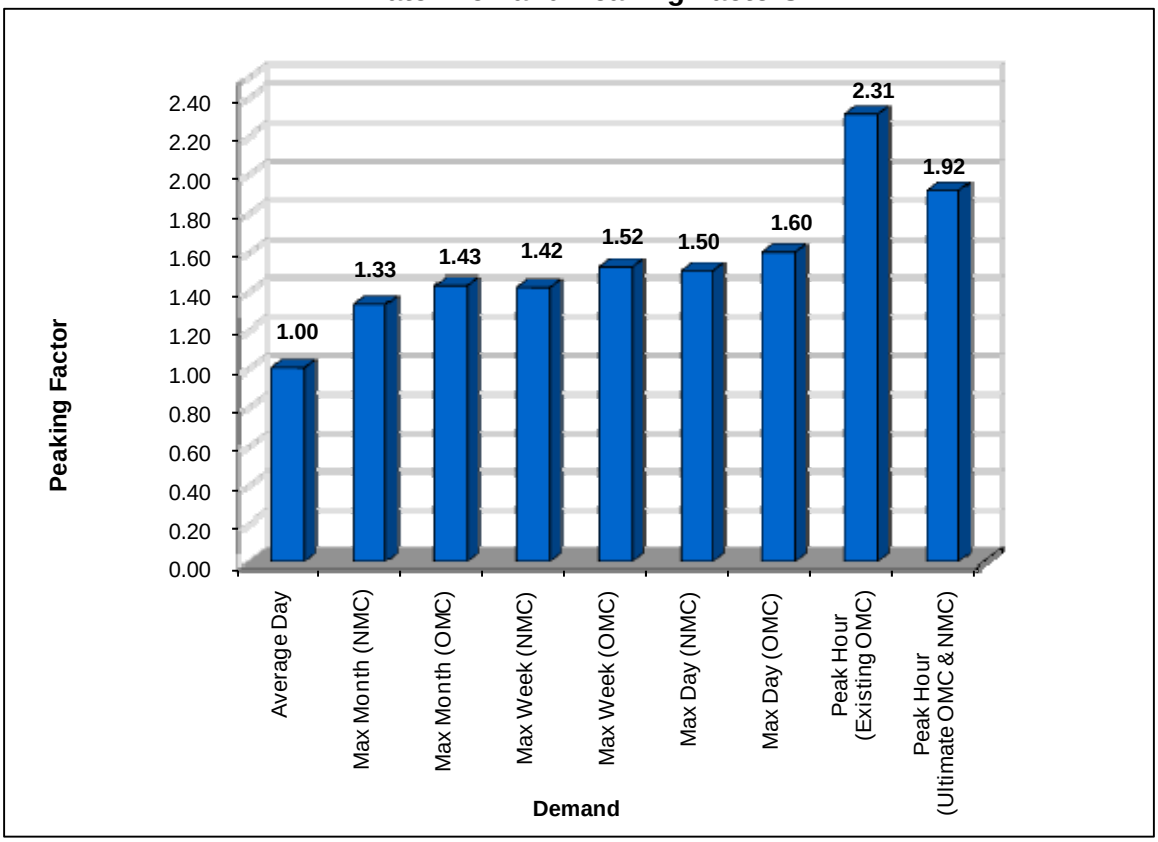


Table 1-2
Existing Water Demands by Zone

Zone	Average			Max Month			Max Week			Max Day[1]			Peak Hour[2]		
	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY
1348	2,671	3.85	4,308	3,819	5.50	6,160	4,060	5.85	6,548	4,273	6.15	6,892	6,173	8.89	9,955
1212	11,059	15.92	17,836	15,814	22.77	25,505	16,810	24.21	27,110	17,694	25.48	28,537	25,557	36.80	41,219
1074	4,977	7.17	8,026	7,117	10.25	11,478	7,565	10.89	12,200	7,963	11.47	12,842	11,501	16.56	18,549
1010	4,674	6.73	7,538	6,684	9.62	10,780	7,104	10.23	11,458	7,478	10.77	12,061	10,801	15.55	17,421
Total	**23,380**	**33.67**	**37,708**	**33,434**	**48.15**	**53,922**	**35,538**	**51.18**	**57,316**	**37,409**	**53.87**	**60,333**	**54,032**	**77.81**	**87,143**

[1] Maximum Day Demand shown is calculated using maximum day factor of 1.60. In the hydraulic model, a maximum day factor of 1.24 is used for Temple Inland.

[2] Peak Hour Demand shown is calculated using peak hour factor of 2.31. In the hydraulic model, some of the large users are assigned specific Peak Hour factors based on the user's hours of operation

Ultimate Demands

A thorough explanation of the development of the ultimate demands is explained in the Ultimate Citywide Water Demand Estimate Technical Memorandum, included as Appendix 1. In summary, the following steps were used to estimate the ultimate demands:

1. Existing meter data was used for existing uses in Old Model Colony (OMC). The demands were reduced by 5 percent to account for future conservation efforts and increased by 5 percent to compensate for unaccounted for water.

2. Developed unit demand factors in gpd/ac were used to estimate demands for the vacant and future densification areas in OMC. Unit demand factors included a 5 percent reduction for future conservation efforts.

3. Developed unit demand factors in gpd/person or gpd/job were used to estimate demands for future mixed use areas. Unit demand factors included a 5 percent reduction for future conservation efforts.

4. Developed unit demand factors in gpd/person or gpd/job were used to estimate demands for future New Model Colony (NMC) residential and commercial areas. Unit demand factors included a 5 percent reduction for future conservation efforts.

5. Developed unit demand factors in gpd/ac were used to estimate demands for future NMC public facilities and schools.

6. Demands for major parks, right-of-ways, and open space areas within NMC were not included because it was assumed to be served by the recycled water system. The remainder of the areas were assumed be served by domestic water and are accounted for in the unit demand factors.

The ultimate average citywide demand estimate included in the Technical Memorandum (Appendix 1) is reported as 69,384 AFY. For this Master Plan, the ultimate average demand is estimated at 74,735 AFY as shown in Table 1-3. The reason for the difference is that the Master Plan did not account for recycled water use for future OMC developments or for recycled water use conversions in the OMC. In the event that future OMC developments do not use recycled water or if current domestic water users are not converted to the recycled water system, the domestic water system is planned to be able to accommodate all the expected ultimate demands.

The following unit demand factors were implemented for all areas where population data was available. These factors account for future water conservation efforts.

Rural Residential = 140 gpd/person

Low Density Residential = 136 gpd/person

Low-Medium Density Residential = 116 gpd/person

Medium Density Residential = 98 gpd/person

High Density Residential = 76 gpd/person

Office Commercial and Business Park = 43 gpd/job

Neighborhood Commercial = 70 gpd/job

General Commercial = 180 gpd/job

Industrial = 95 gpd/job

Mixed use office = 43 gpd/job

Mixed use non-office = 125 gpd/job

The City of Ontario's ultimate water system demands utilized in this study are shown in Table 1-3 by zone.

Table 1-3
Ultimate Water Demands by Zone

Zone	Average			Max Month[1]			Max Week[2]			Max Day[3]			Peak Hour[4]		
	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY
1348	3,552	5.11	5,728	5,079	7.31	8,192	5,399	7.77	8,707	5,683	8.18	9,166	8,208	11.82	13,239
1212	15,874	22.86	25,601	22,700	32.69	36,610	24,128	34.74	38,914	25,398	36.57	40,962	36,685	52.83	59,165
1074	6,045	8.70	9,749	8,644	12.45	13,942	9,188	13.23	14,819	9,672	13.93	15,599	13,970	20.12	22,531
1010	7,878	11.34	12,705	10,737	15.46	17,317	11,446	16.48	18,460	12,076	17.39	19,477	16,162	23.27	26,065
925	12,990	18.71	20,951	17,277	24.88	27,864	18,446	26.56	29,750	19,485	28.06	31,426	24,981	35.97	40,290
Total	**46,339**	**66.73**	**74,734**	**64,438**	**92.79**	**103,925**	**68,608**	**98.80**	**110,651**	**72,315**	**104.13**	**116,630**	**89,113**	**144.01**	**161,290**

** Demands shown do not include potential recycled water use in OMC or potential recycled water conversions*

[1] Maximum Month Demand shown is calculated using maximum month factor of 1.43 for OMC demands and 1.33 for NMC demands.

[2] Maximum Week Demand shown is calculated using maximum week factor of 1.52 for OMC demands and 1.42 for NMC demands.

[3] Maximum Day Demand shown is calculated using maximum day factor of 1.60 for OMC demands and 1.50 for NMC demands. In the hydraulic model, a maximum day factor of 1.24 is used for Temple Inland.

[2] Peak Hour Demand shown for each zone is calculated using the overall system peak hour factor of 1.92. In the hydraulic model, some of the large users are assigned specific Peak Hour factors based on the user's hours of operation. The actual peak hour demands may vary by zone in the model.

Developed unit demand factors in gpd/ac are shown in Table 1-4.

Table 1-4
Domestic Water Unit Demand Factors

Landuse		Density (du/ac)	Density (people/ du)	Unit Demand Factor (gpd/ person or gpd/job)	Unit Demand Factor (gpd/ac)	Unit Demand Factor (gpd/du)
Residential						
Rural Residential	RR	0 - 2	4.0	140	1,120	560
Low Density Residential	LDR	2 - 5	4.0	136	2,450	544
Low Medium Density Residential	LMDR	5 - 11	4.0	116	3,940	464
Medium Density Residential (OMC)	MDR	11 - 25	3.8	98	6,730	372
Medium Density Residential (NMC)	MDR	11 - 25	3.3	98	7,220	323
High Density Residential (OMC)	HDR	25 - 45	3.3	76	8,900	251
High Density Residential (NMC)	HDR	25 - 45	2.0	76	5,320	152
Commercial						
Business Park	BP	-	-	43	2,200	-
General Commercial	GC	-	-	180	2,200	-
Hospitality[1]	HOS	-	-		5,000	-
Neighborhood Commercial	NC	-	-	70	2,200	-
Office Commercial	OC	-	-	43	3,400	-
Industrial						
Industrial	IND	-	-	95	2,000	-
Mixed Use						
Mixed Use[2]	MU	-	-	Factors for residential, see above 43 for office 125 for non-office	N/A	-
Open Space						
Open Space Non-Recreational	OS-NR	-	-	-	1,000	-
Open Space Recreational	OS-R	-	-	-	1,000	-
Public						
Public Facility	PF	-	-	-	2,200	-
Public School[3]	PS	-	-	-	3,500	-

[1] If possible it is recommended to use 150 gpd/room on a case by case basis. It is difficult to estimate the number of rooms or square footage per acre.

[2] Mixed Use demands should be based on the types of landuse that make up the specific area and the unit flow factors provided above. The City's 2010 General Plan (The Ontario Plan) provides detailed information on the landuses that make up each mixed use area (See Table 3-2 of this report).

[3] The unit flow factor 3,500 gpd/ac include an allowance for irrigation. If irrigation will be supplied by recycled water, a factor of 1,800 gpd/ac is recommended. This reduced factor was used in the hydraulic model for NMC schools.

Recycled Water

The City's existing recycled water use in OMC is estimated at 1,547 AFY as of January 2010. The recycled water is supplied by Inland Empire Utilities Agency's (IEUA) recycled water system. There are currently 147 recycled customer meters in the City.

The City's Recycled Water Master Plan is based upon increasing the recycled water use in OMC to 6,898 AFY, including 1,944 AFY in currently vacant areas, and 3,407 AFY in future conversions from potable water to recycled water along the planned recycled water pipeline alignments. The Recycled Water Master Plan determined the need for 11,487 AFY of recycled water in NMC.

Conversions of domestic water use to recycled water use was not incorporated into the domestic water model for this study. This was done to be conservative and assure that the domestic water system could provide the demands if necessary.

1-4 Water Supply

Sources of Supply

The City's existing potable water supply consists of imported water from the Water Facilities Authority (WFA) and Chino Basin Desalter Authority (CDA) and the groundwater from Chino Basin, extracted via the City's wells. The City currently owns 32 wells. Four wells are either abandoned or destroyed, five (5) of the wells are inactive, while the other 23 wells are operational. Over the last ten years, the City has imported an average of 12,735 AFY and pumped 30,605 AFY from the groundwater basin. Therefore, about 29 percent of the City's water supply is imported.

Imported Water Supply

Water is imported into Southern California through two major water supply systems:

1. The Colorado River Aqueduct, constructed and operated by Metropolitan Water District of Southern California (MWD), transports water from the Colorado River to MWD's service area.
2. The State Water Project, owned and operated by the State of California Department of Water Resources (DWR), transports water from the Sacramento-San Joaquin Delta through the California Aqueduct.

The City's imported water supply over the last ten years is shown in Table 1-5.

Table 1-5
Imported Water Supply

Year	WFA Supply		CDA Supply		Total Supply	
	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)
2000	9,258	8.3	-	-	9,258	8.3
2001	8,907	8.0	-	-	8,907	8.0
2002	9,325	8.3	-	-	9,325	8.3
2003	13,207	11.8	-	-	13,207	11.8
2004	15,143	13.5	-	-	15,143	13.5
2005	13,406	12.0	-	-	13,406	12.0
2006	12,256	10.9	2,852	2.5	15,108	13.5
2007	12,826	11.5	5,352	4.8	18,178	16.2
2008	8,747	7.8	7,528	6.7	16,275	14.5
2009	3,494	3.1	5,047	4.5	8,541	7.6
Average	**10,657**	**9.5**	**5,195**	**4.6**	**12,735**	**13.0**

2000-2008 data from City's General Production Reports
2009 data from Ontario System Operations file

Water Facilities Authority

The Water Facilities Authority (WFA) currently owns and operates the Agua de Lejos Water Treatment Plant located at the Benson Avenue and 18th Street, in the City of Upland. It is a conventional surface water treatment facility that treats and disinfects imported water supplies, primarily State Water Project water that is purchased from MWD through IEUA. The current rated capacity of the plant is 81 mgd. The City of Ontario owns 25 mgd or 31.4 percent of the treatment plant capacity.

The water from Agua de Lejos Water Treatment Plant is conveyed to two locations that connect with the City's existing water system. The first turnout (Turnout 1) is located adjacent the 1212-1A and 1212-1B Reservoirs at the northwest corner of Eighth Street and Fern Avenue. It has a 16 mgd capacity. The second turnout (Turnout 2) is located adjacent the 1212-3 Reservoir at the southeast corner of Campus Avenue and A Street. It has a 9 mgd capacity. The maximum volume of water that the City can receive from their WFA connections is therefore 25 mgd.

Chino Basin Desalter Authority

The Chino Basin Desalter Authority (CDA), a joint powers agency, purifies brackish groundwater extracted from the lower Chino Basin with the Chino 1 and Chino 2 Desalter facilities and distributes drinking water to member agencies. Each of the member agencies has "take or pay" contracts to purchase water produced by the CDA. CDA owns and operates the two groundwater treatment desalination systems, Chino Desalter 1 (CDA I) and Chino Desalter 2 (CDA II).

CDA I is located in the City of Chino south of Kimball Avenue, west of Euclid Avenue. There are 14 supply wells feeding the desalter facilities. CDA I produces 14.2 mgd or 15,900 AFY of high-quality drinking water. The City receives about 1,500 AFY of water from the CDA I facility.

CDA II is located at 11202 Harrel Street in Mira Loma, California. There are 8 supply wells feeding the desalter facilities. CDA II produces 9.3 mgd or 10,400 AFY of high quality drinking water. The City receives about 3,500 AFY of water from the CDA II facility.

Groundwater Supply

The City extracts groundwater from the Chino Groundwater Basin (Chino Basin or Basin), which is one of the largest groundwater basins in the Southern California area with storage capacity estimated at five to seven million acre-feet. It collects roughly 140,000 acre-feet of water each year. Chino Basin encompasses about 235 square miles of the upper Santa Ana River watershed and lies within portions of San Bernardino, Riverside, and Los Angeles counties.

Per the Chino Basin Judgement, the City of Ontario has appropriative rights to 16,337.40 AFY and its share of the initial operating safe yield is 11,373.82 AFY or 20.74 percent.

Water Quality

Imported water is generally of good quality with nitrate and total dissolved solid concentrations well below the established maximum contaminant levels. Groundwater quality in Chino Basin is generally good with better quality in the northern portion of the basin where recharge occurs. Salinity (TDS) and nitrate-nitrogen concentrations increase in the southern portion of the basin.

Areas of high nitrate concentrations are shown in Figure 5-2. The City of Ontario has inactivated or abandoned several wells (Well 3, 4, 9, 15, and 50) due to high nitrate and perchlorate concentrations detected above the maximum contaminant levels (MCL).

Future Imported Water Supply

In the future, water supply capacity provided from WFA will remain at 25 mgd. The City's Chino II product water entitlements from CDA will increase by 3,533 AFY following the completion of the Chino II expansion project. The total supply from CDA II will be about 7,033 AFY. The total supply from CDA I will remain at 1,500 AFY. New facilities are being designed so that the CDA II product water can be delivered to the City's 1010 Zone in the vicinity of the intersection of Millliken Avenue and Riverside Drive.

1-5 Existing System

General

The City's existing domestic water system consists of the following:

- 5 primary pressure zones (Zone 925, 1010, 1074, 1212, and 1348)
- Over 2.8 million feet (546 miles) of transmission and distribution pipe, 2-inches through 42-inches in diameter
- 6,811 fire hydrants
- 36,658 water meters
- 23 active wells and 5 inactive wells
- 12 reservoirs with a total volume of 75 MG
- 4 active booster pump stations, 1 inactive booster pump station
- 16 pressure reducing stations
- 5 inter-agency connections
- 2 Connections to Water Facilities Authority
- 2 Connections to Chino Desalter Authority
- 1 Ion Exchange Treatment Facility
- 2 altitude valves
- 36,658 domestic water services (See Table 1-6)

Table 1-6
Water Meter Type

Meter Type	Number of Meters
Single Family Residential	29,473
Multiple Family Residential	2,069
Commercial	3,285
Industrial	278
Landscape Irrigation	1245
Other	308
Total	**36,658**

The existing water service area includes only a very small portion of New Model Colony- Edenglen by Brookfield Homes (located south of Riverside Drive, east of Mill Creek Avenue), and Colony High School (located south of Riverside Drive and west of Mill Creek Avenue). The majority of the existing residents and businesses of NMC use private groundwater wells for their water supply. The existing domestic water system is shown on Figure 1-2. The hydraulic schematic of the existing water system is shown on Figure 1-3.

WFA
Aqua de Lejos
Water Treatment Plant

RES1348-1A
RES1348-1B
RES1348-1C

RES1212-1A
RES1212-1B

SAW
Conn

BP-3
BP-4

RES1212-3

WFA
Conn

WFA
Conn

City of
Upland

City of
Rancho Cucamonga

City of
Montclair

City of
Chino

City of
Chino

City of
Fontana

Riverside
County

Old Model
Colony

New Model
Colony

BP-9A
BP-9B

RES1074-1A
RES1074-1B

BP-1A
BP-1B
BP-1C
BP-2

RES1010-1

RES1010-2A
RES1010-2B

RES925-2A

Ontario

PRS2
PRS3
PRS4
PRS5
PRS6
PRS7
PRS8
PRS9
PRS10
PRS11
PRS12
PRS13
PRS14
PRS15
PRS17
PRS18

CDA II
Conn

CDA I
Conn

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
EIGHTH ST
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST
MAGNOLIA AVE
CYPRESS AVE
SR-60
WALNUT ST
RIVERSIDE DR
FERN ST
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
CUCAMONGA CREEK
WINEVILLE AVE
VINTAGE AVE
CLEVELAND AVE
SULTANA AVE
CAMPUS AVE
BON VIEW AVE
CUCAMONGA AVE
GROVE AVE
PARCO AVE
WALKER AVE
BAKER AVE
VINEYARD AVE

N

0 2,500 5,000 10,000 Feet

Legend

- Booster Pump Station
- Pressure Reducing Station
- Reservoir
- Active Well
- Inactive Well
- 1010 Zone Pipe
- 1074 Zone Pipe
- 1212 Zone Pipe
- 1348 Zone Pipe
- CDA Pipe
- WFA Pipe
- City Boundary
- New Model Colony
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone

CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Existing Water System

Figure 1-2

1500'
1400'
1300'
1200'
1100'
1000'
900'
800'
700'
600'
500'
400'
300'
200'

WFA AGUA DE LEJOS WTP
1618'
1618'
JOINT AGENCY PRS
1474'
30"
NO. 2 TURNOUT/ PRS
1350'
1454'
16"
≈ 9 MGD FROM WFA NO.2
1348' (1A)
1348' (1B)
1348' (1C)
3.00 MG
2.00 MG
3.75 MG
1348'
8.75 MG (3 RES.)
1212' (1A)
1212' (1B)
1212' (2)
1212' (3)
20.00 MG
2.00 MG
0.37 MG
10.00 MG
1212'
32.00 MG
(3 RES.)
1180'
1348' ZONE
4,308 AFY
(11.4 %)
1020'
BP: "B"
XXX GPM
1232'
1454'
NO. 1 TURNOUT/ PRS
SAW
850 AF/Y
24"
≈ 16 MGD FROM WFA NO. 1
1095'
ALT. VALVE
1074' (1A)
1074' (1B)
2.75 MG
2.00 MG
1074'
4.75 MG (2 RES.)
PHASE 2: 1212' TO 925'
1298 GPM
1315 GPM
1282 GPM
CDA II ONTARIO BPS
1110'
CDA II VIA JCSD
3,500 AFY
2,170 GPM
PRS
(PHASE 2)
PRS
(LAT. B)
PRS
(LAT. A)
925' (2A)
6.00 MG
925' 6 MG (1 RES.)
WELLS : 49
2760 GPM
1010' (1)
1010' (2A)
1010' (2B)
1010'
23.50 MG
(3 RES.)
5.50 MG
9.00 MG
9.00 MG
150 HP
BP: 3
100 HP
4
2979 GPM
1803 GPM
PRS :
6" 15 52 PSI
6" 47 PSI
46
2500 TBD
1212' ZONE
17,835 AFY
(47.3 %)
PRS:
4" 14 45 PSI
8" 40 PSI
FROM CVWD
PRS:
6" 6 65 PSI
8" 60 PSI
4" 9 65 PSI
8" 60 PSI
4" 10 89 PSI
6" 85 PSI
10" 70 PSI
4" 11 62 PSI
8" 57 PSI
4" 12 79 PSI
6" 73 PSI
10" 68 PSI
GALVIN WTP
OUT OF SERVICE
MWD
930'
1074' ZONE
8,026 AFY
(21.3 %)
825'
ALT. VALVE
ION-EX
880'
1010' ZONE
7,538 AFY
(20.0 %)
735'
865'
47
1600 TBD
WELLS : 9 18 19 20 24 25 26 27 29 30 31 37 38 41
1200 GPM 580 GPM 786 GPM 1803 GPM 1280 GPM 865 GPM 1061 GPM 2503 GPM 1810 GPM 2958 GPM 2953 GPM 2424 GPM 2557 GPM
200 HP
BP: 9A
200 HP
9B
2137 GPM
2159 GPM
FACILITIES IN PLACE TO BOOST TO 1348' ZONE
BP: 3686 GPM 1A 250 HP
3500 GPM 1B 200 HP
4766 GPM 1C 350 HP
2200 GPM 2 250 HP
PRS:
3" 7 55 PSI
4" 50 PSI
8" 45 PSI
4" 8 55 PSI
8" 50 PSI
12" 40 PSI
4" 13 60 PSI
6" 55 PSI
10" 50 PSI
WELLS : 40 11 15 16 17 35 36 45 3 4 44 52
5305 TBD 240 GPM 300 GPM 1383 GPM 3020 GPM 1658 GPM 2500 GPM 1080 GPM 1240 GPM 2500 GPM 2500 GPM
PRS:
DEM
DEM
4" 2 62 PSI
8" 58 PSI
8" 52 PSI
4" 3 65 PSI
8" 60 PSI
8" 55 PSI
8" 4 64 PSI
12" 57 PSI
4" 90 PSI RELIEF
4" 5 65 PSI
6" 60 PSI
8" 50 PSI
WELL : 50 2500 GPM
34 2074 GPM
CDA I (930 GPM) (1,500 AFY) ARCHIBALD BPS
39 2413 GPM
PRS :
4" 17
10"
4" 18
10"
14"

LEGEND :

WELLS : INACTIVE ACTIVE
RES. = RESERVOIR INACTIVE ACTIVE
SAME SITE =
BP = BOOSTER PUMP INACTIVE ACTIVE
CDA = CHINO BASIN DESALTING AUTHORITY
PRS. = PRESSURE REDUCING STATION INACTIVE ACTIVE
SAW = SAN ANTONIO WATER CO. ABANDONED
WFA = WATER FACILITIES AUTHORITY
AFY = ANNUAL CONSUMPTION FOR 08'
(%) = PERCENT OF TOTAL CONSUMPTION
HYDROELECTRIC FACILITY =
ALTITUDE VALVE =
BLENDING STATION =
TURNOUT / PRS
ION EXCHANGE PLANT ION-EX

BOOSTER LINE
PRV LINE
RES. DEDICATED FILL LINE
WFA FACILITY

NITRATE LEVELS (MG/L)

<20 20-30 31-40 41-50 >50

CITY OF ONTARIO
AKM
PROJECT NO. 1000919.00
DATE: March 2011

CITY OF ONTARIO
WATER MASTER PLAN

Existing Water System
Hydraulic Schematic

Figure 1-3

Pressure Zones

As shown in Figure 1-2, the existing system is divided into the 5 pressure zones entitled: 925 Zone, 1010 Zone, 1074 Zone, 1212 Zone, 1348 Zone. It should be noted that the 925 Zone does not currently have any existing demands. The 925 Zone will serve the future New Model Colony developments. The largest pressure zone in the system is the 1212 Zone, which covers about 38 percent of the existing water service area. Details of each pressure zone are shown in Table 1-7.

Table 1-7
City of Ontario Pressure Zones

Pressure Zone Name[1]	Pressure Zone Name[2]	Area (sq. mi.)	Area (Ac)	Pipe Length (ft)	Hydraulic Grade Line (ft)	Ground Elevation Range (ft)	Static Pressure Range[3] (psi)
1348	13th Street	3.1	1,954	370,591	1,348	1,020 - 1,180	73 - 142
1212	8th Street	18.7	11,957	1,285,311	1,212	865 - 1,095	51 - 150
1074	4th Street	7.5	4,780	596,218	1,074	825 - 930	62 - 108
1010	Phillips Street	9.0	5,783	615,906	1,010	735 - 880	56 - 119
925[4]	Francis Street	10.5	6,733	15,341	925	635 - 800	54 - 126
	Total	**48.8**	**31,206**	**2,883,366**			

[1] Nomenclature used in this report.

[2] Nomenclature used in previous Water Master Plan.

[3] Calculated based on HGL and ground elevation range.

[4] There is no existing demands in the 925 Zone. The water entering Reservoir 925-2A is pumped out to the 1212 Zone. Brookfield Homes and Colony High School are currently connected to the 1010 Zone.

Transmission and Distribution System

The potable water system includes 546 miles of transmission and distribution pipe, ranging in size from 2-inches through 42-inches. Pipe materials are primarily ductile iron, cast iron, and cement motor lined and welded steel. More than half of the system was constructed between 1970 and 2000.

City Wells

There are 32 wells within the City's water system. Twenty three (23) of them are currently active and five (5) are inactive. Four wells have been abandoned. The total well capacity is about 51,100 gpm or 73.6 mgd.

Reservoirs

The City's water system includes twelve (12) reservoirs ranging in capacity from 2 million gallons to 20 million gallons. The City's total reservoir capacity is currently 75 MG of which approximately 32 MG lies within the 1212 Zone. The hydraulic gradient in each pressure zone is controlled by the high water elevation of the reservoirs that feed the zones by gravity.

All the existing reservoirs in the City are less than 60 years old with the exception of Reservoir 1212-3, which was constructed in 1926. The average life expectancy of concrete reservoirs and steel tanks is about 100 years, provided that reservoirs are properly maintained and regularly

repainted or recoated every 15-20 years. Thus, most of the City reservoirs are expected to be in fairly good condition and no improvements based on age are recommended except for Reservoir 1212-3.

Booster Pump Stations

The City's system includes five booster pump stations. One station, housing Booster B (BP-B), is inactive. The Ontario Booster Pump Station was constructed in 2008. It currently takes suction from Reservoir 925-2A. Reservoir 925-2A was constructed to ultimately serve a new 925 Zone, which will serve water to New Model Colony. Currently, there is not much demand in New Model Colony. Therefore, the water is moved from Reservoir 925-2A to the 1212 Zone via three pumps at the Ontario Booster Pump Station.

Pressure Reducing Stations

The City's system includes sixteen (16) pressure reducing stations (PRS). Most of the stations have two or more pressure reducing valves (PRVs), a main valve and a one or more bypass valves. The main valve, the smallest in diameter, typically has the highest pressure setting. Bypass valves are larger in diameter and have a slightly lower pressure setting than the main valve. The bypass valve will open when the system pressure drops below the main valve's pressure setting and the main valve cannot supply enough water. If the downstream pressure continues to fall below the bypass valve pressure setting, the second bypass valve will open to provide additional water. In addition, pressure relief valves are generally present at each PRS. These valves protect the water system from abnormally high pressures should the regulating valves fail to work properly.

Altitude Valves

The existing system has two altitude valves that regulate reservoir operations. The altitude valves are operated based on levels in Reservoirs 1010-2 and 1010-1.

Imported Water Connections

The City has two Water Facilities Authority (WFA) turnouts, two points of connection with the Chino Basin Desalter Authority (CDA), and one point of connection to the San Antonio Water Company (SAWC).

Inter-Agency Connections

The City's water system has five inter-agency connections with neighboring cities or water utilities. These inter-agency connections allow the City to obtain water from or provide water to adjacent water systems. One connection is capable of allowing water from Cucamonga Valley Water District to the City's 1212 Zone. One connection is capable of providing water from the City's 1212 Zone to the City of Chino. Three connections are capable of providing water from the City's 1348 Zone to the City of Upland and Cucamonga Valley Water District.

Water Treatment

Operated by the City for over thirty years to treat raw Colorado River water from the MWD Upper Feeder, the John Galvin Water Treatment Plant was deactivated in 1993 because the treatment process did not meet the requirements of the Surface Water Treatment Rule.

As a part of participating in the DYY program, the John Galvin Water Treatment Plant site (southeast corner of Cucamonga Avenue and Fourth Street) was chosen for the location of a new ion-exchange facility. The ion-exchange plant was completed in 2008 and treats water extracted from Well 44 and Well 52. The groundwater is treated for nitrates and perchlorates and is then fed into Reservoir 1074-1A and 1074-1B. The facility includes a bypass blending system where groundwater can be blended with Zone 1212 water prior to entering Reservoir 1074-1A and 1074-1B. The treated and bypass blending capacities depend on the groundwater quality being treated at the time. The maximum well water concentrations are 70 mg/L nitrate and 8 micrograms/L perchlorate. The treated well water has concentrations of less than 35 mg/L nitrate and less than 4.6 micrograms/L perchlorate.

1-6 Service Criteria

Performance criteria are established to evaluate the adequacy of various water system components through a systematic analysis. Necessary improvements are identified and recommended for inclusion in a Capital Improvement Program (CIP). Some criteria are based upon experience and their application is at the discretion of the water purveyor. This includes service pressures, storage capacity, and sources of supply. Other criteria, such as water quality and fire protection, are based on federal, state and local jurisdictional requirements.

A summary of the service criteria is listed in Table 1-8.

Water Quality

The quality of water served by the City has to be in accordance with the Federal standards as well as the State of California Department of Public Health (CDPH) standards as set forth in Title 22 of the California Code of Regulations.

The basic water quality standards are established by the Safe Drinking Water Act (SDWA), which was passed by the Congress in 1974. Amendments to the SDWA were enacted in 1986 and 1996. The SDWA mandated the U.S. Environmental Protection Agency (EPA) to develop primary drinking water standards or maximum contaminant levels (MCL'S) in public water supplies.

The CDPH has responsibility for the State's drinking water program. It is accountable to the EPA for enforcement of the SDWA and for adoption of standards that are at least as stringent as that of the EPA. Since California conducts independent risk assessments, some of its standards are more stringent than the standards of the Federal Government.

See Section 7-2.11 for additional information regarding the water quality requirements.

Table 1-8
Service Criteria

Description	Criteria	Existing Requirement	Ultimate Requirement
1. Source of Supply			
a. Total	Maximum Day Demand (except for closed zones which shall be Maximum Day Demand plus Fire Flow Demand or Peak Hour, whichever is greater)	37,409 gpm	72,315 gpm
b. Local Supply	Average Day Demand	23,380 gpm	46,339 gpm
2. Reservoir Capacity			
a. Operational Storage	30% of Maximum Day Demand	16.2 mg	27.4 mg
b. Emergency Storage	100% of Average Day Demand	33.7 mg	66.7 mg
c. Fire Suppression	Highest Fire Flow Requirement		
Residential			
Rural	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Low Density	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Low-Medium Density	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Medium Density	2,000 gpm for 2 hours	0.24 mg	0.24 mg
High Density	3,500 gpm for 4 hours	0.84 mg	0.84 mg
Retail / Service			
Neighborhood Commercial	2,500 gpm for 3 hours	0.45 mg	0.45 mg
General Commercial	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Office Commercial	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Hospitality	4,000 gpm for 4 hours	0.96 mg	0.96 mg
Employment			
Business Park	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Industrial	3,500 gpm for 4 hours	0.84 mg	0.84 mg
Other			
Airport	4,000 gpm for 4 hours	0.96 mg	0.96 mg
Mixed Use	3,500 gpm for 4 hours	0.84 mg	0.84 mg
Open Space	1,500 gpm for 2 hours		
Public Facility	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Public School	2,500 gpm for 3 hours	0.45 mg	0.45 mg
3. Booster Pump Stations	➢ Capable of delivering Maximum Day Demand plus Fire Flow or Peak Hour Demand of service area, whichever is greater ➢ Stand-by pump equal in size to the largest duty pump ➢ Flow meters, suction and discharge pressure gauges, and telemetry equipment for alarm and status notification at each station ➢ Provisions for emergency power at all stations		
4. Minimum Pipe Size	12-inch in commercial and industrial areas 8-inch in all other areas		

Table 1-8
Service Criteria (continued)

Description	Criteria
5. Maximum Velocities	➢ 5 ft/s at Average Day Demand ➢ 7 ft/s at Maximum Day Demand (5 ft/s for PVC pipe) ➢ 7 ft/s at Fire Flow Demand (5 ft/s for PVC pipe)
6. Static Pressures	➢ Minimum 40 psi ➢ Desired 60 - 80 psi ➢ With pressure regulation over 80 psi
7. Dynamic Pressures	Minimum 40 psi during Peak Hour Demand
8. Fire Flows and Pressures	
Residential	
Rural	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant
Low Density	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant
Low-Medium Density	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant
Medium Density	2,000 gpm for 2 hours with 20 psi residual pressure at fire hydrant
High Density	3,500 gpm for 4 hours with 20 psi residual pressure at fire hydrant
Retail / Service	
Neighborhood Commercial	2,500 gpm for 3 hours with 20 psi residual pressure at fire hydrant
General Commercial	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant
Office Commercial	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant
Hospitality	4,000 gpm for 4 hours with 20 psi residual pressure at fire hydrant
Employment	
Business Park	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant
Industrial	3,500 gpm for 4 hours with 20 psi residual pressure at fire hydrant
Other	
Airport	4,000 gpm for 4 hours with 20 psi residual pressure at fire hydrant
Mixed Use	3,500 gpm for 4 hours with 20 psi residual pressure at fire hydrant
Open Space	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant
Public Facility	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant
Public School	2,500 gpm for 3 hours with 20 psi residual pressure at fire hydrant

1-7 Hydraulic Model

A computer model of the City's water system was utilized to aid in the evaluation of the adequacy of the existing facilities under present and future demand conditions.

Hydraulic analyses were performed using the Innovyze (formerly MWHSoft) InfoWater program, which is a commercially available hydraulic software package that is designed to simulate steady state and extended period operations of water systems.

The City's existing hydraulic model, developed for the 2006 Water and Recycled Water Master Plan, was used as the basis for the model. For this study, pipelines and facilities that had been constructed since mid-2004 and not included in the original model were added per the City's Water GIS and as-built construction plans.

The model primarily includes the domestic water pipelines that are owned by the City. Water service laterals are not included. Modeling information associated with each pipe includes size, length, and roughness. Other information included in the model database are pipe diameter, year of installation, zone, and pipe material. Modeling information associated with each node includes elevation, water demand, and diurnal pattern of demand. Node and facility elevations were obtained from the City's 2-foot contour information, provided in GIS shapefile format. The elevations are based on the National American Vertical Datum (NAVD) of 1988.

See Section 8 for additional details on the development of the hydraulic model.

1-8 System Analysis

The established system criteria and the computer model were utilized in analyzing the system, and evaluating its adequacy. The system was analyzed under average day, maximum day, peak hour, and maximum day plus fire flow conditions. Survey of the City's source of supply, storage, and pumping facilities were also conducted.

Existing system deficiencies were identified and mitigation projects were formulated based upon the results of the model runs, the survey, and input from City staff. Proposed projects were added in the hydraulic model to test the operation of the system after implementation.

Source of Supply

The criterion established requires a source of supply equal to one maximum day demand, with one average day demand from local sources.

Per the criterion, the City's existing source of supply should be greater or equal to 37,409 gpm with 23,380 gpm from local sources. The total existing supply sources is equivalent to 71,554 gpm which exceeds the criteria of one maximum day demand of 37,409 gpm. The total source of supply from wells or local sources is 51,093 gpm which exceeds the criteria of one average day demand of 23,380 gpm.

Per the criterion, the City's ultimate source of supply would need to be greater or equal to 72,315 gpm (maximum day demand) with 46,339 gpm (average day demand) from local sources. The City already has an additional well drilled (Well 43) and sites identified for three more (Well 42, 48, and 51). Altogether, the ultimate system will include 9 additional wells, with 7 wells serving the 925 zone. The total capacity of the existing wells meets the criteria of one average day demand under ultimate conditions. However, additional wells are needed to be able to supply the maximum day demand efficiently when water from one or more of the imported supply sources may not be available, and to operate the wells during the off-peak periods.

The estimated useful life of well casings is 60 years. The oldest active well is Well 17, which was constructed in 1963. Well 24 was constructed in 1969, and Wells 25, 26, and 27 were constructed in 1971. Depending upon the condition of the casings, these wells may be lost in the next 15 to 20 years. Because nine new wells are planned, additional replacement wells have not been included in the CIP for these wells.

Storage

For the City of Ontario's system, operational storage criterion is based on 30 percent of the maximum day demand for NMC, and 25 percent of maximum day demand for OMC due to the diversity of demands in OMC. The City's emergency storage criteria is set to one average day demand. Fire suppression storage is the volume required to supply the service area with the required fire flows, which range from 1,500 to 4,000 gpm for a duration of two (2) to four (4) hours. The fire flow suppression storage and operational storage is increased by 15 percent so that a portion of the reservoir volume is available for variations in elevation, and to provide submergence over the reservoir outlet pipe. The emergency storage volume is not increased by 15 percent in order to keep the required storage volumes at reasonable amounts. In a real emergency, the emergency storage volume plus the operational storage volume plus the fire suppression storage volume would all be available for use.

Due to age and condition, it is assumed in the ultimate storage analysis that the 10 MG Reservoir 1212-3 will be abandoned. Two additional 8 MG reservoirs are recommended for the 1212 Zone. One additional 6 MG reservoir and two 9 MG reservoirs are recommended for the 925 Zone which will ultimately provide service to most of New Model Colony. The recommended reservoirs were considered in the ultimate storage analysis.

For the existing system, a storage deficit of 6.68 mgd was calculated in the 1074 Zone. For the ultimate system, the storage deficit of the 1074 Zone is increased to 8.92 mgd. The available surplus in the 1212 Zone (3.52 mgd, following the construction of two new 8 MG reservoirs) could be transferred to the 1074 Zone via PRSs. Ultimately, the 1010 Zone surplus is calculated to be 9.19 mgd. The construction of a new booster pump station is recommended to pump this surplus water from the 1010 Zone to the 1074 Zone.

Reservoir condition assessment led to the following recommendations:

- Structural retrofits for 1348 Zone Reservoirs
- Inlet and outlet piping seismic retrofits for Reservoir 1010-1A
- Repair of Reservoir 1212-3 (to extend its useful life possibly 10 to 15 years), including thorough roof inspection and repair

Model Runs and System Pressures

Existing System Analysis - The existing system was modeled with existing demands in order to confirm the system geometry and controls. Results were compared with SCADA information provided by the City.

Ultimate Maximum Day, Peak Hour Analysis - Upon confirmation that the existing system model was simulating existing field conditions, the remaining hydraulic analyses for this study was primarily based upon the ultimate demands expected for the City's domestic water system. Initially, the ultimate demands were applied to the existing system plus planned facilities for the expanded 1010 Zone and the 925 Zone (see Section 10 for further descriptions). The model was run to determine areas of low pressures under maximum day peak hour conditions. Improvements formulated to increase pressures in these areas to meet the criteria of a minimum of 40 psi during peak hour conditions include 3 PRSs and 28,390 feet of new pipe.

Ultimate Maximum Day plus Fire Flows - System analysis was conducted with ultimate facilities and demands under maximum day plus fire flow conditions. If the fire node was located near multiple land use types, the highest fire flow demand was utilized. Improvement recommendations for additional or upsized pipe to address the fire flow deficiencies include 136,909 feet of pipe.

Additional Analysis / Improvement Recommendations

Additional improvement recommendations based upon previous studies, interviews with City staff and additional analysis include the following:

- Pipeline replacement program for small diameter pipelines (6-inch or less) and aging pipelines (50 years or older)
- Permanent back-up power at Well 39
- Portable generator connections and manual transfer switches at all twenty existing wells
- Purchase of eight 750 KW portable generators
- One future inter-agency connection
- Four future emergency connections
- Completion of water meter replacements
- Security upgrades at Reservoirs 1212-1A & 1212-1B, Reservoir 1212-3, Well 9, Well 26, Well 35, and Reservoir 1010-1
- Airport metering and backflow prevention

See Section 9 for additional information on the aforementioned improvement recommendations.

1-9 Ultimate System

The ultimate domestic water system will consist of five pressure zones as shown on Figure 1-4. As New Model Colony is developed, the 1010 Zone will be expanded further south to Chino Avenue and a fifth pressure zone called the 925 Zone will be added, covering the rest of New Model Colony. A hydraulic schematic of the ultimate system is shown on Figure 1-5. Ultimate facility recommendation locations are shown on Figure 1-6.

WFA
Aqua de Lejos
Water Treatment Plant

RES1348-1A
RES1348-1B
RES1348-1C

RES1212-4A
RES1212-4B

City of Upland

RES1212-1A
RES1212-1B

SAW Conn

BP-3
BP-4

WFA Conn

WFA Conn

City of Rancho Cucamonga

City of Montclair

BP-9A
BP-9B

PRS15

RES1074-1A
RES1074-1B

BP-1A
BP-1B
BP-1C
BP-2

PRS14

RES1010-1

RES1010-2A
RES1010-2B

Old Model Colony

PRS9
PRS11
PRS21
PRS22

AV3

RES925-1A
RES925-1B

RES925-2A
RES925-2B

Ontario

PRS6
PRS12
PRS13
PRS10
PRS7
PRS8
PRS19

CDA II Conn

PRS4
PRS5
PRS2
PRS23
PRS3

PRS18

CDA II Conn

City of Chino

PRS16

PRS17

CDA I Conn

New Model Colony

Riverside County

City of Fontana

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
EIGHTH ST
SIXTH ST
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
FOURTH ST
ONTARIO MILLS PKWY
I-10 FWY
AIRPORT DR
JURUPA ST
PHILADELPHIA ST
MISSION BLVD
WINEVILLE AVE
VINTAGE AVE
SR-60
RIVERSIDE DR
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
BENSON AVE
MAGNOLIA AVE
CYPRESS AVE
SR-60
WALNUT ST
RIVERSIDE DR
FERN ST
EUCLID AVE
SULTANA AVE
CAMPUS AVE
BON VIEW AVE
CUCAMONGA AVE
GROVE AVE
PARCO AVE
WALKER AVE
BAKER AVE
VINEYARD AVE
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
CUCAMONGA CREEK
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
CLEVELAND AVE

N

0 2,500 5,000 10,000
Feet

Legend

- Altitude Valve
- Pressure Reducing Station
- Booster Pump Station
- Reservoir
- Active Well
- Inactive Well
- Zone 925 Pipe
- Zone 1010 Pipe
- Zone 1074 Pipe
- Zone 1212 Pipe
- Zone 1348 Pipe
- CDA Pipe
- WFA Pipe
- 925 Pressure Zone
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone
- City Boundary

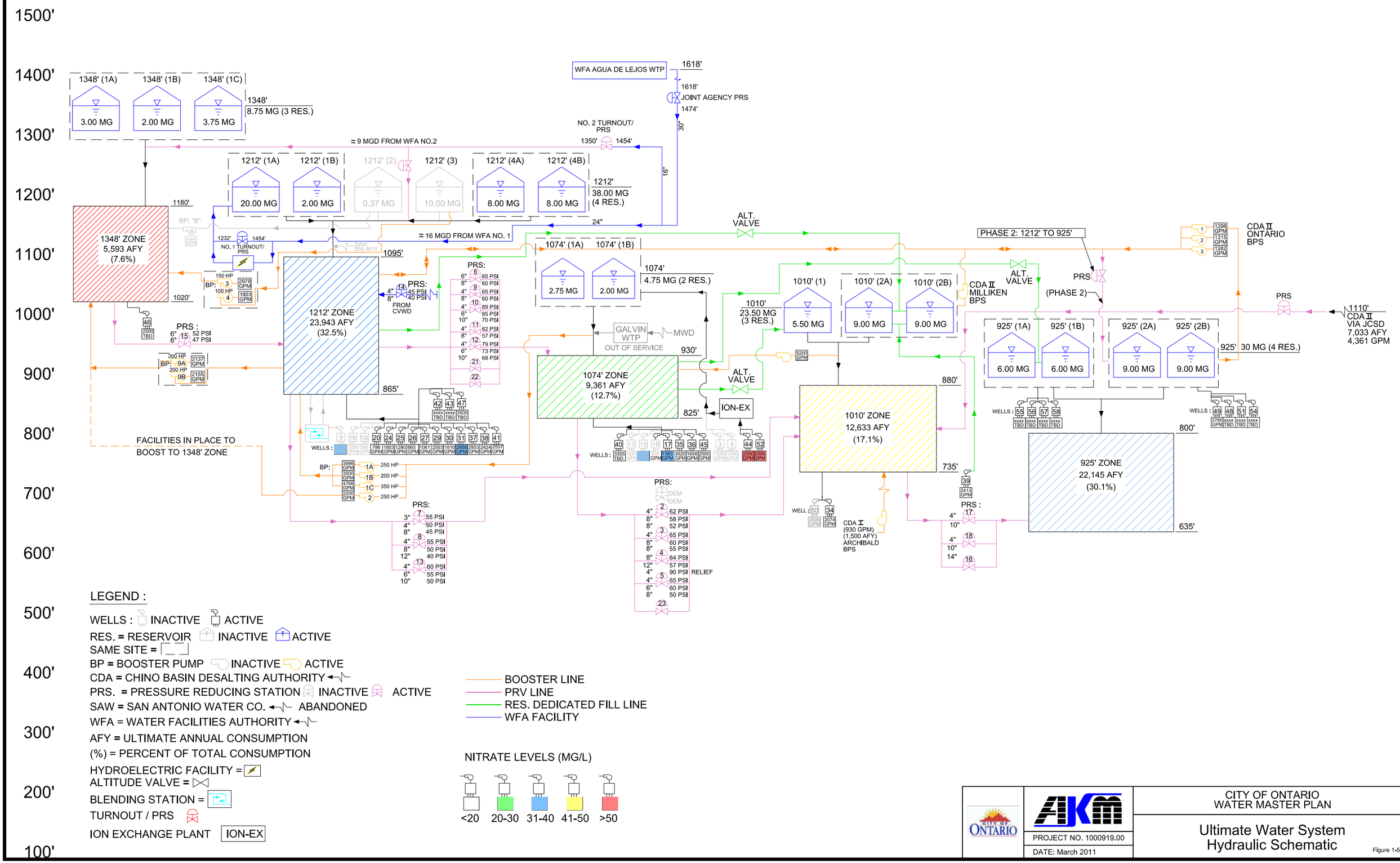
CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Ultimate Water System

Figure 1-4



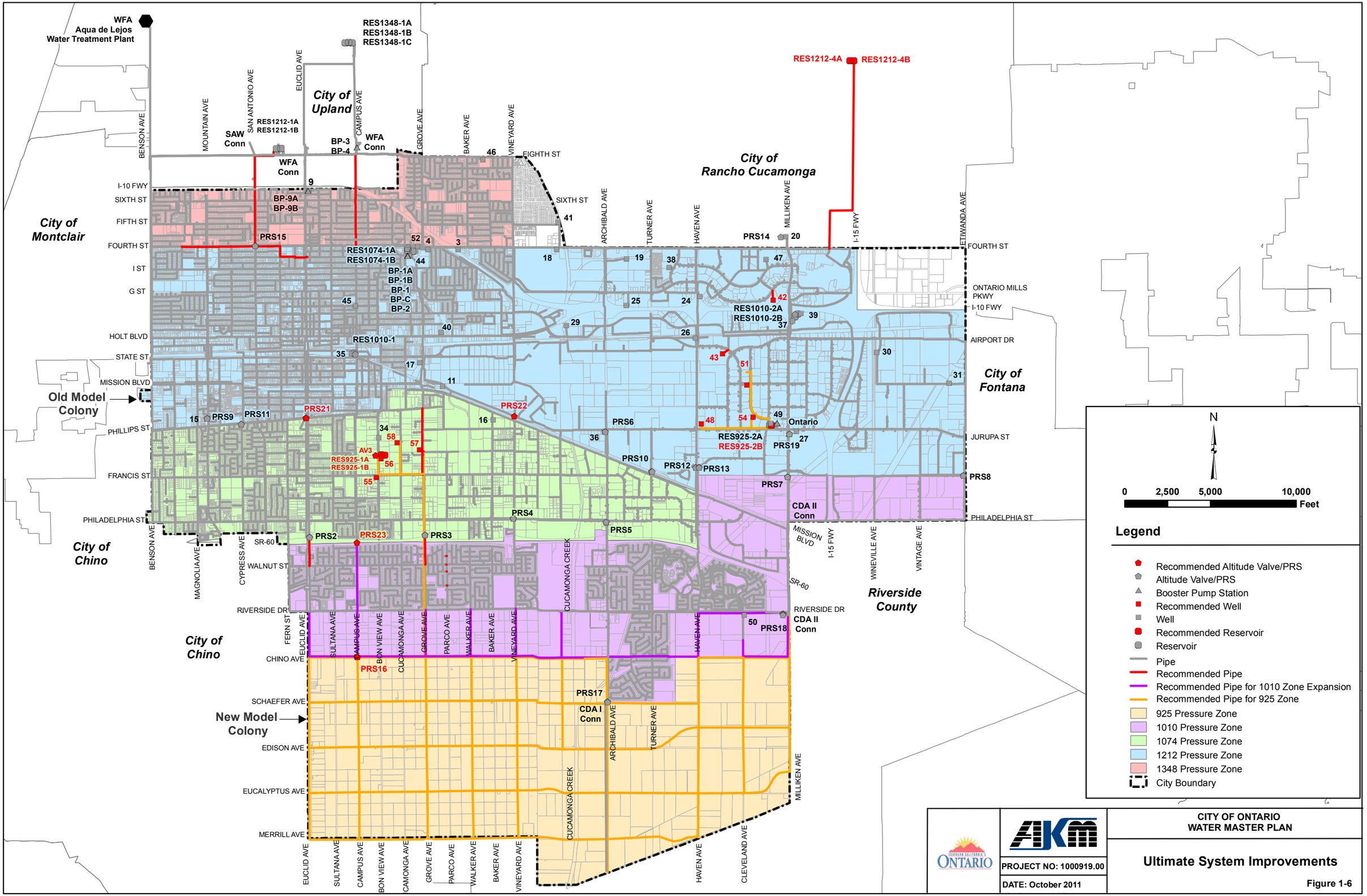
CITY OF ONTARIO WATER MASTER PLAN

Ultimate Water System Hydraulic Schematic

PROJECT NO. 1000919.00

DATE: March 2011

Figure 1-5



CITY OF ONTARIO
WATER MASTER PLAN

Ultimate System Improvements

Figure 1-6

PROJECT NO: 1000919.00

DATE: October 2011

925 Zone Facilities

The future 925 Zone will provide water service to the majority of New Model Colony. This zone is generally bounded by Chino Avenue to the north, Euclid Avenue to the west, the City boundary to the south, and Milliken Avenue to the east. Some of the facilities that will ultimately serve the 925 Zone have already been constructed.

1010 Zone Facilities

The southerly boundary of the existing 1010 Zone will ultimately be expanded south to Chino Avenue from Euclid Avenue to Milliken Avenue. Currently, mainline pipes are planned in major streets. The future pipes will tie into existing 1010 Zone pipes in Riverside Drive. The expanded 1010 Zone will require approximately 58,650 feet of mainline pipes. Recommended sizes range from 12-inches to 18-inches. Pipe sizes recommended in the 2006 WMP and existing agreements with developers were maintained for this study. A new booster pump station from 1010 Zone to 1074 Zone is recommended to provide water to 1010 Zone in emergencies or when storage reserves are low. The location of this future pump station should be determined during a preliminary design study..

1212 Zone Facilities

It is recommended that the future 1212 Zone include two additional 8 MG reservoirs (1212-4A and 1212-4B) to meet the storage criteria. The City has obtained a site located north of Foothill Boulevard and west of Rochester Avenue in the City of Rancho Cucamonga. Piping has already been installed through the adjacent shopping center located on the property east of the reservoir site. The total length of 30-inch pipe required to connect the future Reservoir 1212-4A and 1212-4B to the existing system is approximately 13,600 feet (will depend on final alignment). The new pipe is proposed to tie into an existing 24- inch waterline in Fourth Street. See Figure 1-4 for approximate locations of the recommended 1212 Zone facilities. It is assumed that Reservoir 1212-3 will be abandoned following the construction of Reservoir 1212-4A and 1212-4B.

Under ultimate conditions, the City may take up to 25 mgd supply water from WFA connections in the 1212 Zone. Some of this water needs to be conveyed south through pressure reducing stations to serve other zones. Pressure reducing stations between the 1212 Zone and 1074 Zone are currently located on the east and west end of the 1074 Zone. Two additional pressure reducing stations are recommended at Euclid Avenue and Vineyard Avenue to assist in increasing pressures in the north central portion of the 1074 Zone. Another pressure reducing station is recommended between the 1074 Zone and 1010 Zone at Grove Avenue and SR-60, to increase the pressures in the northern portion of the 1010 Zone.

1-10 Capital Improvement Program

The Capital Improvement Program (CIP) consists of projects that will enhance the system to meet the established criteria, properly maintain the system's assets, and replace the facilities that have reached the end of their useful lives. The goal of the CIP is to provide the City with a long-range planning tool that will allow construction of the recommended projects in an orderly manner to improve the existing system and provide for future growth. In order to accomplish this goal, it is

necessary to determine the estimated cost of the needed water system improvements identified in this report, establish a basis and prioritize each of the projects.

The recommended CIP is shown in Table 1-9. Project locations are shown on Figure 1-7.

Cost Estimates

Cost estimates have been prepared for each recommended project, based upon information from recent similar projects. The pipeline replacement costs are based upon $15 per diameter inch per foot for the OMC and $12 per diameter inch per foot for the NMC. The City of Ontario's Old Model Colony is largely developed, and future pipelines will be constructed along alignments with many existing utilities. Therefore, the costs of constructing new or replacement facilities will be generally higher in this area than one that is undeveloped. New well costs include providing permanent back-up power. Construction costs can be expected to fluctuate as changes occur in the economy. These costs should therefore be reevaluated and updated annually based upon Engineering News Record (ENR) Index for the Los Angeles area (ENRLA), with the base ENRLA Index of 10,285 for April 2012.

It should be noted that some of the improvements recommended herein are conceptual in nature based on existing planning information available. Therefore, they should not be considered as absolute for final design. Further analysis and refinement will be necessary prior to commencing work on the final plans, specifications and estimates package for each project. Detailed preliminary design studies should be prepared to select the final design projects.

The cost estimates that follow were generated by estimating the quantities of required items for each improvement, and applying typical unit prices to obtain the total estimated construction costs. Contingencies are estimated at 10 percent of the construction cost. Engineering and administration costs are estimated at 15 percent of the construction plus contingency costs. The resultant sum is the total estimated project cost.

Projects are identified in Table 1-9 as a part of the OMC or the NMC (column "OMC/NMC") and as needed due to existing conditions or ultimate conditions (column "Ex/Ult"). All fire flow deficiencies found in the OMC are assigned to the existing OMC cost. Fire flow deficiencies were all found under existing conditions, but projects were developed so that the fire flows could be met under ultimate conditions as well. A summary of the total costs are as follows:

Existing OMC cost: $ 157,788,220

Ultimate OMC cost: $ 35,077,180

Ultimate NMC cost: $ 153,097,660

Total CIP cost: $ 345,963,060 (not including annual OMC improvement project costs)

Annual OMC improvement project cost: $675,000

Project Priorities

The primary consideration in establishing project priorities for the capital improvement program list must always be given to the health, safety and welfare of the public and the customers. In general, the projects necessary to improve the existing system are scheduled earlier in the order of supply, pumping and storage. Fire protection rates as a high priority, but is usually dependent on the supply and storage, as well as the distribution system.

Supply improvements rate in the order of benefit to the overall system, and reliability during emergencies such as multiple sources.

Pumping improvements rate in the order of ability to augment fire flows, capacity to maintain adequate storage levels in the reservoirs, and redundancy of power and pumps to provide adequate service during emergencies.

Storage improvements rank in the order of fire protection, operational capability to meet average and peak flows, and emergencies.

With these guidelines, the projects recommended in this report and their estimated costs were examined and sorted. Each project is shown with its total estimated project cost. The City should review this schedule and adjust it annually to respond to changed conditions and to take advantage of concurrent construction such as street paving projects or adjacent infrastructure work.

Projects in New Model Colony or related to service to New Model Colony will be dependent upon the progression of development, which is relatively unknown at this time. Therefore, the New Model Colony projects are not prioritized in Table 1-9.

Table 1-9
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC	Ex/ Ult	Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Improvement Projects																
1	O-1	WAXXXX	OMC	Ex	Other		1348 Zone Reservoirs Structural Retrofits	3	Reservoir	5,000,000	$/project	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	5,000,000
2	O-2	WA0901	OMC	Ex	Other		Reservoir 1010-1A Piping Seismic Retrofits	1	Reservoir	102,000	$/project	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	102,000
3	S-1	WA9910	OMC	Ex	Supply		CIP Well #43 in the 1212 Zone Equipping of Well drilled in 2008	1	Well	1,600,000	$/Well	1,600,000	160,000	35,000	150,000	1,945,000
4	S-2		OMC	Ex	Supply		CIP Well #42 in the 1212 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
5	S-3		OMC	Ex	Supply		Treatment for OMC Wells			Lump Sum		8,890,000	889,000	977,900	488,950	11,245,850
6	S-4	Skipped														
7	S-5	Skipped														
8	S-6	Skipped														
9	S-7		OMC	Ex	Supply		Well #11 Abandon due to continuing sanding problem (1074 Zone)	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
10	R-1		OMC	Ex	Reliability		Backup Power for Well 39 (500 KW) - 1010 Zone	500	KW	500,000	$/Well	500,000	50,000	55,000	27,500	632,500
11	ST-1		OMC	Ex	Storage		Replace Roof on Reservoir 1212-3	73,100	sq ft	10	$/sq ft	731,000	73,100	80,410	40,205	924,715
12	ST-2		OMC	Ex	Storage		Booster Pump Station from 1010 Zone to 1074 Zone - Location to be determined	300	HP	5,000	$/HP	1,500,000	150,000	165,000	82,500	1,897,500
13	O-3	WA0301	OMC	Ex	Other		Airport Metering and Backflow Prevention - Planning	8	meters	120,000	$/study	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	120,000
14	O-4	WA0301	OMC	Ex	Other		Airport Metering and Backflow Prevention - Construction	8	meters	300,000	$/project	300,000	30,000	33,000	16,500	379,500
15	R-2		OMC	Ex	Reliability		Portable Generator Connection and Manual Transfer Switch	2	Well	250,000	$/Well	500,000	50,000	55,000	27,500	632,500
16	R-3		OMC	Ex	Reliability		Portable Generators-750 KW	2	EA	500,000	$/Genset	1,000,000	100,000	110,000	55,000	1,265,000
17	S-8		OMC	Ex	Supply		Abandon Existing OMC Well #9	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
18	S-9		OMC	Ex	Supply		Abandon Existing OMC Well #15	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
19	S-10		OMC	Ex	Supply		Abandon Existing OMC Well #16	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
20	S-11	Skipped														
21	S-12		OMC	Ex	Supply		Abandon John Galvin Facility	1	LS	400,000	LS	400,000	40,000	44,000	22,000	506,000
22	P-1		OMC	Ex	Pressure		20-inch pipeline in Campus Ave from Eighth St to Fourth St (1212 Zone)	5,400	ft	300	$/ft	1,620,000	162,000	178,200	89,100	2,049,300
23	P-2		OMC	Ex	Pressure		30-inch pipeline in Eighth St from Reservoir 1212-1A and 1212-1B to San Antonio Ave (1212 Zone)	1,500	ft	450	$/ft	675,000	67,500	74,250	37,125	853,875
24	P-3		OMC	Ex	Pressure		30-inch pipeline in San Antonio Ave from Eighth St to Fourth St (1212 Zone)	5,300	ft	450	$/ft	2,385,000	238,500	262,350	131,175	3,017,025
25	P-4		OMC	Ex	Pressure		18-inch pipeline in Fourth St from Elderberry Ave to San Antonio Ave (1212 Zone)	4,300	ft	270	$/ft	1,161,000	116,100	127,710	63,855	1,468,665
26	P-5		OMC	Ex	Pressure		18-inch pipeline in Fourth St from San Antonio Ave to Vine Ave (1212 Zone)	1,450	ft	270	$/ft	391,500	39,150	43,065	21,533	495,248
27	P-6		OMC	Ex	Pressure		18-inch pipeline in Vine Ave from Fouth St to J St (1212 Zone)	700	ft	270	$/ft	189,000	18,900	20,790	10,395	239,085
28	P-7		OMC	Ex	Pressure		18-inch pipeline in J St from Vine Ave to Euclid Ave (1212 Zone)	1,600	ft	270	$/ft	432,000	43,200	47,520	23,760	546,480
29	P-8		OMC	Ex	Pressure		24-inch pipeline in J St east side of Euclid Ave (1212 Zone)	110	ft	360	$/ft	39,600	3,960	4,356	2,178	50,094
30	P-9		OMC	Ult	Pressure		PRS 21 at Euclid Ave and Phillips St (from 1212 Zone to 1074 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
31	P-10		OMC	Ult	Pressure		PRS 22 at Vineyard Ave and Mission Blvd (from 1212 Zone to 1074 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
32	P-11		OMC	Ult	Pressure		12-inch pipeline in Grove Ave from Philips St to Francis St (1074 Zone)	4,400	ft	180	$/ft	792,000	79,200	87,120	43,560	1,001,880
33	P-12		OMC	Ult	Pressure		12-inch pipeline in Euclid Ave from PRS 2 at SR-60 to Walnut St (1010 Zone)	1,750	ft	180	$/ft	315,000	31,500	34,650	17,325	398,475
34	P-13		OMC	Ult	Pressure		16-inch pipeline in Grove Ave from PRS 3 at SR-60 to Walnut St (1010 Zone)	1,800	ft	240	$/ft	432,000	43,200	47,520	23,760	546,480
35	P-14		OMC	Ult	Pressure		PRS 23 at SR-60 and Campus Ave (from 1074 Zone to 1010 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
36	P-15		OMC	Ult	Pressure		6-inch pipeline in Banyan St, west of Parco Ave (1010 Zone)	30	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
37	P-16		OMC	Ult	Pressure		10-inch pipeline in Walnut St, west of Parco Ave (1010 Zone)	10	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
38	P-17		OMC	Ult	Pressure		6-inch pipeline in Maidstone St, west of Parco Ave (1010 Zone)	30	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
39	P-18		OMC	Ult	Pressure		8-inch pipeline in St. Andrews St, west of Parco Ave (1010 Zone)	10	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
40	ST-3		OMC	Ult	Storage		Reservoir 1212-4A	8.0	MG	1.20	$/gallon	9,600,000	960,000	1,056,000	528,000	12,144,000
41	ST-4		OMC	Ult	Storage		Reservoir 1212-4B	8.0	MG	1.20	$/gallon	9,600,000	960,000	1,056,000	528,000	12,144,000
42	ST-5		OMC	Ult	Storage		30-inch transmission line from Reservoir 1212-4A and 1212-4B	13,600	ft	450	$/ft	6,120,000	612,000	673,200	336,600	7,741,800
43	ST-6		OMC	Ex	Storage		Abandon Reservoir 1212-3 (condition/age)	10.0	MG	30	$/CY	1,485,000	148,500	163,350	81,675	1,878,525
44	R-11		OMC	Ex	Reliability		Future Emergency Connection (MVWD-1)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
45	R-12		OMC	Ex	Reliability		Future Emergency Connection (Chino-2)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
46	R-13		OMC	Ex	Reliability		Future Emergency Connection (FWC-1)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
47	R-14		OMC	Ex	Reliability		Future Emergency Connection (Upland-2)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
											Subtotal	**55,728,100**	**5,572,810**	**5,989,091**	**3,127,046**	**75,639,047**

Table 1-9 (Continued)
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Annual Improvement Projects																
48	ST-7	WA0206	OMC	Ex	Storage		Reservoir recoating/repainting/repair			150,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	150,000
49	O-5	WA0205	OMC	Ex	Other		Facility Security Improvements			200,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	200,000
50	O-6	WA0605	OMC	Ex	Other		New Meter Installations			75,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	75,000
51	O-7	WA0602	OMC	Ex	Other		Water Meter Replacements			250,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	250,000
											Subtotal					**675,000**
Old Model Colony Old and Small Pipe Replacement Projects																
52	O-8		OMC	Ex	Condition/Age	8" & Less	Improvements Due to Pipe Age (pipes constructed in or before 1960)- Replace with 8"	357,343	ft	120	$/ft	42,881,161	4,288,116	4,716,928	2,358,464	54,244,669
53	O-8		OMC	Ex	Condition/Age	10" & 12"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 12"	43,580	ft	180	$/ft	7,844,368	784,437	862,880	431,440	9,923,125
54	O-8		OMC	Ex	Condition/Age	14" & 16"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 16"	13,588	ft	240	$/ft	3,261,204	326,120	358,732	179,366	4,125,424
55	O-8		OMC	Ex	Condition/Age	16" to 18"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 18"	38,380	ft	270	$/ft	10,362,720	1,036,272	1,139,899	569,950	13,108,840
56	O-8		OMC	Ex	Condition/Age	18" to 20"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 20"	4,582	ft	300	$/ft	1,374,520	137,452	151,197	75,599	1,738,768
57	O-8		OMC	Ex	Condition/Age	20" to 24"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 24"	5,569	ft	360	$/ft	2,005,002	200,500	220,550	110,275	2,536,328
58	O-8		OMC	Ex	Condition/Age	24" to 36"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 36"	616	ft	540	$/ft	332,640	33,264	36,590	18,295	420,789
59	O-9		OMC	Ex	Size	4" & Less	Replace Small Diameter Pipes with 8-inch Pipe (pipes 4-inch and smaller)	49,631	ft	120	$/ft	5,955,720	595,572	655,129	327,565	7,533,986
											Subtotal	**74,017,336**	**7,401,734**	**8,141,907**	**4,070,953**	**93,631,930**
New Model Colony Improvement Projects																
60	ST-8		NMC	Ult	Storage		Reservoir 925-1A	9.0	MG	1.20	$/gallon	10,800,000	1,080,000	1,188,000	594,000	13,662,000
61	ST-9		NMC	Ult	Storage		Reservoir 925-1B	9.0	MG	1.20	$/gallon	10,800,000	1,080,000	1,188,000	594,000	13,662,000
62	ST-10		NMC	Ult	Storage		Reservoir 925-2B	6.0	MG	1.20	$/gallon	7,200,000	720,000	792,000	396,000	9,108,000
63	S-13		NMC	Ult	Supply		Altitude Valve from 1074 Zone to 925 Zone at Reservoir 925-1A and 925-1B	12	inch	250,000	$/valve	250,000	25,000	27,500	13,750	316,250
64	S-14		NMC	Ult	Supply		Land Acquisition for Well #48 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
65	S-15		NMC	Ult	Supply		NMC Well #48 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
66	S-16		NMC	Ult	Supply		18-inch well collecting line for Well 48 and 54 to Reservoir 925-2A	3,000	ft	216	$/ft	648,000	64,800	71,280	35,640	819,720
67	S-17		NMC	Ult	Supply		24-inch well collecting line for Well 48 and 54 to Reservoir 925-2A	900	ft	288	$/ft	259,200	25,920	28,512	14,256	327,888
68	S-18		NMC	Ult	Supply		30-inch well collecting line for Well 48 to Reservoir 925-2A	400	ft	360	$/ft	144,000	14,400	15,840	7,920	182,160
69	S-19		NMC	Ult	Supply		Land Acquisition for Well #51 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
70	S-20		NMC	Ult	Supply		NMC Well #51 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
71	S-21		NMC	Ult	Supply		18-inch well collecting line for Well 51 to Reservoir 925-2A	4,000	ft	216	$/ft	864,000	86,400	95,040	47,520	1,092,960
72	S-22		NMC	Ult	Supply		Land Acquisition for Well #54 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
73	S-23		NMC	Ult	Supply		NMC Well #54 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
74	S-24		NMC	Ult	Supply		18-inch well collecting line for Well 54 to Reservoir 925-2A	500	ft	216	$/ft	108,000	10,800	11,880	5,940	136,620
75	S-25		NMC	Ult	Supply		Land Acquisition for Well #55 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
76	S-26		NMC	Ult	Supply		NMC Well #55 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
77	S-27						Skipped									
78	S-28		NMC	Ult	Supply		Land Acquisition for Well #56 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
79	S-29		NMC	Ult	Supply		NMC Well #56 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
80	S-30		NMC	Ult	Supply		30-inch line from Well 56 to intersection of Bonview Ave and Francis St	1,400	ft	480	$/ft	672,000	67,200	73,920	36,960	850,080
81	S-31						Skipped									
82	S-32		NMC	Ult	Supply		30-inch line in Francis St from Bonview Ave to Grove Ave	2,700	ft	360	$/ft	972,000	97,200	106,920	53,460	1,229,580
83	S-33		NMC	Ult	Supply		Land Acquisition for Well #57 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
84	S-34		NMC	Ult	Supply		NMC Well #57 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
85	S-35		NMC	Ult	Supply		18-inch well collecting line from Well 57 to intersection of Francis St and Grove Ave	1,500	ft	216	$/ft	324,000	32,400	35,640	17,820	409,860
86	S-36		NMC	Ult	Supply		Land Acquisition for Well #58 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
87	S-37		NMC	Ult	Supply		NMC Well #58 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
88	S-38		NMC	Ult	Supply		18-inch well collecting line from Well 58 to intersection of Francis St and Cucamonga Ave	2,000	ft	216	$/ft	432,000	43,200	47,520	23,760	546,480
89	S-39		NMC	Ult	Supply		PRS 16 at Campus Ave and Chino Ave (from 1010 Zone to 925 Zone)	8 and 12	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
90	S-40		NMC	Ult	Supply		Treatment at Bon View and Jurupa Reservoir Sites	1	Site	10,000,000	$/well	10,000,000	1,000,000	1,100,000	550,000	12,650,000
91	T-1		NMC	Ult	Transmission		12-inch distribution lines (925 Zone)	173,150	ft	144	$/ft	24,933,600	2,493,360	2,742,696	1,371,348	31,541,004
92	T-2		NMC	Ult	Transmission		18-inch distribution lines (925 Zone), Chino Ave	5,300	ft	216	$/ft	1,144,800	114,480	125,928	62,964	1,448,172
93	T-3		NMC	Ult	Transmission		18-inch distribution lines (925 Zone), Chino Ave	6,600	ft	216	$/ft	1,425,600	142,560	156,816	78,408	1,803,384

Table 1-9 (Continued)
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
New Model Colony Improvement Projects continued																
94	T-4		NMC	Ult	Transmission		24-inch distribution lines (925 Zone), Milliken Ave, Eucalyptus Ave, Archibald Ave, Edison Ave	29,200	ft	288	$/ft	8,409,600	840,960	925,056	462,528	10,638,144
95	T-5		NMC	Ult	Transmission		30-inch distribution lines (925 Zone), Grove Ave, Milliken Ave	11,900	ft	360	$/ft	4,284,000	428,400	471,240	235,620	5,419,260
96	T-6		NMC	Ult	Transmission		42-inch distribution lines (925 Zone), Grove Ave btw Reservoir 925-1A and Chino Ave	10,700	ft	504	$/ft	5,392,800	539,280	593,208	296,604	6,821,892
97	T-7		NMC	Ult	Transmission		12-inch distribution lines (1010 Zone)	20,900	ft	144	$/ft	3,009,600	300,960	331,056	165,528	3,807,144
98	T-8		NMC	Ult	Transmission		18-inch distribution lines (1010 Zone), Cleveland Ave north of Chino Ave.	950	ft	216	$/ft	205,200	20,520	22,572	11,286	259,578
99	T-9		NMC	Ult	Transmission		18-inch distribution lines (1010 Zone), Chino Ave,Riverside Dr, Campus Ave	36,800	ft	216	$/ft	7,948,800	794,880	874,368	437,184	10,055,232
												120,077,200	**12,007,720**	**13,208,492**	**6,604,246**	**153,097,658**
Old Model Colony Fire Flow Improvement Projects																
100	FF-1	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Deodar St, Fuchsia Ct, Oaks Ct, Iris Ct, Jasmine Ct, Fuchsia Ave, Helen Ct, Gardenia Ct	3,852	ft	120	$/ft	462,240	46,224	50,846	25,423	584,734
101	FF-2	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Elderberry Ave, Gardenia Ave, Alley between Sixth St and Fifth St, Alley between Helen Ave and Elderberry Ave, Alley between Gardenia Ave and Elderberry Ave	3,614	ft	120	$/ft	433,680	43,368	47,705	23,852	548,605
102	FF-3	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Fifth St, Helen Ave, College Wy. Two new connections are recommended; 1 - Euclid Ave and Harvard St connect the fire hydrant to 12-inch pipe in Euclid Ave, 2 - Harvard St and Alley east of Euclid Ave connect the fire hydrant to 8-inch pipe in Harvard St	10,770	ft	120	$/ft	1,292,400	129,240	142,164	71,082	1,634,886
103	FF-4	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Rosewood Ct, Elderberry Ave	964	ft	120	$/ft	115,680	11,568	12,725	6,362	146,335
104	FF-5	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - State St, Oaks Ave, Mission Blvd, Magnolia Ave	5,018	ft	120	$/ft	602,160	60,216	66,238	33,119	761,732
105	FF-6	1074	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Helen Ave, Benson Ave, Philadelphia St	4,090	ft	120	$/ft	490,800	49,080	53,988	26,994	620,862
106	FF-7	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Oaks Ave	2,621	ft	120	$/ft	314,520	31,452	34,597	17,299	397,868
107	FF-8	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Boulder Ave, Granite Ave	1,281	ft	120	$/ft	153,720	15,372	16,909	8,455	194,456
108	FF-9	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - San Antonio Ave, Cypress Ave	1,232	ft	120	$/ft	147,840	14,784	16,262	8,131	187,018
109	FF-10	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - La Deney Dr, Cypress Dr, Hawthorne St, San Antonio Ave	6,379	ft	120	$/ft	765,480	76,548	84,203	42,101	968,332
110	FF-11	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Cypress Dr	925	ft	120	$/ft	111,000	11,100	12,210	6,105	140,415
111	FF-12	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Rosewood St, Rosewood Ct	1,194	ft	120	$/ft	143,280	14,328	15,761	7,880	181,249
112	FF-13	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Fourth St, Rosewood Dr	1,821	ft	120	$/ft	218,520	21,852	24,037	12,019	276,428
113	FF-14	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Palmetto Ave	1,041	ft	120	$/ft	124,920	12,492	13,741	6,871	158,024
114	FF-15	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Pinyon Dr, Pinyon Ct, Vesta St, Alpine Ct, Cone Flower Dr	2,972	ft	120	$/ft	356,640	35,664	39,230	19,615	451,150
115	FF-16	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Brooks St, Mountain Ave	1,423	ft	120	$/ft	170,760	17,076	18,784	9,392	216,011
116	FF-17	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Ladora Ct	565	ft	120	$/ft	67,800	6,780	7,458	3,729	85,767
117	FF-18	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Redwood Ave, Cedar St	1,688	ft	120	$/ft	202,560	20,256	22,282	11,141	256,238
118	FF-19	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Francis St. New connection is recommended between proposed 8-inch and existing 8-inch pipe lines in Francis St east of Fern St.	1,927	ft	120	$/ft	231,240	23,124	25,436	12,718	292,519
119	FF-20	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Sunkist St	1,383	ft	120	$/ft	165,960	16,596	18,256	9,128	209,939
120	FF-21	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Laurel Ave, Transit St, Emporia St	1,678	ft	120	$/ft	201,360	20,136	22,150	11,075	254,720
121	FF-22	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - B St, Laurel Ave	1,382	ft	120	$/ft	165,840	16,584	18,242	9,121	209,788
122	FF-23	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Alley between Vine Ave and Fern Ave, and between Fern Ave and Palm Ave	714	ft	120	$/ft	85,680	8,568	9,425	4,712	108,385
123	FF-24	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - E St, Fern Ave	535	ft	120	$/ft	64,200	6,420	7,062	3,531	81,213
124	FF-25	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - E St	784	ft	120	$/ft	94,080	9,408	10,349	5,174	119,011
125	FF-26	1212	OMC	Ex	Fire Flow	4	8-inch distribution line -F St	1,114	ft	120	$/ft	133,680	13,368	14,705	7,352	169,105
126	FF-27	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Alley between Granada St and Plaza Serena St	83	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
127	FF-28	1348	OMC	Ex	Fire Flow	2&4&6	8-inch distribution line - Alley between San Antonio Ave and Vine Ave, Armsley Sq, Bonita Ct	2,461	ft	120	$/ft	295,320	29,532	32,485	16,243	373,580
128	FF-29	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Kenmore Ct, Caroline Ct, Kenmore Ave	2,699	ft	120	$/ft	323,880	32,388	35,627	17,813	409,708
129	FF-30	1348	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Alvarado St, Deodar St, Sultana Ave, Columbia Ave. Pipe in Columbia Ave must connect to pipe in Deodora St at the intersection of Deodar St and Columbia Ave.	3,144	ft	120	$/ft	377,280	37,728	41,501	20,750	477,259
130	FF-31	1212	OMC	Ex	Fire Flow	2&4&6	8-inch distribution line - D St and Alleys between Euclid Ave and Lemon Ave	1,734	ft	120	$/ft	208,080	20,808	22,889	11,444	263,221
131	FF-32	1212	OMC	Ex	Fire Flow	-	8-inch distribution line - Plum Ave	180	ft	120	$/ft	21,600	2,160	2,376	1,188	27,324

Table 1-9 (Continued)
Capital Improvement Program

Row No.	WMP Project No.	Zone	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Fire Flow Improvement Projects (continued)																
132	FF-33	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Emporia St, Transit St, Lemon Ave	1,301	ft	120	$/ft	156,120	15,612	17,173	8,587	197,492
133	FF-34	1212	OMC	Ex	Fire Flow	3&4	8-inch distribution line - State St	561	ft	120	$/ft	67,320	6,732	7,405	3,703	85,160
134	FF-35	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Budd St	721	ft	120	$/ft	86,520	8,652	9,517	4,759	109,448
135	FF-36	1074	OMC	Ex	Fire Flow	2&6	8-inch distribution line - Deanza Dr	1,447	ft	120	$/ft	173,640	17,364	19,100	9,550	219,655
136	FF-37	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Berkeley Ct. Connect existing 6-inch and 10-inch pipe lines at the intersection of Mountain Ave and J St.	737	ft	120	$/ft	88,440	8,844	9,728	4,864	111,877
137	FF-38	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Woodlawn St	1,342	ft	120	$/ft	161,040	16,104	17,714	8,857	203,716
138	FF-39	1074	OMC	Ex	Fire Flow	6	12-inchdistribution line - Bon View Ave	2,495	ft	360	$/ft	898,200	89,820	98,802	49,401	1,136,223
139	FF-40	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Greenwood Ave and Mission Blvd	640	ft	120	$/ft	76,800	7,680	8,448	4,224	97,152
140	FF-41	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line -California St, Cucamonga St	356	ft	120	$/ft	42,720	4,272	4,699	2,350	54,041
141	FF-42	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Washington St, Jefferson Ave	2,359	ft	120	$/ft	283,080	28,308	31,139	15,569	358,096
142	FF-43	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - State St, Cucamonga Ave, Grove Ave. Connect existing 12-inch pipe line to proposed 8-inch pipeline.	2,066	ft	120	$/ft	247,920	24,792	27,271	13,636	313,619
143	FF-44	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Lynn Haven St	721	ft	120	$/ft	86,520	8,652	9,517	4,759	109,448
144	FF-45	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Yale St	1,203	ft	120	$/ft	144,360	14,436	15,880	7,940	182,615
145	FF-46	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Pleasant Ave, La Deney Dr	1,132	ft	120	$/ft	135,840	13,584	14,942	7,471	171,838
146	FF-47	1348	OMC	Ex	Fire Flow	6	16-inch distribution line - Richland St	1,431	ft	240	$/ft	343,440	34,344	37,778	18,889	434,452
147	FF-48	1348	OMC	Ex	Fire Flow	6&8	12-inch distribution line - Sixth St, Deodar St, Eleventh Ave, Grove Ave	3,900	ft	180	$/ft	702,000	70,200	77,220	38,610	888,030
148	FF-49	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Virginia Ave, Fifth St, La Deney Ct, Parkside Ave	3,531	ft	120	$/ft	423,720	42,372	46,609	23,305	536,006
149	FF-50	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Fifth St, Grove Ave	1,798	ft	120	$/ft	215,760	21,576	23,734	11,867	272,936
150	FF-51	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - El Dorado Ave	542	ft	120	$/ft	65,040	6,504	7,154	3,577	82,276
151	FF-52	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Fifth St, Baker Ave, Princeton St	3,568	ft	120	$/ft	428,160	42,816	47,098	23,549	541,622
152	FF-53	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Mariposa Ave, Granada St	1,102	ft	120	$/ft	132,240	13,224	14,546	7,273	167,284
153	FF-54	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Greenwood Ave, El Morado Ct, Florence Ct	1,187	ft	120	$/ft	142,440	14,244	15,668	7,834	180,187
154	FF-55	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Fourth St	820	ft	120	$/ft	98,400	9,840	10,824	5,412	124,476
155	FF-56	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Yale St	554	ft	120	$/ft	66,480	6,648	7,313	3,656	84,097
156	FF-57	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Fifth St, Holmes Ct, La Paloma Ct, I-10 Fwy E.B.	2,630	ft	120	$/ft	315,600	31,560	34,716	17,358	399,234
157	FF-58	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement south of Sixth St to Council Ave	791	ft	120	$/ft	94,920	9,492	10,441	5,221	120,074
158	FF-59	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - D St	927	ft	120	$/ft	111,240	11,124	12,236	6,118	140,719
159	FF-60	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Kern St	1,237	ft	120	$/ft	148,440	14,844	16,328	8,164	187,777
160	FF-61	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Baker Ave	922	ft	120	$/ft	110,640	11,064	12,170	6,085	139,960
161	FF-62	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Easement between Vineyard Ave and Grove Ave and south of Airport Dr	2,945	ft	120	$/ft	353,400	35,340	38,874	19,437	447,051
162	FF-63	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement between Airport Dr and Holt Blvd and East of Vineyard Ave	498	ft	120	$/ft	59,760	5,976	6,574	3,287	75,596
163	FF-64	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Easement at south of Airport Dr and east of Moore Wy	763	ft	120	$/ft	91,560	9,156	10,072	5,036	115,823
164	FF-65	1348	OMC	Ex	Fire Flow	8&10	16-inch distribution line - Eight St, Grove Ave	9,171	ft	240	$/ft	2,201,040	220,104	242,114	121,057	2,784,316
165	FF-66	Skipped											0	0	0	0
166	FF-67	1348	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Euclid Ave, Armsley St	1,330	ft	120	$/ft	159,600	15,960	17,556	8,778	201,894
167	FF-68	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement east of San Antonio and west of Euclid Ave between Fifth St and Princeton St	668	ft	120	$/ft	80,160	8,016	8,818	4,409	101,402
168	FF-69	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Seventh St	10	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
169	FF-70	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Boulder Ave, Vesta St, Hollowell St	3,351	ft	120	$/ft	402,120	40,212	44,233	22,117	508,682
170	FF-71	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Empora St, Pleasant Ave	641	ft	120	$/ft	76,920	7,692	8,461	4,231	97,304
171	FF-72	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - California Ct, Mission Blvd, Campus Ave, Campus St	1,138	ft	120	$/ft	136,560	13,656	15,022	7,511	172,748
172	FF-73	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Raltson St, Maitland St, Campus Ave, Taylor Ave	2,558	ft	120	$/ft	306,960	30,696	33,766	16,883	388,304
173	FF-74	1212	OMC	Ex	Fire Flow	4	8-inch distribution line -Nocta St, Allyin Ave, Willow St	370	ft	120	$/ft	44,400	4,440	4,884	2,442	56,166
174	FF-75	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Ontario Blvd	103	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
175	FF-76	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Harvard St	24	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
176	FF-77	1348	OMC	Ex	Fire Flow	6	12-inch distribution line - Eighth St at Virginia Ave	50	ft	180	$/ft	30,000	3,000	3,300	1,650	37,950
							Subtotal	**136,909**			**Subtotal**	**18,651,720**	**1,865,172**	**2,051,689**	**1,025,845**	**23,594,426**
							Grand Total (excluding annual OMC improvement project costs)					**268,474,356**	**26,847,436**	**29,391,179**	**14,828,090**	**345,963,060**

WFA
Agua de Lejos
Water Treatment Plant

O-1
RES1348-1A
RES1348-1B
RES1348-1C
R-14

ST-3
RES1212-4A

ST-4
RES1212-4B

ST-5
30"

City of
Upland

City of
Rancho
Cucamonga

City of
Montclair

City of
Fonatana

Old
Model Colony

New Model Colony

City of
Chino

Riverside
County

Ontario International
Airport

Landfill

SAW
Conn

RES1212-1A
RES1212-1B

WFA
Conn

ST-1
ST-6
RES1212-3

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
WINEVILLE AVE
VINTAGE AVE
CUCAMONGA CREEK

EIGHTH ST
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
ONTARIO MILLS PKWY
I-10 FWY
AIRPORT DR
JURUPA ST

I-10 FWY

P-1 30"
P-2 30"
P-3 30"
P-4 18"
P-5 18"
P-6 24"
P-7 18"
P-9 PRS21
P-10 PRS22
P-11 12"
P-12 12"
P-13 18"
P-14 PRS23
P-15 6"
P-16 10"
P-17 6"
P-18 6"

PRS1 PRS2 PRS3 PRS4 PRS5 PRS6 PRS7 PRS8 PRS9 PRS10 PRS11 PRS12 PRS13 PRS14 PRS15 PRS16 PRS17 PRS18 PRS19

CDA I Conn
CDA II Conn
BP-ONTARIO

RES1074-1A
RES1074-1B
BP-1
BP-2
BP-3
BP-4
BP-9

RES1010-1
RES1010-2A
RES1010-2B
AV1
AV2
AV3

RES925-2A
RES925-2B
ST-10
S-40

ST-8
RES
925-1A
ST-9
RES
925-1B
S-40

Legend

- Recommended Emergency Connection
- Recommended Altitude Valve/PRS
- Altitude Vavle/PRS
- Booster Pump Station
- Recommended Well
- Well
- Recommended Reservoir
- Reservoir
- 8" Fire Flow Pipe Improvement
- 12" Fire Flow Pipe Improvement
- 16" Fire Flow Pipe Improvement
- Small Diameter Pipe Improvement (O-9)
- Pipe Improvement due to Age (O-8)
- Recommended Improvement Pipe
- Recommended Pipe for 1010 Zone Expansion
- Recommended Pipe for 925 Zone
- Existing Pipe
- Other Agency Pipe
- City Boundary
- 925 Pressure Zone
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone

N

0 1,500 3,000 6,000 Feet

1"=1500'

CITY OF ONTARIO
WATER MASTER PLAN

Capital Improvement Project Locations

PROJECT NO: 1000919.00

DATE: April 2012

Figure 1-7

SECTION 2

INTRODUCTION

2-1 Purpose

The City of Ontario provides domestic water service to a population of approximately 175,000 residents, as well as commercial, industrial, public and agricultural lands and the Ontario International Airport within its service area. The City recognizes its responsibility to efficiently meet the customers' needs with long range planning efforts. By reviewing its existing water system and future needs, the City can continue to maintain a high service level and reliability in its water system in a cost effective and fiscally responsible manner. This report is intended to update the domestic water analysis of the *2006 Water and Recycled Water Master Plan* and to provide a comprehensive planning guide for improving and upgrading the City's domestic water system through 2035.

2-2 Previous Studies

Previous studies completed and utilized in the development of this Water Master Plan include the following:

- *The Ontario Plan (General Plan), February 2010*
- *The Ontario Plan Draft Environmental Impact Report, April 2009*
- *City of Ontario Water and Recycled Water Master Plan Update*, *April 2006*
- *City of Ontario Urban Water Management Plan, December 2005*

2-3 Scope of Work

The scope of work for this study consists of the following:

Task 1 – Obtain and Review all Related Information

Task 2 – Update Domestic Water System Hydraulic Model

- Determine existing demands from recent water sales information and use to update model
- Determine future demands using The Ontario Plan land use information
- Obtain record drawings of the pipelines, wells, and other system improvements that have been implemented since the completion of the 2006 Water Master Plan and update the model
- Update operational settings in the model to current conditions

Task 3 – System Analyses

- Review and update criteria with City staff, including residential fire flow requirements
- Conduct analyses of the existing system for the average day, maximum day, and maximum day plus fire flow scenarios
- Review and update the following:
    - Pipeline Replacement Plan
    - Storage Reservoir Condition Assessment
    - Storage Capacity Evaluation
    - System-wide Supply Analysis

Task 4 – Develop Capital Improvement Program

Task 5 – Prepare Master Plan Report

- Prepare a comprehensive master plan report that summarizes the efforts and results of Tasks 1 through 4

2-4 Acknowledgements

AKM Consulting Engineers would like to express their sincere appreciation to the following individuals for their valuable assistance and support throughout the preparation of this study:

- Scott Burton, Assistant Utilities General Manager
- Dennis Mejia, Utilities Engineering Division Manager
- Jeffrey Krizek, Associate Engineer
- Sheldon Yu, Senior Associate Civil Engineer
- Fernando Cobos, Utilities Project Manager
- Ryan Bengsch, Assistant Engineer
- Ivan Sanchez, Engineering Assistant/GIS
- Tom O'Neill, Water Production Manager
- Chris Bonadurer, Water Production Supervisor
- Donnie Hamilton, Water Production Supervisor

2-5 Abbreviations

To conserve space and improve readability, abbreviations have been used in this report. Each abbreviation has been spelled out in the text the first time it is used. Subsequent use of the term is usually identified by its abbreviation. The abbreviations utilized in this report are contained in Table 2-1.

Table 2-1
Abbreviations

Abbreviation	Explanation
Ac, ac	Acre
AC, ACP	Asbestos Cement Pipe
AF	Acre-Foot or Acre Feet
AFY	Acre Feet per Year
AL	Action Level
amsl	Above Mean Sea Level
APA	Allowable Pumping Allocation
AWWA	American Water Works Association
BPS	Booster Pump Station
CBWM	Chino Basin Watermaster
ccf	Hundred Cubic Feet
CCWRF	Carbon Canyon Wastewater Reclamation Facility
CDA	Chino Basin Desalter Authority
CDA I	Chino Basin Desalter 1
CDA II	Chino Basin Desalter 2
CDPH	State of California Department of Public Health
cfs	Cubic Feet per Second
CII	Commercial, Institutional, Industrial
CIP, cip	Cast Iron Pipe
CIP	Capital Improvement Program
City	City of Ontario
CMLS	Concrete Mortar Lined Steel
CML & CMC	Concrete Mortar Lined & Concrete Mortar Coated
CML & CS	Concrete Mortar Lined & Coated Steel
CML & WS	Concrete Mortar Lined & Welded Steel
Conc	Concrete
CU	Copper
CUWCC	California Urban Water Conservation Council
CVWD	Cucamonga Valley Water District
D/DBPR	Disinfectants/Disinfection By-Products Rule
DPH	State of California Department of Public Health
Dia	Diameter
DIP	Ductile Iron Pipe
DU, du	Dwelling Unit
DWMP	Domestic Water Master Plan
DWR	State of California, Department of Water Resources
DW	Domestic Water
DYY	Dry Year Yield

Table 2-1 (continued)
Abbreviations

Abbreviation	Explanation
EL, el	Elevation
ENR	Engineering News Record
EPA	United States Environmental Protection Agency
ESWTR	Enhanced Surface Water Treatment Rule
F	Fahrenheit
FCV	Flow Control Valve
fps	Feet per Second
ft	Feet
FY	Fiscal Year
GIS	Geographic Information System
gpcd	Gallons per Capita per Day
gpd	Gallons per Day
gpm	Gallons per Minute
GSTL	Galvanized Steel
HGE	Hydraulic Grade Elevation
HGL	Hydraulic Grade Line
HP, hp	Horsepower
HWL	High Water Level
IDSE	Initial Distribution System Evaluation
in	Inch
IEUA	Inland Empire Utilities Agency
JCSD	Jurupa Community Services District
LF	Lineal Feet
MCL	Maximum Contaminant Level
MCLG	Federal Maximum Contaminant Level Goal
MG, mg	Million Gallons
mgd	Million Gallons per Day
mg/l	Milligrams per Liter or Parts per Million
MWD	Metropolitan Water District of Southern California
NAVD	National American Vertical Datum
NL	Notification Levels
NMC	New Model Colony
OBMP	Optimum Basin Management Program
OFD	Ontario Fire Department
OMC	Old Model Colony
O&M	Operation and Maintenance
OSHA	Occupational Safety & Health Administration
OSY	Operating Safe Yield
PCE	Tetrachloroethylene
PCCP	Pre-Cast Concrete Pipe

Table 2-1 (continued)
Abbreviations

Abbreviation	Explanation
PHG	Public Health Goal
PRS	Pressure Regulating Station
PRV	Pressure Reducing Valve
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
RCCP	Reinforced Concrete Cylinder Pipe
RL	Response Levels
RPM	Rotations per Minute
RSTL	Riveted Steel
SAWC	San Antonio Water Company
SARWC	Santa Ana River Water Company
SCADA	Supervisory Control and Data Acquisition
SCE	Southern California Edison
SDWA	Safe Drinking Water Act
SF	Square Feet
SOI	Sphere of Influence
STL, stl	Steel
TCE	Trichloroethylene
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
THAAS	Total Haloacetic Acids
TOC	Total Organic Carbon
TTHM	Total Trihalomethanes
TVMWD	Three Valleys Municipal Water District
µg/l	Micrograms per Liter or Parts per Billion
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VFD	Variable Frequency Drive
VOCs	Volatile Organic Compounds
WFA	Water Facilities Authority
WMP	Water Master Plan
WMWD	Western Municipal Water District
WQPP	Water Quality Protection Plan
WS, WSTL	Welded Steel
WTP	Water Treatment Plant

SECTION 3

STUDY AREA

3-1 Purpose

This section describes the City of Ontario water service area, discusses the land uses within the study area, and population estimates.

3-2 Location

The study area, shown on Figure 3-1, coincides with the City of Ontario boundary with the exception of two small areas in the north central and northeastern portion of the City that are served by Cucamonga Valley Water District (CVWD). It is located approximately 35 miles east of downtown Los Angeles and encompasses approximately 50 square miles (32.060 acres) of residential, commercial, industrial, public and agricultural lands and the Ontario International Airport. It is bordered by the Cities of Chino and Montclair on the west; the Cities of Upland and Rancho Cucamonga on the north; the City of Fontana and Riverside County on the east; and Riverside County, and the City of Chino on the south. The major highways crossing through portions of the study area include the San Bernardino Freeway (I-10) on the north, the Pomona Freeway (SR-60) on the south, and the Ontario Freeway (I-15) on the east.

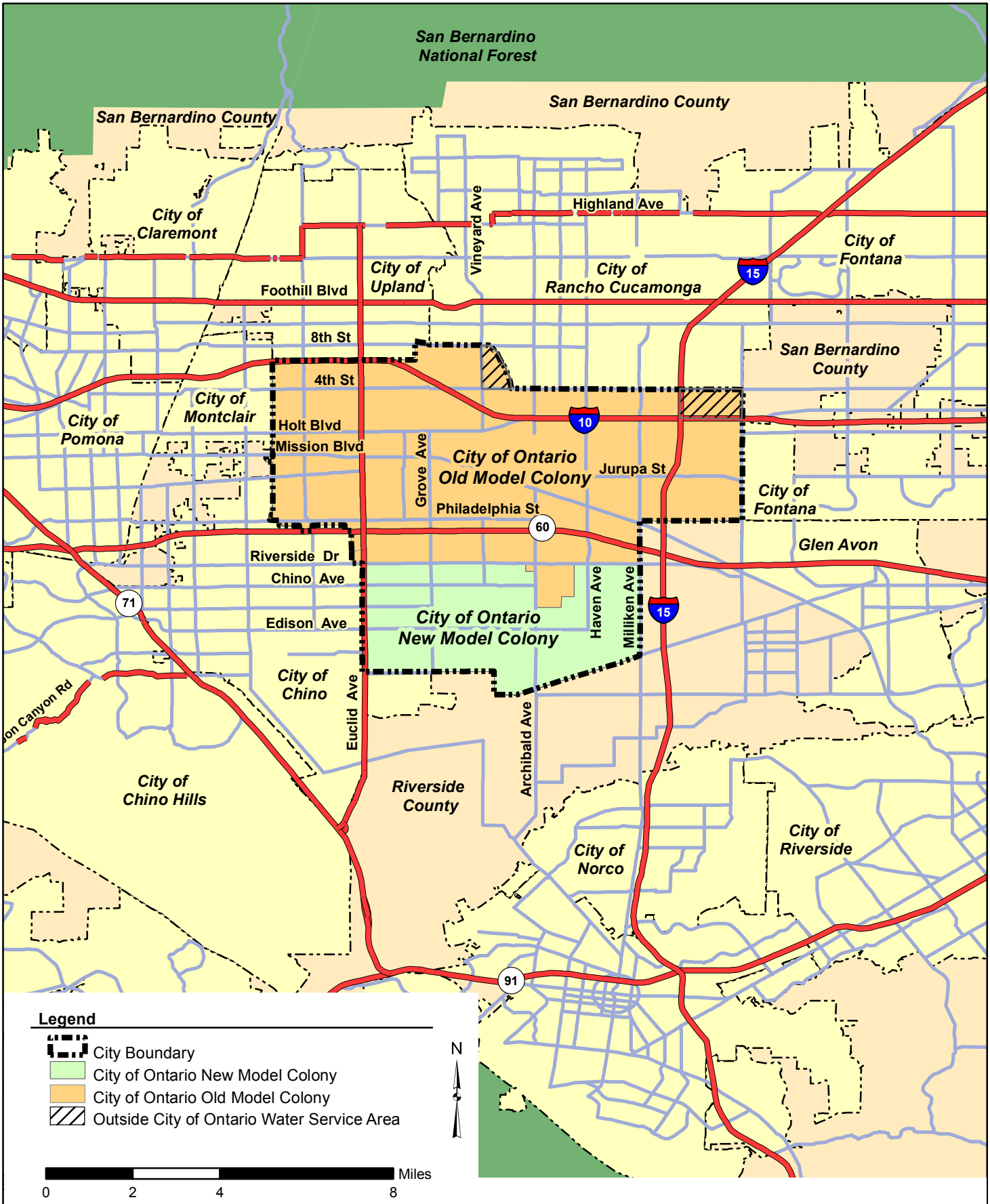
The City is divided into two distinct areas, Old Model Colony (OMC) and New Model Colony (NMC). The two areas are generally divided by Riverside Drive. OMC consists of existing residential, commercial, and industrial developments, and the Ontario International Airport. It comprises approximately 37.2 square miles (23,776 acres). NMC is an agricultural area that was annexed in 1999. It currently consists of approximately 12.8 square miles (8,182 acres) of agricultural land. The City's General Plan 2010 details future development of the agricultural lands in NMC into a mix of residential, commercial, industrial, and public uses. The ultimate residential population of NMC is expected to reach 162,518. Development of NMC has begun with the construction of Colony High School and Edenglen, a Brookfield Homes project, located southwest and southeast of the intersection of Riverside Drive and Mill Creek Avenue, respectively.

3-3 Topographical Description and Geology

General Area

The City's water service area is located in the San Bernardino Plain, which is an expanse of sand, gravel and boulders. Dominating the valley are Mt. San Antonio, Cucamonga Peak, and Ontario Peak. Cucamonga Peak is visibly flat on top which represents sections of the original valley floor. Loose dirt and gravel flows swiftly from the slopes of these young mountains with the sometimes torrential rains.

The valley and plain has taken more than 10 million years to form. Geologists place the beginning of the area's geologic history between 12 and 28 million years ago, the same time the San Andreas Fault is believed to have been formed. The San Gabriel Mountains are part of the east-west



CITY OF ONTARIO
WATER MASTER PLAN

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Regional Location Map

Figure 3-1

trending transverse ranges, which run across the north-south grain of California. The San Gabriel Mountains are intersected 25 miles east of Ontario at the Cajon Pass by the San Andreas Fault.

These mountains were partially formed by geologic activity along this fault. Visible to the south of Ontario is a portion of the peninsular range consisting of the Santa Ana Mountains, the base of which is carved by the Santa Ana River. Several blocks of the peninsular range are separated by faults generally attributed to the San Andreas Fault system. Small rolling hills make up the north and west portions of the valley (Chino Hills, Diamond Bar, and the Covina Hills).

The transverse and peninsular ranges meet in the San Gorgonio Pass area, 50 miles east of Ontario. Mount San Gorgonio is the tallest peak in Southern California and is frequently visible from Ontario.

Elevations

The topography of the region generally slopes in a southwesterly direction. The highest point in the service area is west of Grove Avenue and north of 8th Street at 1180 feet above mean sea level (amsl), and the lowest point is at the intersection of Euclid Avenue and Merrill Avenue (633 feet amsl).

Soils

Native soils, shown on Figure 3-2, consist of the following

Class I Soils

- Chino Silt Loam
- Grangeville Fine Sandy Loam
- Hanford Sandy Loam

Class II Soils

- Delhi Fine Sand
- Hanford Coarse Sandy Loam
- Hilmar Loamy Fine Sand

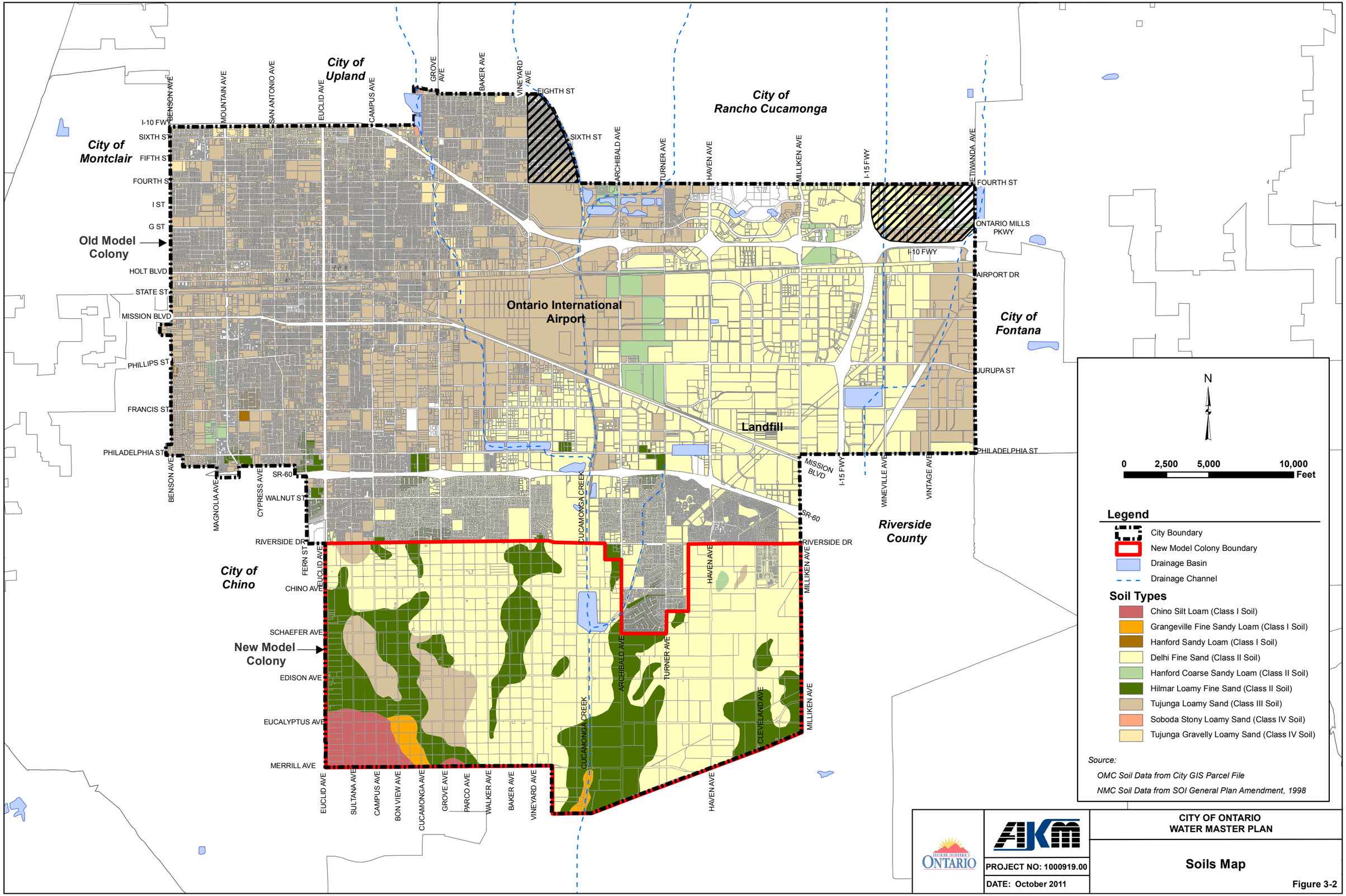
Class III Soils

- Tujunga Loamy Sand

Class IV Soils

- Soboda Stony Loamy Sand
- Tujunga Gravelly Loamy Sand

Due to the presence of predominantly dairy industries over a long period of time, prime agricultural soils, high in salts and nitrates, cover approximately 2,999 acres or 36 percent of the total area in the NMC (SOI General Plan Amendment, 1998). Organic materials (manure and feed) are reportedly present in thickness of up to six feet.



CITY OF ONTARIO
WATER MASTER PLAN

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Soils Map

Figure 3-2

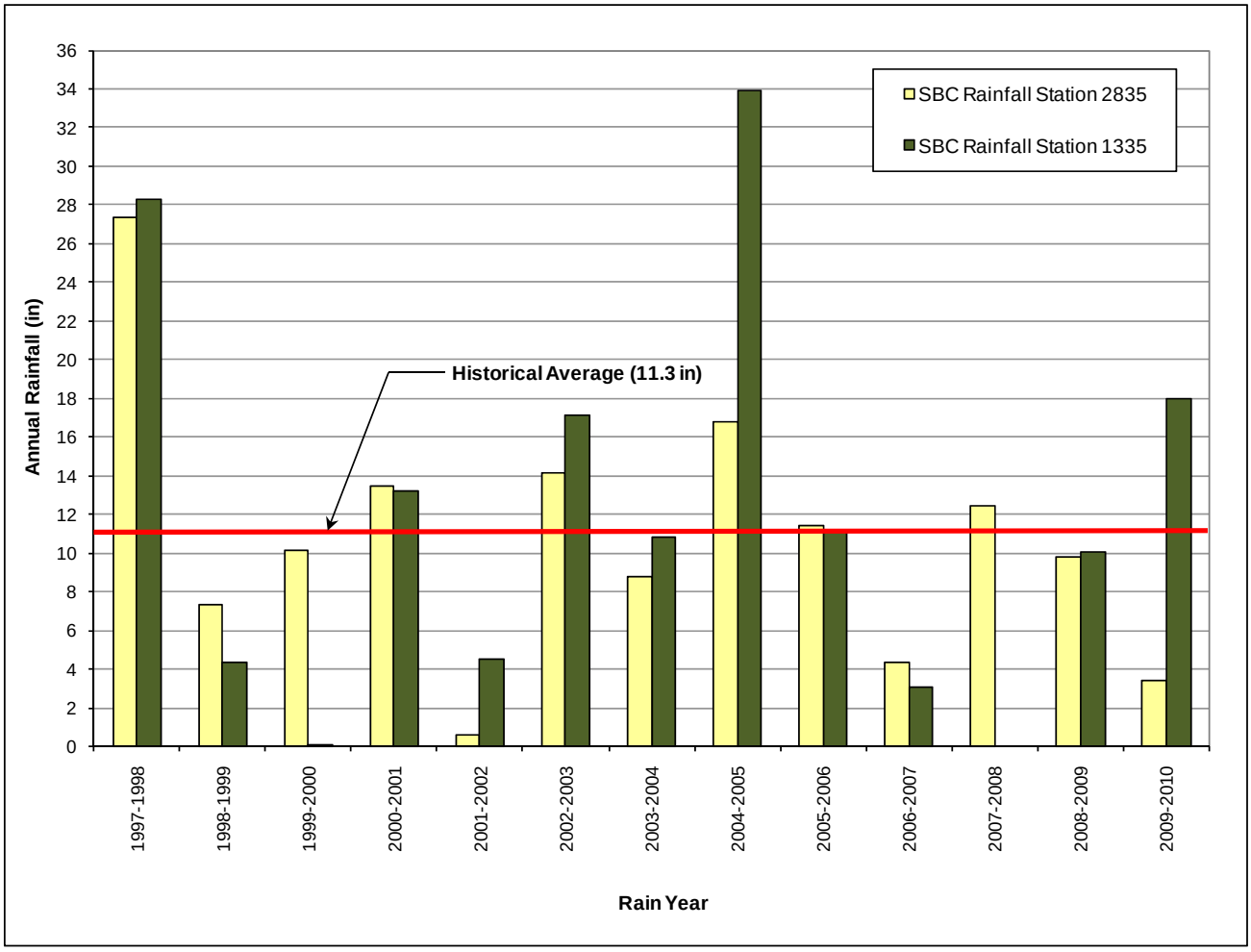
The NMC is located within the Chino Groundwater Basin, which has been found to maintain a relatively shallow water table. The SOI General Plan Amendment reported findings of groundwater elevations ranging from 530 to 590 feet in 1991. Water depths observed in 1991 were about 100 feet (SOI General Plan Amendment).

3-4 Climate

The climate in the study area is Mediterranean-like with generally moderate temperatures and low humidity year-round. The average median temperature is approximately 83^{o} F. The average annual days of sunshine is 312.

The historical average annual rainfall is about 11.3 inches. Most of the rainfall typically occurs between October and April. Figure 3-3 shows the seasonal rainfall from 1994 to 2010 as measured by the San Bernardino County Rain Gauge Stations 2835 and 1335. Station 2835 is located at a local fire station on Mountain Avenue, south of Fourth Street. Station 1335 is located on the southeast corner of Francis Street and Parco Avenue.

Figure 3-3
Seasonal Rainfall 1997-2010



3-5 Land Use

The land use information utilized in the preparation of the Water Master Plan is primarily based upon the City's GIS parcel land use data and newly approved General Plan data. This information was supplemented by aerial photographs, field reviews, and information provided by City staff.

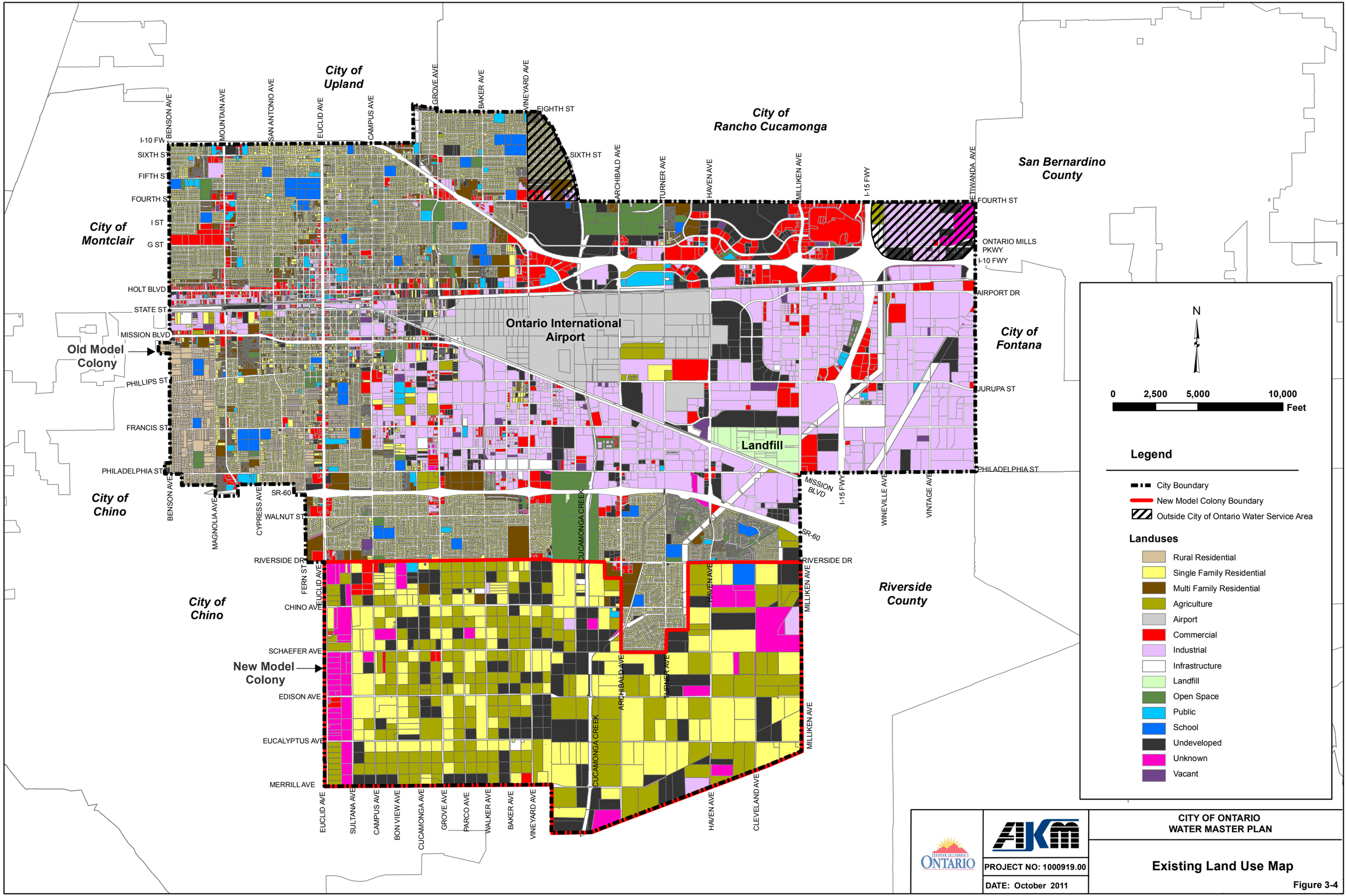
Existing Land Use

The City is a well planned urban community with a balance of residential, commercial, and industrial land uses. Within the service area, the primary land use is residential (8,762 Ac or 28.0 %). Industrial use also makes up a significant portion of the total existing land use (4,671 Ac or 14.9%). Approximately 3,290 acres or 10.5 percent of the total is currently undeveloped. Table 3-1 provides a summary of the existing land uses. Figure 3-4 shows the locations of these land uses.

Table 3-1
Existing Study Area Land Uses

Landuse Description		Service Area				Outside Service Area		Total City			
		OMC (Ac)	NMC (Ac)	Total (Ac)	% of Total	OMC (Ac)	% of Total	OMC (Ac)	NMC (Ac)	Total (Ac)	% of Total
RR	Rural Residential	566		566	1.8			566		566	1.8
SFR	Single Family Residential	4,489	2,585	7,074	22.6	115	115.0	4,604	2,585	7,189	22.5
MFR	Multiple Family Residential	1,099	23	1,122	3.6	44	44.0	1,143	23	1,166	3.6
	Total Residential	**6,154**	**2,608**	**8,762**	**28.0**	**159**		**6,313**	**2,608**	**8,921**	**27.9**
COM	Commercial	1,745	76	1,821	5.8	14	14.0	1,759	76	1,835	5.7
IND	Industrial	4,606	65	4,671	14.9	227	227.0	4,833	65	4,898	15.3
OPEN	Open Space	725	9	734	2.3			725	9	734	2.3
PUBLIC	Public	326	15	341	1.1			326	15	341	1.1
SCHL	Schools	419	38	457	1.5			419	38	457	1.4
ARPT	Airport	1,500		1,500	4.8			1,500		1,500	4.7
LF	Landfill	209		209	0.7			209		209	0.7
AGR	Agriculture	206	2,733	2,939	9.4	20	20.0	226	2,733	2,959	9.3
INF	Infrastructure	869	85	954	3.0	35	35.0	904	85	989	3.1
ROW	Right-of-Ways	4,362	372	4,734	15.1			4,362	372	4,734	14.8
UND	Undeveloped	1,767	1,523	3,290	10.5	79	79.0	1,846	1,523	3,369	10.5
UNK	Unknown	77	658	735	2.3	70	70.0	147	658	805	2.5
VAC	Vacant Buildings	198		198	0.6	9	9.0	207		207	0.6
	Total	**23,163**	**8,182**	**31,345**	**100.0**	**613**	**613**	**23,776**	**8,182**	**31,958**	**100.0**

The total number of housing units in the City is estimated at 47,795. With a population of 174,536 and a 3.67 percent vacancy rate, the average number of persons per household is estimated at 3.766 (Ref: *California Department of Finance, Demographic Research Unit, Table E-5, 2010*).



CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Existing Land Use Map

Figure 3-4

Ultimate Conditions

The ultimate land uses are based upon the City's latest general plan document entitled *The Ontario Plan (2010).* Table 3-2 provides a summary of the ultimate land uses and Figure 3-5 shows the locations of these land uses. The residential area will increase to 10,915 acres (34.2 percent of total). The employment area, including business parks and industrial uses, is expected to entail about 8,103 acres (25.4 percent of total).

Residential Land Uses

The Ontario Plan defines five residential land use categories: Rural, Low Density, Low-Medium Density, Medium Density, and High Density. The plan provides densities for each of the residential land use categories, which are summarized in Table 3-3.

Retail / Service

Four retail / service uses are defined: Neighborhood Commercial, General Commercial, Office Commercial, and Hospitality. The intensities for each commercial use are shown in Table 3-3.

Employment

Two employment uses are defined: Business Park and Industrial. The intensities for each employment use are shown in Table 3-3.

Open Space

Open Space land use designations include Non-Recreational Open Space, Recreational Open Space and Water Open Space (i.e. lakes, ponds, etc).

Public

Public land use designations include Public Facility and Public School.

Other

Other land use designations include the Ontario International Airport, Landfill, Railroad and Roadways.

Table 3-2
Ultimate Study Area Land Uses

Land Use Category	Acres[2]	% of Total Area	Density (du/ac)[3]	Intensity (FAR)[3]	Units	Population[4]	Square Feet (Non-Office)	Square Feet (Office)	Total Square Feet	Jobs[5] (Non-Office)	Jobs[5] (Office)	Total Jobs[5]
Residential												
Rural Residential	453	1.4	2.0		906	3,621						
Low Density Residential (OMC)	4,308	13.5	4.0		17,232	68,876						
Low Density Residential (NMC)	3,158	9.9	4.5		14,211	56,801						
Low Medium Density Residential (OMC)	295	0.9	8.5		2,508	10,026						
Low Medium Density Residential (NMC)	505	1.6	8.5		4,295	17,167						
Medium Density Residential (OMC)	896	2.8	18.0		16,124	61,551						
Medium Density Residential (NMC)	1,059	3.3	22.0		23,294	77,964						
High Density Residential	241	0.8	35.0		8,421	28,185						
Subtotal	***10,915***	***34.2***			***86,991***	***324,192***						
Mixed Use												
Downtown	109	0.3	35.0		2,279	4,557	756,202	756,202	1,512,403	543	2,163	2,706
Euclid & Francis	10	0.0	30.0		156	312	181,210	0	181,210	419	0	419
Holt	55	0.2	30.0		412	824	478,289	1,195,722	1,674,011	343	3,420	3,763
Meredith	246	0.8	40.0		2,957	5,914	2,146,637	5,366,592	7,513,229	1,541	15,348	16,890
Hospitality	76	0.2	60.0		457	914	1,493,672	1,493,672	2,987,345	1,072	4,272	5,344
Ontario Festival (MxU in 14)	37	0.1	20.0		368	736	112,211	240,451	352,662	81	688	768
Guasti	83	0.3	30.0		500	1,001	1,089,871	1,271,516	2,361,388	783	3,637	4,419
Ontario Center (E. of Haven)	345	1.1	40.0		4,139	8,278	1,502,384	7,511,922	9,014,306	1,079	21,484	22,563
Mills	240	0.7	40.0		479	958	3,912,233	1,564,893	5,477,126	2,809	4,476	7,285
NMC south	316	1.0	35.0		3,315	6,630	962,632	5,775,795	6,738,427	691	16,519	17,210
NMC east	264	0.8	25.0		1,978	3,956	1,378,413	1,206,111	2,584,524	990	3,449	4,439
SR60 & Hamner	41	0.1	0.0		0	0	349,112	313,305	662,417	251	896	1,147
Subtotal	***1,822***	***5.7***			***17,039***	***34,078***	***14,362,865***	***26,696,182***	***41,059,046***	***10,601***	***76,351***	***86,952***
Retail/Service												
Neighborhood Commercial	277	0.9		0.30			2,896,914	724,229	3,621,143	6,692	2,071	8,763
General Commercial	552	1.7		0.30			6,488,654	720,962	7,209,616	4,659	2,062	6,721
Office Comercial	526	1.6		0.75			5,151,406	12,019,946	17,171,352	3,699	34,377	38,076
Hospitality	145	0.5		1.00			5,049,475	1,262,369	6,311,844	3,626	3,610	7,236
Subtotal	***1,499***	***4.7***					***19,586,449***	***14,727,505***	***34,313,954***	***18,675***	***42,121***	***60,796***
Employment												
Business Park	1,357	4.2		0.40			11,821,313	11,821,313	23,642,626	7,684	33,809	41,493
Industrial	6,747	21.1		0.55			145,469,382	16,163,265	161,632,647	94,555	46,227	140,782
Subtotal	***8,103***	***25.4***					***157,290,695***	***27,984,578***	***185,275,273***	***102,239***	***80,036***	***182,275***
Other												
Open Space - Non-Recreational	1,243	3.9										
Open Space - Recreational	991	3.1										
Open Space - Water	59	0.2										
Public Facility	99	0.3										
Public School	627	2.0										
Airport	1,422	4.5										
Railroad	247	0.8										
Landfill	137	0.4										
Right-of-Way	4,794	15.0										
Subtotal	***9,619***	***30.1***										
Total	***31,958***	***100.0***			***104,030***	***358,270***	***191,240,009***	***69,408,264***	***260,648,273***	***131,515***	***198,508***	***330,023***

Notes

[1] Historically, citywide buildout levels do not achieve the maximum allowable density/ intensity on every parcel and are, on average, lower than allowed by the General Plan. Accordingly, the buildout estimates in this General Plan do not assume buildout at the maximum density or intensity and instead are adjusted downward to account for variations in buildout intensity. Buildout assumptions are as agreed upon on 2-4-08.

[2] Acres are given as adjusted gross acreages, which do not include the right-of-way for roadways, flood control facilities, or railroads.

[3] Density/ Intensity includes both residential density, expressed as units per acre, and non-residential intensity, expressed as floor area ratio (FAR), which is the amount of building square feet in relation to the size of the lot.

[4] Estimates of population by residential designation are based on a persons-per-household factor that varies by housing type. 3.347 pph for MF, 3.278 pph for sfa, and 3.997 pph for sfd.

[5] The factors used to generate the number of employees are 2.310 e/ 1000 sf of community commercial; .718 e/ 1000 sf of regional commercial; .650 e/ 1000 sf of industrial; and 2.86 e/ 1000 sf of office.

Reference: The Ontario Plan Approved Landuse Buildout Estimates, January 2010

City of Montclair

City of Upland

City of Rancho Cucamonga

San Bernardino County

City of Fontana

City of Chino

Riverside County

Old Model Colony

New Model Colony

Ontario International Airport

Landfill

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE

I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
EIGHTH ST
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
MAGNOLIA AVE
CYPRESS AVE
FERN ST
SULTANA AVE
BON VIEW AVE
CUCAMONGA AVE
PARCO AVE
WALKER AVE
CUCAMONGA CREEK
CLEVELAND AVE
WINEVILLE AVE
VINTAGE AVE

Legend

- City Boundary
- New Model Colony Boundary
- Outside City of Ontario Water Service Area

Landuses

- Airport
- Business Park
- General Commercial
- High Density Residential
- Hospitality
- Industrial
- Low Density Residential
- Land Fill
- Low Medium Density Residential
- Medium Density Residential
- Mixed Use
- Neighborhood Commercial
- Office Commercial
- Open Space - Non-Recreational
- Open Space - Recreational
- Open Space - Water
- Public Facility
- Public School
- Rural Residential
- Rail

#	Mixed Use Area
1	Downtown
2	Euclid & Francis
3	Holt
4	Meredith
5	Hospitality
6	Ontario Festival
7	Guasti
8	Ontario Center
9	Mills
10	NMC South
11	NMC East
12	SR-60 & Haven

N

0 2,500 5,000 10,000 Feet

CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Ultimate Land Use Map

Figure 3-5

Table 3-3
Future Buildout

Land Use	Acres	Assumed Density/ Intensity	Units	Population	Non-Residential Square Feet
Residential					
Rural	453	2 du/ac	906	3,621	
Low Density	7,466	4.0 du/ac (OMC) 4.5 du/ac (NMC)	31,443	125,678	
Low-Medium Density	800	8.5 du/ac	6,803	27,193	
Medium Density	1,955	18.0 du/ac (OMC) 22.0 du/ace (NMC)	39,418	139,515	
High Density	241	35 du/ac	8,421	28,185	
Subtotal	**10,915**		**86,991**	**324,192**	
Mixed Use					
Downtown	109	60% of the area at 35 du/ac 40% of the area at 0.80 FAR for office and retail	2,279	4,557	1,512,403
East Holt Boulevard	55	25% of the area at 30 du/ac 50% of the area at 1.0 FAR office 25% of the area at 0.80 FAR retail	412	824	1,674,011
Meredith	246	30% of the area at 40 du/ac 70% at 1.0 FAR for office and retail uses	2,957	5,914	7,513,229
Transit Center	76	10% of the area at 60 du/ac 90% of the area at 1.0 FAR office and retail	457	914	2,987,345
Inland Empire Corridor	37	50% of the area at 20 du/ac 30% of the area at 0.50 FAR office 20% of the area at 0.35 FAR retail	368	736	352,662
Guasti	83	20% of the area at 30 du/ac 30% of the area at 1.0 FAR retail 50% of the area at 0.70 FAR office	500	1,001	2,361,388
Ontario Center	345	30% of the area at 40 du/ac 50% of the area at 1.0 FAR office 20% of the area at 0.5 FAR retail	4,139	8,278	9,014,306
Ontario Mills	240	5% of the area at 40 du/ac 20% of the area at 0.75 FAR office 75% of the area at 0.5 FAR retail	479	958	5,477,126
NMC east	264	30% of the area at 25 du/ac 30% of the area at 0.35 FAR for office 40% of the area at 0.3 FAR for retail uses	1,978	3,956	2,584,524
NMC west	316	30% of the area at 35 du/ac 70% of the area at 0.7 FAR office and retail	3,315	6,630	6,738,427
Euclid / Francis	10	50% of the area at 30 du/ac 50% of area at 0.8 FAR retail	156	312	181,210
SR-60 / Haven	41	65% of the area at 0.3 FAR retail 35% of the area at 0.5 FAR office			662,417
Subtotal	**1,822**		**17,039**	**34,078**	**41,059,046**
Retail/Service					
Neighborhood Commercial	277	0.30 FAR			3,621,143
General Commercial	552	0.30 FAR			7,209,616
Office/Commercial	526	0.75 FAR			17,171,352
Hospitality	145	1.00 FAR			6,311,844
Subtotal	**1,499**				**34,313,954**

Table 3-3 (Continued)
Future Buildout

Land Use	Acres	Assumed Density/ Intensity	Units	Population	Non-Residential Square Feet
Employment					
Business Park	1,357	0.40 FAR			23,642,626
Industrial	6,747	0.55 FAR			161,632,647
Subtotal	**8,103**				**185,275,273**
Other					
Open Space – Non-Recreation	1,243	Not applicable			
Open Space – Recreation	991	Not applicable			
Open Space - Water	59	Not applicable			
Public Facility	99	Not applicable			
Public School	627	Not applicable			
Los Angeles/Ontario International Airport (LAONT)	1,422	Not applicable			
Landfill	137	Not applicable			
Railroad	247	Not applicable			
Roadways	4,794	Not applicable			
Subtotal	**9,619**				
TOTAL	**31,958**		**104,030**	**358,270**	**260,648,273**

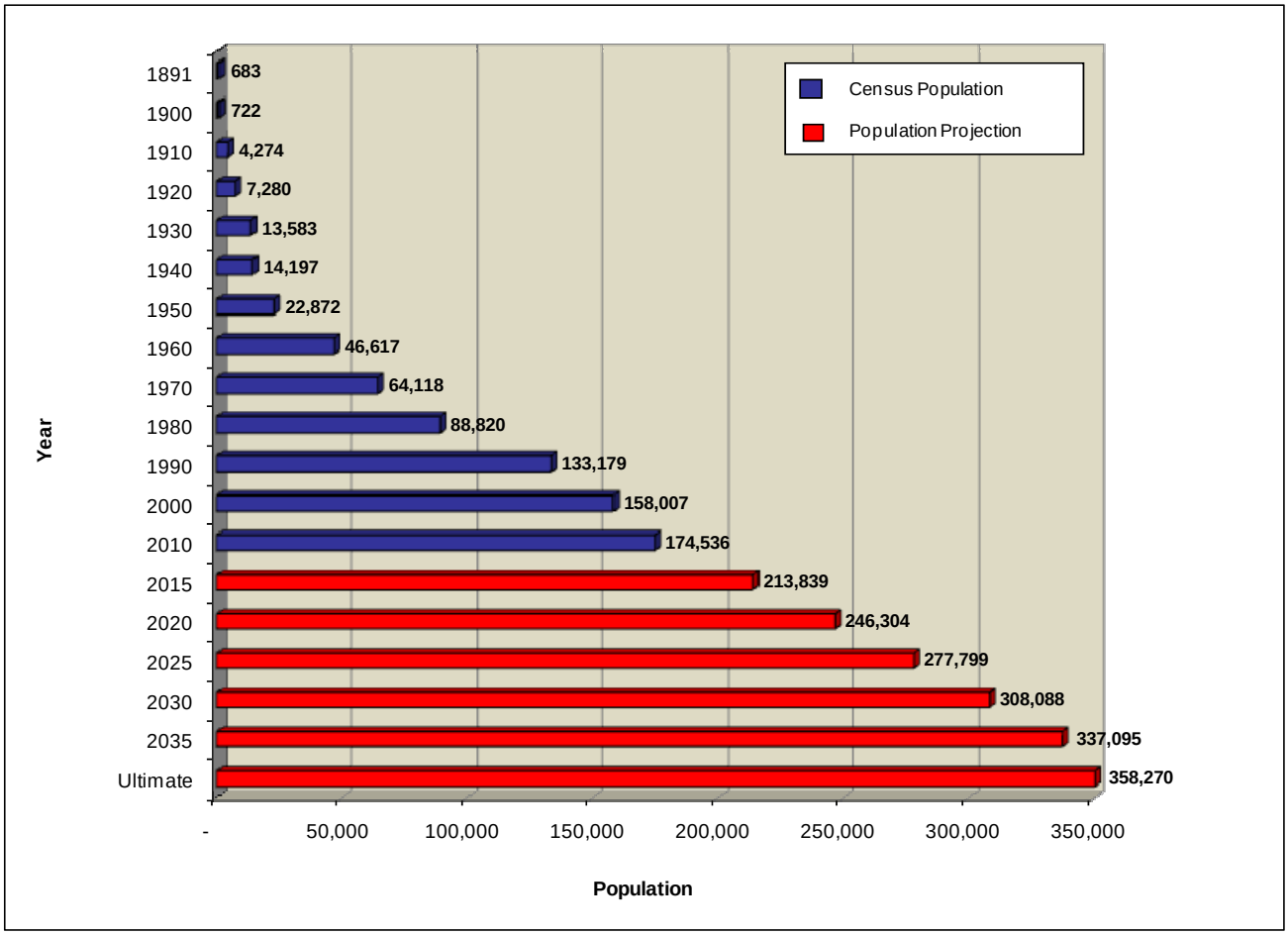
3-6 Population

Since its incorporation in 1890, the City of Ontario has grown from a population of 683 to approximately 174,536 in 2010 (*Ref: California Department of Finance, Table E-5, 2010*). The historical population increase from 1890 to 2010, as well as future projections are depicted on Figure 3-6.

It should be noted that the estimates shown on Figure 3-6 for the year 2000 through 2035 includes New Model Colony, which was annexed by the City in 1999. The City of Ontario Planning Department estimated the population in New Model Colony in 1999 to be about 1,500 persons (*Ref: Sphere of Influence General Plan Amendment Digest).* The population shown includes the 628 acres of land (5,770 persons) within the City of Ontario's Old Model Colony, but served water by the Cucamonga Valley Water District.

The ultimate population in New Model Colony is expected to be approximately 162,518 (*Ref: 2010 General Plan Approved Landuse Buildout Estimate Table*). The ultimate population in Old Model Colony is estimated at 195,752. The total ultimate population is estimated at 358,270 which will more than double the existing population. The service area population will be 352,500.

Figure 3-6
City of Ontario Population History and Projections



Reference: Historical population data from California State Department of Finance.
Population projections from SCAG Adopted 2008 Regional Transportation Plan Growth Forecast

SECTION 4

WATER USE

4-1 Historic Water Production and Purchase

The City obtains its potable water supply from groundwater wells in Chino Basin and imported water from the Water Facilities Authority (WFA) and the Chino Basin Desalter Authority (CDA). The City currently owns 32 wells. Four wells are either abandoned or destroyed, five (5) of the wells are inactive, while the other 23 wells are operational.

The total annual water production and purchase from January 2001 to December 2009 is shown in Table 4-1 and on Figure 4-1. Figure 4-2 illustrates the historic water production and purchase by month. Over the last ten years, the annual production has averaged a total of 43,340 AFY (38.7 mgd). The average production from Chino Basin is 30,605 AFY (27.3 mgd). Per the Chino Basin Judgment, the City of Ontario has appropriative rights to 16,337.40 AFY and its share of the initial operating safe yield is 11,373.82 AFY or 20.74 percent. The average amount of imported water purchased is 12,735 AFY (11.4 mgd).

There has been a decrease in production over the past three years, starting in 2007. This may be attributed to a very conscientious water conservation effort by the customers. Water conservation is discussed further in Section 4-9.

Table 4-1
Historic Water Production and Purchase (Annual)

Calendar Year	Imported			Groundwater			Total Production	
	Purchased		% of Total	Production		% of Total		
	AFY	mgd		AFY	mgd		AFY	mgd
2000	9,258	8.3	20	36,842	32.9	80	46,100	41.2
2001	8,907	8.0	20	35,105	31.3	80	44,011	39.3
2002	9,325	8.3	21	35,444	31.6	79	44,769	40.0
2003	13,207	11.8	30	30,240	27.0	70	43,447	38.8
2004	15,143	13.5	35	27,824	24.8	65	42,967	38.4
2005	13,406	12.0	32	28,799	25.7	68	42,205	37.7
2006	15,108	13.5	34	28,793	25.7	66	43,901	39.2
2007	18,178	16.2	40	26,946	24.1	60	45,124	40.3
2008	16,275	14.5	38	27,064	24.2	62	43,339	38.7
2009	8,541	7.6	23	28,996	25.9	77	37,537	33.5
Average	**12,735**	**11.4**		**30,605**	**27.3**		**43,340**	**38.7**
2000-2008 data from City's General Production Reports								
2009 data from Ontario System Operations file								

Figure 4-1
Historical Water Production and Purchase (Annual)

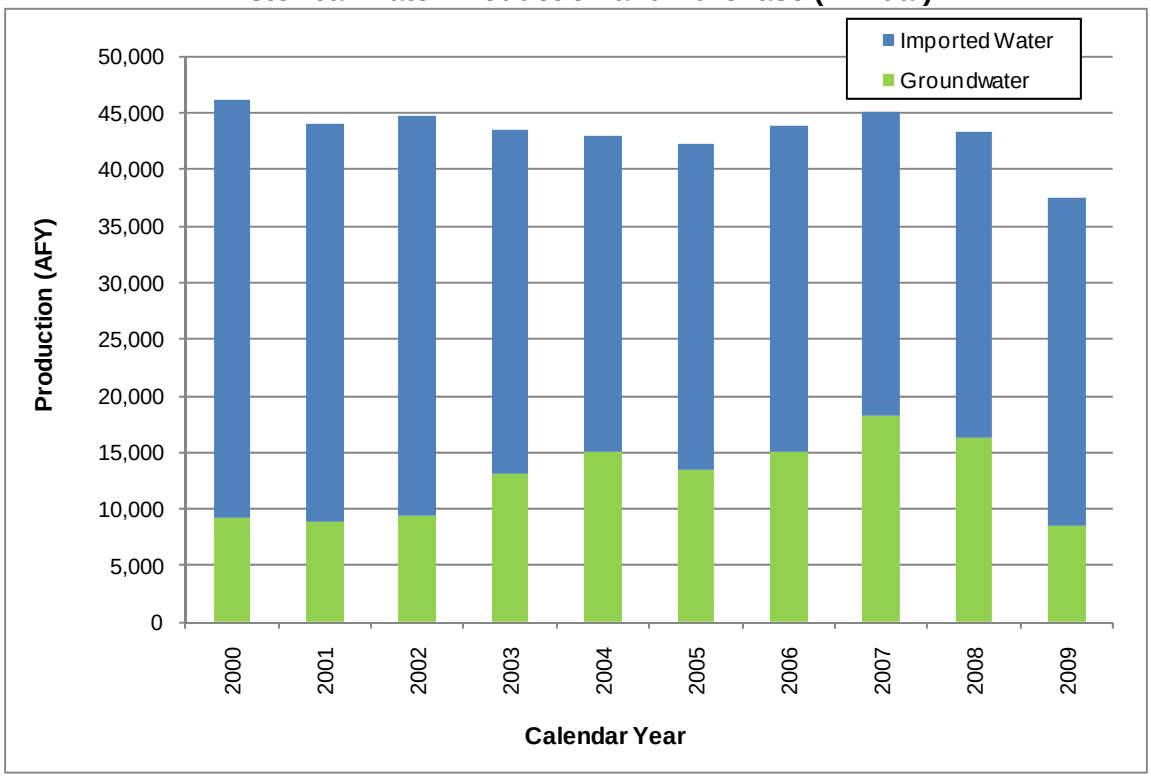
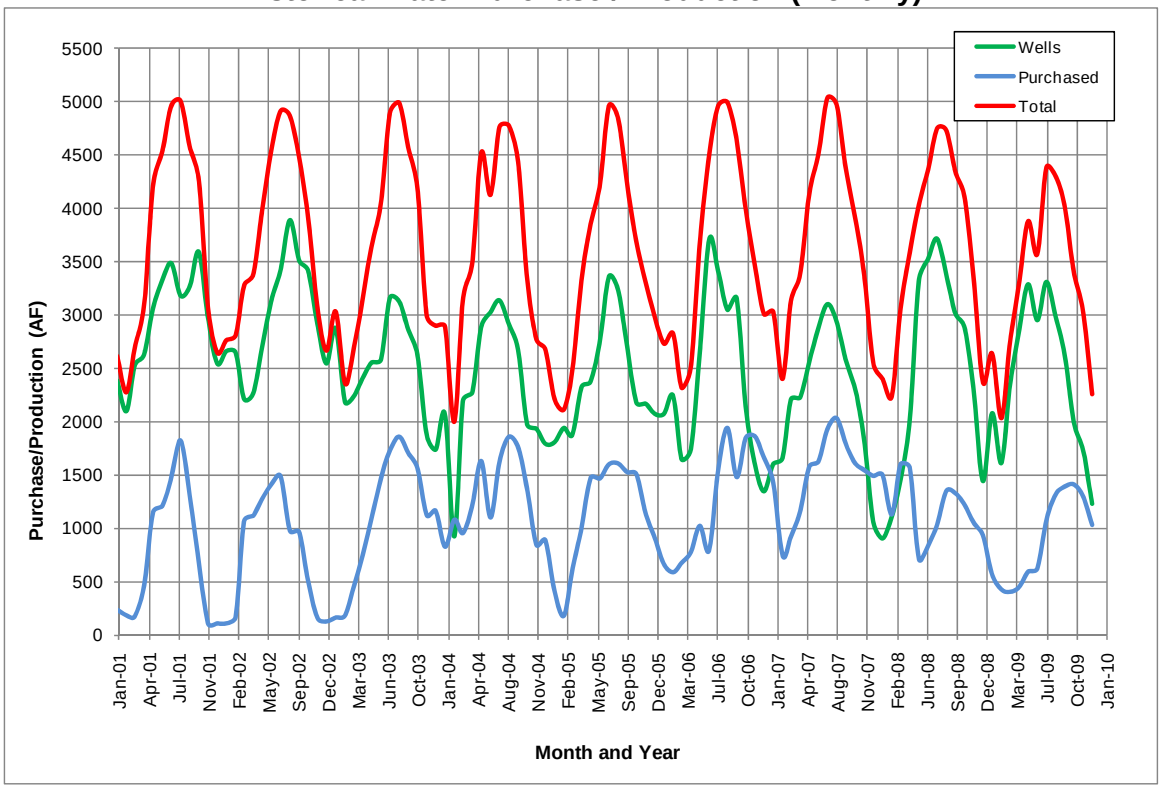


Figure 4-2
Historical Water Purchase / Production (Monthly)



4-2 Water Consumption versus Water Production / Purchase

The City typically purchases/produces more water than the quantity measured by the customer meters. Table 4-2 summarizes the difference between the measured consumption and production from 2000 to 2009. Figure 4-3 graphically shows the City's water consumption versus production/purchase. On average, 2.4 percent of the water supply is unaccounted for each year. The discrepancy is partly due to the differences in the accuracies of the few large meters which measure purchases and production, and the thousands of small customer meters which measure sales. Unaccounted for water can also be due to unmeasured uses such as water main flushing and other maintenance related tasks. The remainder may be due to leaks from the system. The average unaccounted for water rate of 2.4 is well within the industry standard. The data for water production was incomplete for calendar year 2000.

The total production / purchase data shown in Table 4-2 does not exactly match the data in Table 4-1. The data came from two different sources provided by the City. The City's General Production Reports provided monthly production numbers by well and imported water connection. The DWR Public Water System Statistics Reports provided a monthly summary of the City's overall production and consumption.

Table 4-2
Water Consumption versus Water Production/Purchase

Calendar Year	Water Consumption[1] (AFY)	Water Production/ Purchase[1] (AFY)	Percent Unaccounted For Water	Population[2]	Per Capita Production/ Purchase (GPD/Person)	Per Capita Consumption (GPD/Person)
2000	42,998	Data Incomplete	-	152,524	-	252
2001	43,108	43,951	1.9	153,951	255	250
2002	44,193	44,709	1.2	157,752	253	250
2003	41,772	43,447	3.9	160,641	241	232
2004	42,087	42,967	2.0	162,528	236	231
2005	42,097	42,205	0.3	164,308	229	229
2006	42,780	43,901	2.6	164,763	238	232
2007	44,286	44,806	1.2	166,058	241	238
2008	42,072	43,301	2.8	166,760	232	225
2009	37,708	39,538	4.6	167,138	211	201
Average	**42,310**	**43,173[3]**	**2.4[4]**	**161,642**	**237[3]**	**232**

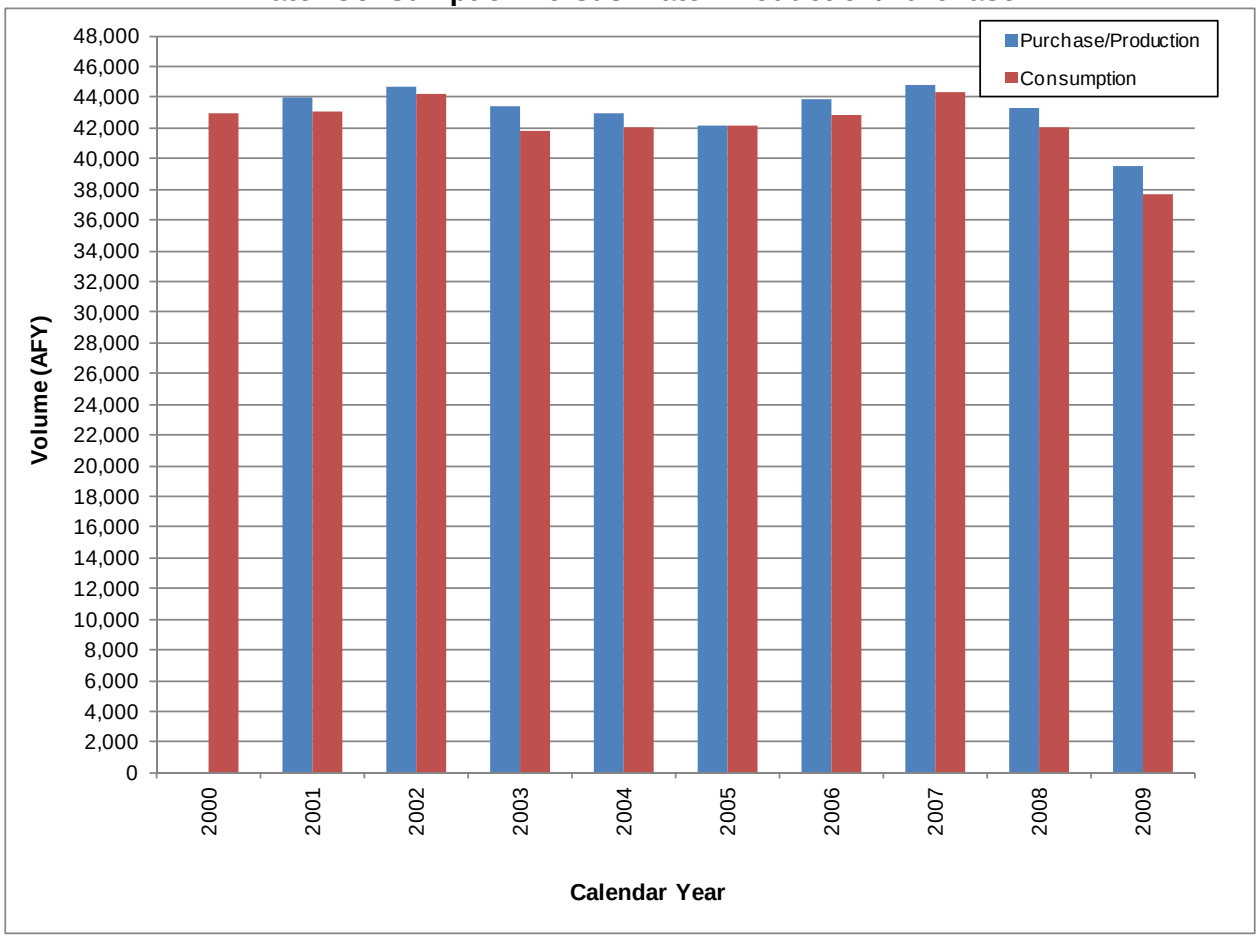
[1] Consumption and Production/Purchase data extracted from annual Department of Water Resources Public Water System Statistics Report. Consumption data for 2005 provided by City staff.

[2] Population data from California Department of Finance, E-5 Population and Housing Estimates for Cities 2000-2010, excluding estimate of population for areas in Ontario served by CVWD.

[3] Water production/purchase and per capita production/purchase averages do not include calendar year 2000 because the data was not available on the DWR report.

[4] Percent unaccounted for water average does not include calendar year 2000 data, because the data was not available.

Figure 4-3
Water Consumption versus Water Production/Purchase



4-3 Water Demand Variations

Demand variations through a year are influenced by seasonal effects such as temperature, humidity, and precipitation. System demand variations throughout a day are influenced by the customer base and the daily lifestyles of the customers. In primarily residential areas, the peak demands within a day typically occur in the morning hours between 6:00 am and 9:00 am, when customers wake to begin their daily routine. In largely commercial and industrial areas, the peaks may occur mid-day or the demand may even remain relatively constant throughout the work day. For this study, the variations are expressed as a ratio to the average demand, with the average demand being equal to one.

4-4 Monthly Demand Variations

Typical of most Southern California communities, the City's water consumption exhibits a distinct seasonal pattern. Peak and low monthly consumption occur during the dry summer months and wet winter months, respectively. Monthly demand totals for 2000 to 2009 are shown in Table 4-3. Peak demands typically occur in August and September. Low demands typically occur in February, March, or April. The highest and lowest monthly demand factors seen in Table 4-3 are 1.43 and

0.53, respectively. A graph of the monthly demand factors (monthly demand/average monthly demand) by year is illustrated on Figure 4-4.

Table 4-3
Monthly Water Demands (AF)

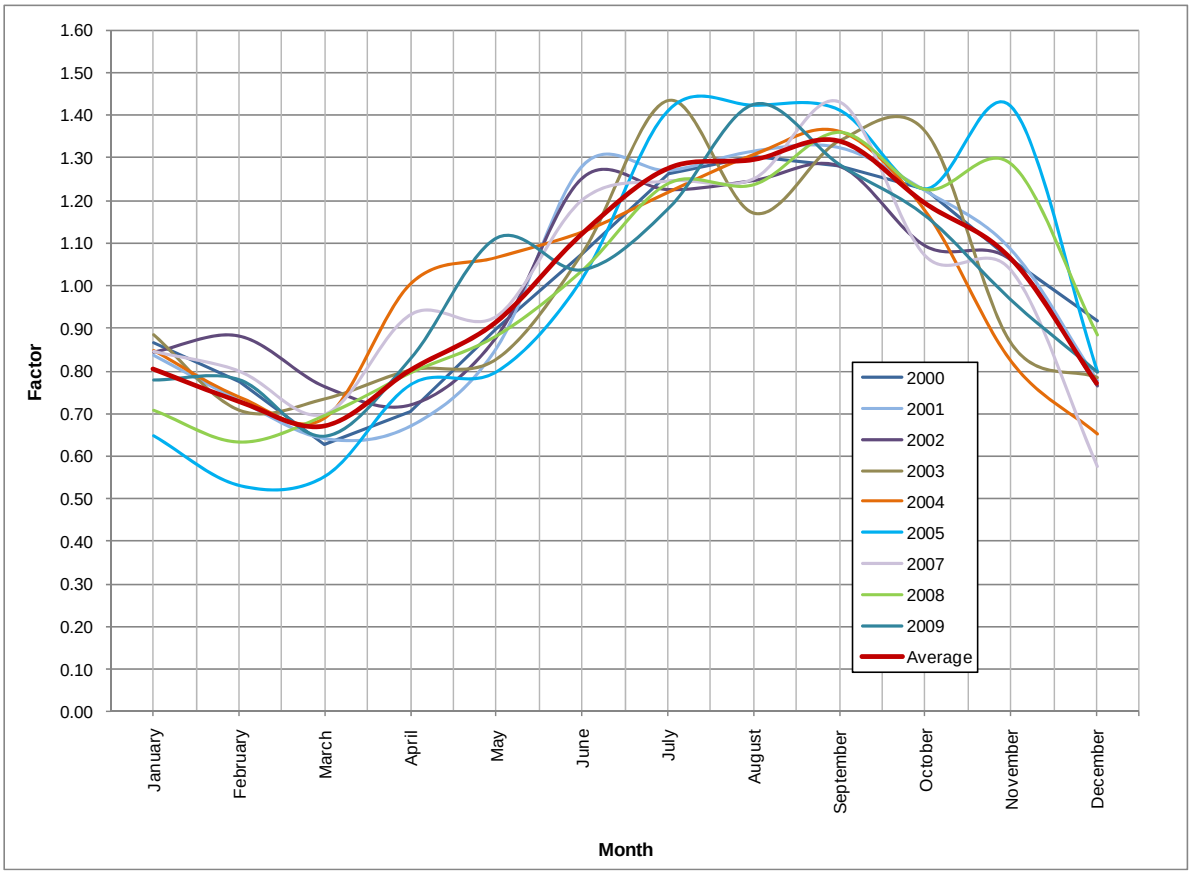
Month	2000	Factor	2001	Factor	2002	Factor	2003	Factor	2004	Factor
January	3100	0.86	3005	0.84	3105	0.84	3084	0.89	2970	0.85
February	2771	0.77	2625	0.73	3243	0.88	2469	0.71	2586	0.74
March	2255	0.63	2305	0.64	2803	0.76	2563	0.74	2416	0.69
April	2523	0.70	2413	0.67	2649	0.72	2798	0.80	3523	1.00
May	3218	0.90	3070	0.85	3239	0.88	2888	0.83	3737	1.07
June	3862	1.08	4598	1.28	4613	1.25	3754	1.08	3948	1.13
July	4532	1.26	4558	1.27	4510	1.22	4994	1.43	4276	1.22
August	4670	1.30	4721	1.31	4590	1.25	4074	1.17	4586	1.31
September	4596	1.28	4748	1.32	4712	1.28	4667	1.34	4774	1.36
October	4396	1.23	4384	1.22	4021	1.09	4737	1.36	4114	1.17
November	3810	1.06	3888	1.08	3896	1.06	3009	0.86	2875	0.82
December	3295	0.92	2793	0.78	2812	0.76	2735	0.79	2282	0.65
Average	**3586**		**3592**		**3683**		**3481**		**3507**	

Month	2005	Factor	2007	Factor	2008	Factor	2009	Factor	Average Factor
January	2555	0.65	3117	0.84	2486	0.71	2450	0.78	0.81
February	2093	0.53	2945	0.80	2225	0.63	2452	0.78	0.73
March	2180	0.55	2575	0.70	2446	0.70	2038	0.65	0.67
April	3033	0.77	3439	0.93	2796	0.80	2611	0.83	0.80
May	3151	0.80	3423	0.93	3100	0.88	3493	1.11	0.92
June	4021	1.02	4431	1.20	3639	1.04	3259	1.04	1.12
July	5578	1.41	4592	1.24	4351	1.24	3708	1.18	1.28
August	5624	1.42	4614	1.25	4342	1.24	4474	1.42	1.30
September	5577	1.41	5275	1.43	4772	1.36	4029	1.28	1.34
October	4848	1.23	3939	1.07	4301	1.23	3653	1.16	1.20
November	5608	1.42	3813	1.03	4508	1.29	3033	0.97	1.07
December	3153	0.80	2122	0.57	3106	0.89	2508	0.80	0.77
Average	**3952**		**3690**		**3506**		**3142**		

Notes: *Peak factors are highlighted in red*

Data extracted from annual Department of Water Resources Public Water System Statistics Reports

Figure 4-4
Monthly Demand Factors



4-5 Daily Demand Variations

Maximum day demand for this study was based upon a review of daily production/purchase reports for 2007 and 2008. The maximum day production/purchase for both years was approximately 1.5 times the average day demand for the year. A maximum day demand factor of 1.6 was selected for the Master Plan work to account for the limited data currently available.

4-6 Hourly Demand Variations

Knowledge of accurate demand variations over a 24-hour period is essential for proper analysis of water systems. For this study, hourly demand variations were represented by the development of a diurnal demand curve for each potable water usage type. The diurnal demand curves are employed in determining the adequacy of the sources of supply, pumping facilities, reservoirs, and the transmission / distribution facilities.

The diurnal curves developed in the City's Water and Recycled Water Master Plan, dated April 2006 were implemented in this study, which did not include diurnal curve development in its scope. The diurnal curves were generally based upon tank level information from the Supervisory Control and Data Acquisition (SCADA) system. The residential diurnal curves are shown on Figure 4-5. The diurnal curve for commercial and industrial, irrigation, schools without irrigation, and commercial and industrial uses without irrigation are shown on Figure 4-6. The school pattern

without irrigation and the commercial and industrial uses without irrigation is used for future developments where irrigation is planned to be served by recycled water, such as in New Model Colony.

Figure 4-5
Residential Diurnal Curves

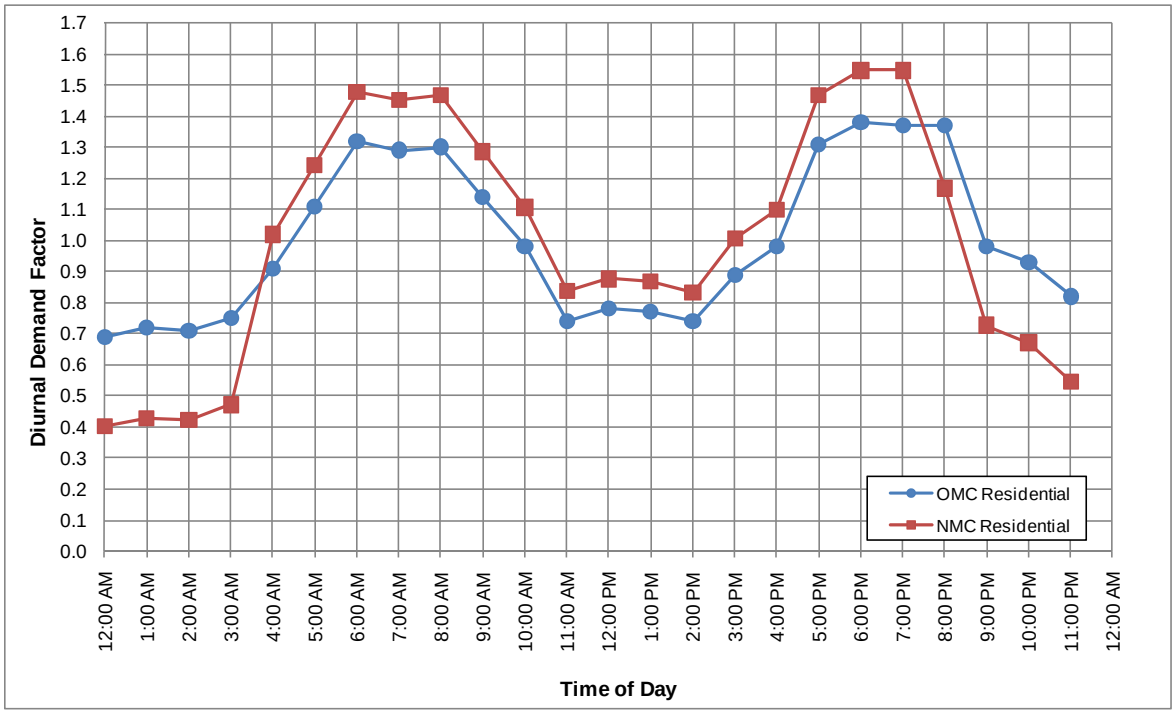
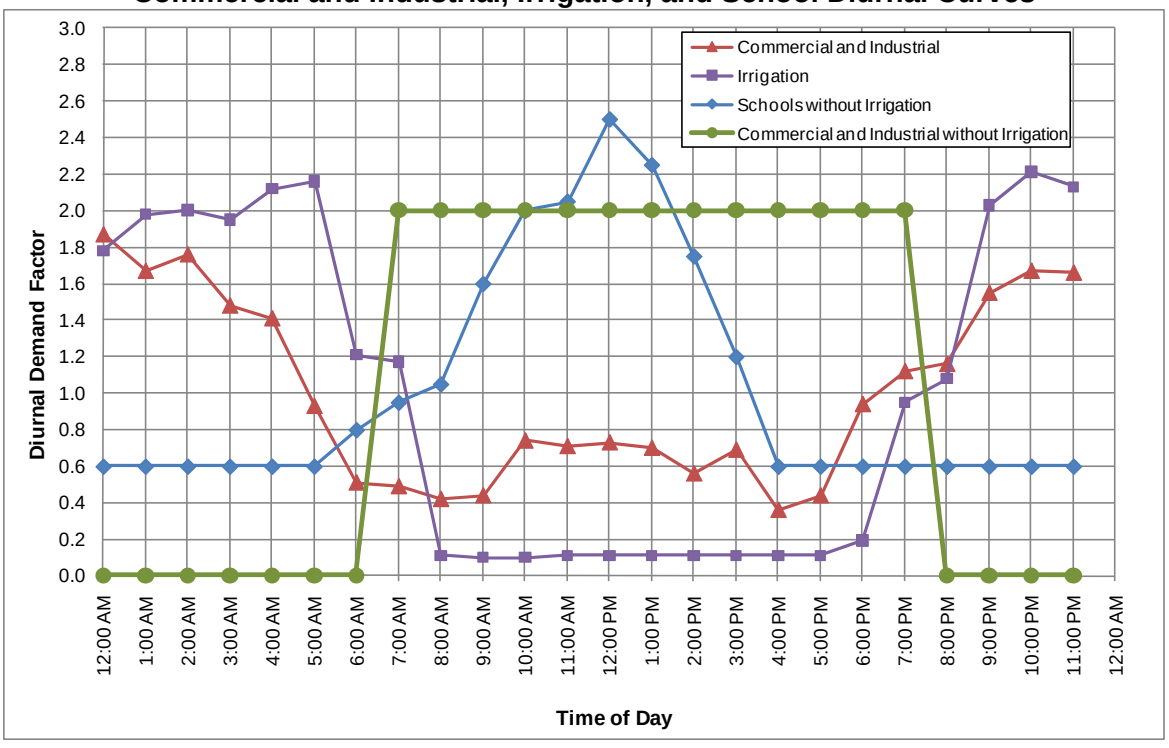


Figure 4-6
Commercial and Industrial, Irrigation, and School Diurnal Curves

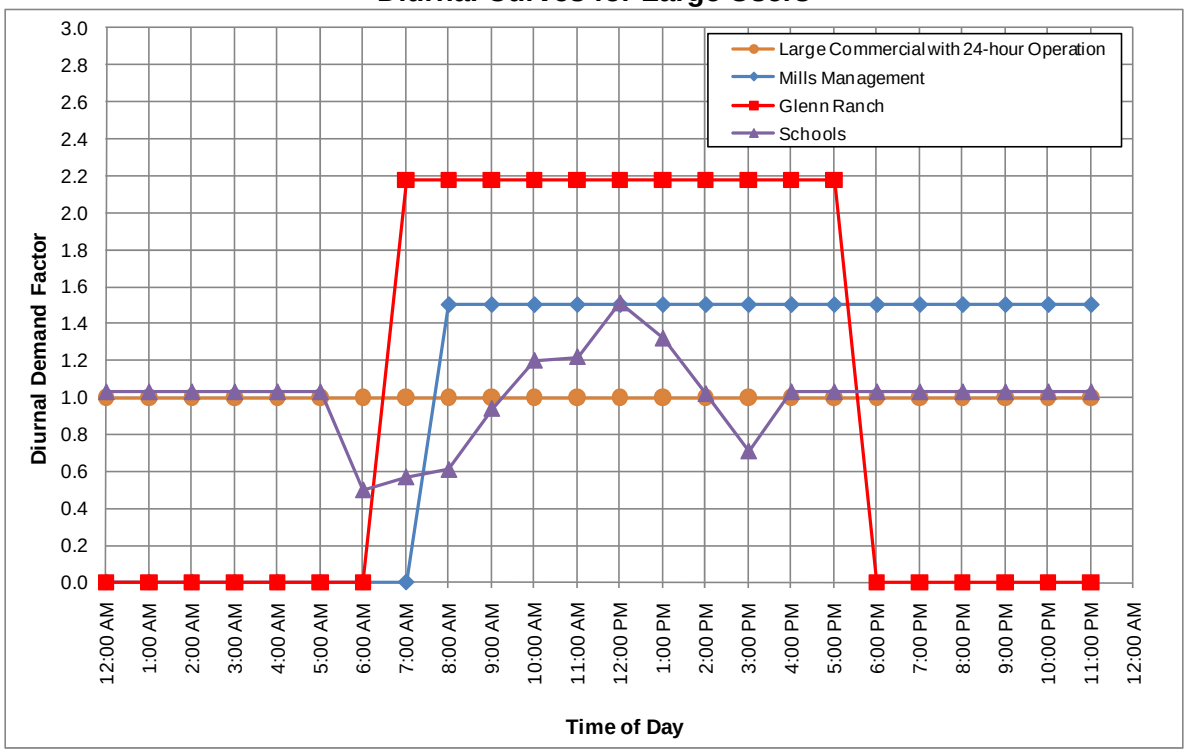


Specific curves, some of which are graphed in Figure 4-7, were developed for the large water users with specific operation times as listed in Table 4-4.

Table 4-4
Peaking Factors for Large Users

User Name	Hours of Operation	Diurnal Demand Factor
Alumin Art Plating	6 am - 11:30 pm, Mon-Fri	1.87
Arrowhead	24 hrs a day, 7 days a week	1.00
Cintas Corporation	24 hrs a day, 7 days a week	1.00
Clement Pappas	6 am - 10 pm, 7 days a week	1.50
Coca Cola USA	24 hrs a day, Sun-Thurs and 7 am - 11 pm, Fri	1.24
Crothall Healthcare Inc	24 hrs a day, 7 days a week	1.00
Culligan Water	7 am - 2 pm, Mon-Sat	4.01
Dairy Fresh Products	4 am - 12 pm, Mon-Fri and 8 am - 3 pm, Sat	3.58
Danco Metal Surfacing	6 am - 12 pm, Mon-Fri	5.62
Dominos Pizza Dist Corp	24 hrs a day, 7 days a week	1.00
Fresh Start Bakeries	24 hrs a day, 7 days a week	1.00
Inland Empire	5 am - 8 pm, Mon-Sat	1.87
LA Dpt Apts	24 hrs a day, Mon-Sat	1.17
Rama Foods	24 hrs a day, Mon-Sat	1.17
Superior Quality Foods	6 am - 1 am, Mon-Fri	1.77
Temple-Inland	24 hrs a day, 7 days a week	1.00
The Mills Mgmt Corp, Amc Theaters	8 am - 12 am, 7 days a week	1.50
Travelcenter Of	24 hrs a day, 7 days a week	1.00
Unifirst Corp	6 am - 8 pm, 7 days a week	1.50

Figure 4-7
Diurnal Curves for Large Users



4-7 System Demands and Peaking Factors

It is important to evaluate a water system during various incremental peak demands. Typically, a water system is designed to meet the maximum demands placed on it. The system components must be designed to cope with these demands as they occur. Maximum month and maximum day demands are important factors in sizing a system's supply capability. Maximum day demands usually dictate the design criteria for both system transmission and storage needs. Peak hour criterion is a measure of the system's overall adequacy with respect to its transmission and distribution elements, as well as its operational storage capacity.

The existing water system demands (OMC) are estimated as shown in Table 4-5, based on historical data.

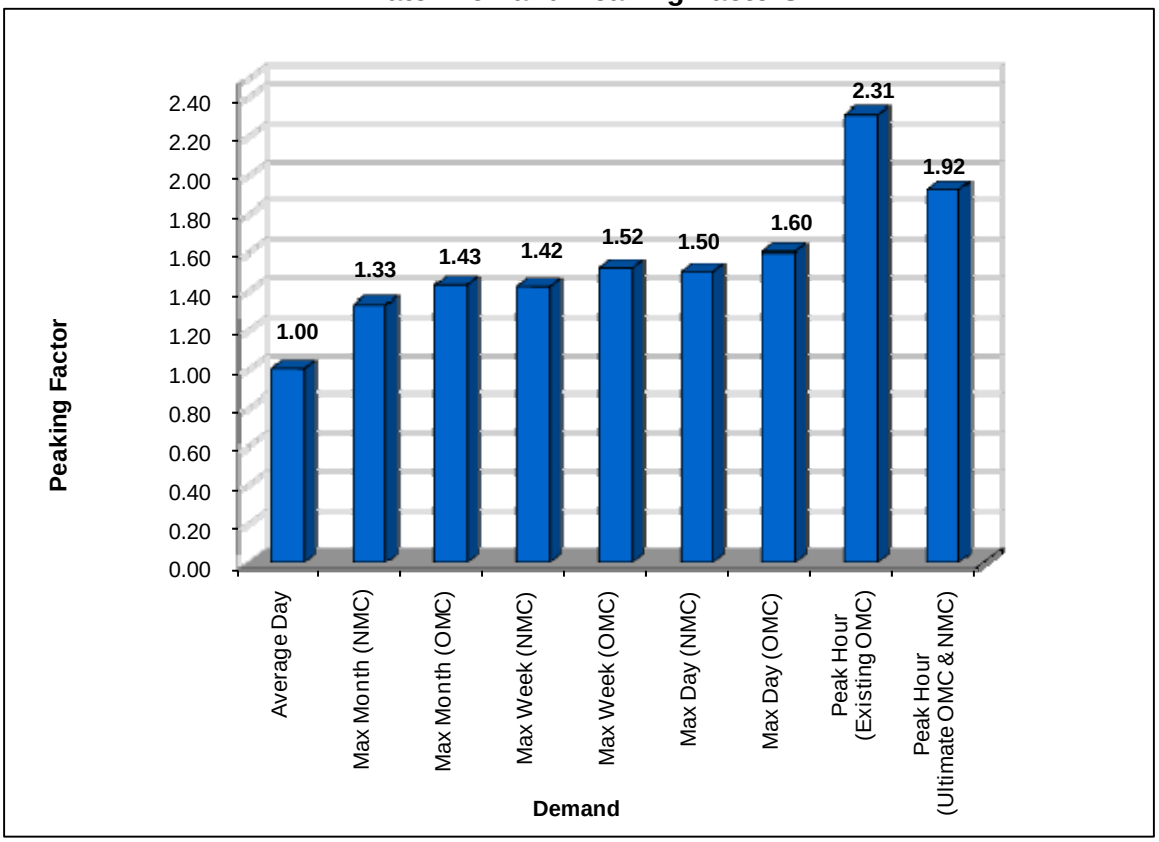
Table 4-5
Existing Water System Demands and Peaking Factors

Demand Description	Existing Demand			Peaking Factor
	(gpm)	(mgd)	(AFY)	
Average Day	23,380	33.67	37,708	1.00
Max Month	33,434	48.15	53,922	1.43
Max Week	35,538	51.18	57,316	1.52
Max Day	37,409	53.87	60,333	1.60
Peak Hour	54,032	77.81	87,143	2.31

The maximum day peaking factor for New Model Colony was further refined to account for the fact that it is planned to be largely residential in nature and there will be a dual recycled water system constructed in all major streets. The City anticipates a target of 12 percent of the total water use in low density residential areas to be provided by the recycled water system. It is expected that this percentage will increase as the residential density increases. With more recycled water and less irrigation use on the domestic water system, the maximum day peaking factor in New Model Colony is reduced to an estimated factor of 1.5. This factor is utilized for future demand estimates in New Model Colony. The relationships between the peaking factors developed for this study with respect to the average day demand estimate are displayed graphically on Figure 4-8.

In the hydraulic model, a maximum day peaking factor of 1.24 was utilized for Temple Inland, the City's largest water user. This factor was developed by review of historical water meter data. In 2008, Temple Inland used an average of 51,606 ccf per month. The maximum month demand (January 2008) was 63,967 ccf. This maximum day peaking factor (considered equivalent to the maximum month peaking factor for this study) is therefore calculated to be about 1.24 (63,967/51,606).

Figure 4-8
Water Demand Peaking Factors



**Note that the ultimate peak hour factor is 1.92 versus the existing peak hour factor of 2.31. The peak hour factor is dependent on the amount and types of land use and the hourly demand variations (described in subsection 4-6.*

4-7.1 Existing Demands

Average Day

The average day demand is based on the City of Ontario's average daily consumption for FY 2009. As shown in Table 4-5, the average day demand is approximately 37,708 AFY (23,380 gpm).

Maximum Month

The maximum month peaking factor was determined from the annual production and consumption records. Based on historical records from 2000 to 2009, the maximum month usage is about 1.43 times the average month and typically occurs in August or September. The maximum month demand is estimated at approximately 53,922 AFY (33,434 gpm).

Maximum Week

The maximum week demands are estimated to be approximately 1.52 times the average day demand or 57,316 AFY (35,538 gpm).

Maximum Day

The maximum day demands are estimated to be approximately 1.60 times the average day demand or 60,333 AFY (37,409 gpm). The Old Model Colony maximum day peaking factor was developed based on historical daily production records. The New Model Colony maximum day peaking factor was developed by excluding a portion of the water use that is expected to be served through the recycled water system (based on an assumed dwelling unit frontage and irrigation factor).

Peak Hour

The peak hour demands were based upon the diurnal demand curves illustrated on Figure 4-4 through Figure 4-6. The existing overall peak hour system demand is estimated to be 2.31 times the average day demand or about 87,143 AFY (54,032 gpm).

Existing Water Demands by Zone

Existing water demands by zone are shown in Table 4-6. These are estimates based upon the distribution of demands used in the hydraulic model. The model utilized water meter records from 2008.

Table 4-6
Existing Water Demands by Zone

	Average			Max Month			Max Week			Max Day[1]			Peak Hour[2]		
Zone	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY
1348	2,671	3.85	4,308	3,819	5.50	6,160	4,060	5.85	6,548	4,273	6.15	6,892	6,173	8.89	9,955
1212	11,059	15.92	17,836	15,814	22.77	25,505	16,810	24.21	27,110	17,694	25.48	28,537	25,557	36.80	41,219
1074	4,977	7.17	8,026	7,117	10.25	11,478	7,565	10.89	12,200	7,963	11.47	12,842	11,501	16.56	18,549
1010	4,674	6.73	7,538	6,684	9.62	10,780	7,104	10.23	11,458	7,478	10.77	12,061	10,801	15.55	17,421
Total	**23,380**	**33.67**	**37,708**	**33,434**	**48.15**	**53,922**	**35,538**	**51.18**	**57,316**	**37,409**	**53.87**	**60,333**	**54,032**	**77.81**	**87,143**

[1] Maximum Day Demand shown is calculated using maximum day factor of 1.60. In the hydraulic model, a maximum day factor of 1.24 is used for Temple Inland.

[2] Peak Hour Demand shown for each zone is calculated using the overall system peak hour factor of 2.31. In the hydraulic model, some of the large users are assigned specific Peak Hour factors based on the user's hours of operation. The actual peak hour demands may vary by zone in the model.

4-7.2 Ultimate Demands

The City of Ontario's ultimate water system demands utilized in this study are shown in Table 4-7 by zone.

Table 4-7
Ultimate Water Demands by Zone

Zone	Average			Max Month[1]			Max Week[2]			Max Day[3]			Peak Hour[4]		
	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY	gpm	mgd	AFY
1348	3,552	5.11	5,728	5,079	7.31	8,192	5,399	7.77	8,707	5,683	8.18	9,166	8,208	11.82	13,239
1212	15,874	22.86	25,601	22,700	32.69	36,610	24,128	34.74	38,914	25,398	36.57	40,962	36,685	52.83	59,165
1074	6,045	8.70	9,749	8,644	12.45	13,942	9,188	13.23	14,819	9,672	13.93	15,599	13,970	20.12	22,531
1010	7,878	11.34	12,705	10,737	15.46	17,317	11,446	16.48	18,460	12,076	17.39	19,477	16,162	23.27	26,065
925	12,990	18.71	20,951	17,277	24.88	27,864	18,446	26.56	29,750	19,485	28.06	31,426	24,981	35.97	40,290
Total	**46,339**	**66.73**	**74,734**	**64,438**	**92.79**	**103,925**	**68,608**	**98.80**	**110,651**	**72,315**	**104.13**	**116,630**	**89,113**	**144.01**	**161,290**

** Demands shown do not include potential recycled water use in OMC or potential recycled water conversions*

[1] Maximum Month Demand shown is calculated using maximum month factor of 1.43 for OMC demands and 1.33 for NMC demands.

[2] Maximum Week Demand shown is calculated using maximum week factor of 1.52 for OMC demands and 1.42 for NMC demands.

[3] Maximum Day Demand shown is calculated using maximum day factor of 1.60 for OMC demands and 1.50 for NMC demands. In the hydraulic model, a maximum day factor of 1.24 is used for Temple Inland.

[2] Peak Hour Demand shown for each zone is calculated using the overall system peak hour factor of 1.92. In the hydraulic model, some of the large users are assigned specific Peak Hour factors based on the user's hours of operation. The actual peak hour demands may vary by zone in the model.

A thorough explanation of the development of the ultimate demands is explained in the Ultimate Citywide Water Demand Estimate Technical Memorandum, included as Appendix 1. In summary, the following steps were used to estimate the ultimate demands:

1. Existing meter data was used for existing uses in Old Model Colony (OMC). The demands were reduced by 5 percent to account for future conservation efforts and increased by 5 percent to compensate for unaccounted for water.

2. Developed unit demand factors in gpd/ac were used to estimate demands for the vacant and future densification areas in OMC. Unit demand factors included a 5 percent reduction for future conservation efforts.

3. Developed unit demand factors in gpd/person or gpd/job were used to estimate demands for future mixed use areas. Unit demand factors included a 5 percent reduction for future conservation efforts.

4. Developed unit demand factors in gpd/person or gpd/job were used to estimate demands for future New Model Colony (NMC) residential and commercial areas. Unit demand factors included a 5 percent reduction for future conservation efforts.

5. Developed unit demand factors in gpd/ac were used to estimate demands for future NMC public facilities and schools.

6. Demands for major parks, right-of-ways, and open space areas within NMC were not included because it was assumed to be served by the recycled water system. The remainder of the areas were assumed be served by domestic water and are accounted for in the unit demand factors.

The ultimate average citywide demand estimate included in the Technical Memorandum (Appendix 1) is reported as 69,384 AFY. For this Master Plan, the ultimate average demand is estimated at 74,735 AFY as shown in Table 4-7. The reason for the difference is that the Master Plan did not account for recycled water use for future OMC developments or for recycled water use conversions in the OMC. In the event that future OMC developments do not use recycled water or if current domestic water users are not converted to the recycled water system, the domestic water system is planned to be able to accommodate all the expected ultimate demands.

The following unit demand factors were implemented for all areas where population data was available. These factors account for future water conservation efforts.

Rural Residential = 140 gpd/person

Low Density Residential = 136 gpd/person

Low-Medium Density Residential = 116 gpd/person

Medium Density Residential = 98 gpd/person

High Density Residential = 76 gpd/person

Office Commercial and Business Park = 43 gpd/job

Neighborhood Commercial = 70 gpd/job

General Commercial = 180 gpd/job

Industrial = 95 gpd/job

Mixed use office = 43 gpd/job

Mixed use non-office = 125 gpd/job

Developed unit demand factors in gpd/ac are shown in Table 4-8. As discussed in Section 4-7, different peaking factors (maximum month, maximum week, and maximum day) were developed for New Model Colony and are shown in Figure 4-8. The total system demands shown in Table 4-7 reflect the use of the various developed peaking factors.

Table 4-8
Domestic Water Unit Demand Factors

Landuse		Density (du/ac)	Density (people/ du)	Unit Demand Factor (gpd/ person or gpd/job)	Unit Demand Factor (gpd/ac)	Unit Demand Factor (gpd/du)
Residential						
Rural Residential	RR	0 - 2	4.0	140	1,120	560
Low Density Residential	LDR	2 - 5	4.0	136	2,450	544
Low Medium Density Residential	LMDR	5 - 11	4.0	116	3,940	464
Medium Density Residential (OMC)	MDR	11 - 25	3.8	98	6,730	372
Medium Density Residential (NMC)	MDR	11 - 25	3.3	98	7,220	323
High Density Residential (OMC)	HDR	25 - 45	3.3	76	8,900	251
High Density Residential (NMC)	HDR	25 - 45	2.0	76	5,320	152
Commercial						
Business Park	BP	-	-	43	2,200	-
General Commercial	GC	-	-	180	2,200	-
Hospitality[1]	HOS	-	-		5,000	-
Neighborhood Commercial	NC	-	-	70	2,200	-
Office Commercial	OC	-	-	43	3,400	-
Industrial						
Industrial	IND	-	-	95	2,000	-
Mixed Use						
Mixed Use[2]	MU	-	-	Factors for residential, see above 43 for office 125 for non-office	N/A	-
Open Space						
Open Space Non-Recreational	OS-NR	-	-	-	1,000	-
Open Space Recreational	OS-R	-	-	-	1,000	-
Public						
Public Facility	PF	-	-	-	2,200	-
Public School[3]	PS	-	-	-	3,500	-

[1] If possible it is recommended to use 150 gpd/room on a case by case basis. It is difficult to estimate the number of rooms or square footage per acre.

[2] Mixed Use demands should be based on the types of landuse that make up the specific area and the unit demand factors provided above. The City's 2010 General Plan (The Ontario Plan) provides detailed information on the landuses that make up each mixed use area (See Table 3-2 of this report).

[3] The unit demand factor 3,500 gpd/ac include an allowance for irrigation. If irrigation will be supplied by recycled water, a factor of 1,800 gpd/ac is recommended. This reduced factor was used in the hydraulic model for NMC schools.

4-8 High Water Users

The City's high water users are listed in Table 4-9.

Table 4-9
High Water Users

No.	Customer	Cutomer Address	Usage Type	Average Consumption		
				gpm	gpd	AFY
1	Temple-Inland	5100 E Jurupa St	COM	879	1,266,134	1,418
2	Cucamonga Guasti Pk	1010 N Archibald Av	COM	268	385,920	432
3	L A Dpt Apts	3450 E Airport Dr #500	WATERCOM	265	381,672	428
4	The Mills Mgmt Corp, City of Ontario, AMC Theaters	4320 E Fourth St	WATERCOM, IRRIGATN	216	311,227	349
5	Parks Dept	1200 W Fifth St	WATERCOM	193	277,531	311
6	Regis Contractors L P	955 N Duesenberg Dr	MF	178	256,752	288
7	Tiger-Drylac-USA Inc	1261 E Belmont St	IRRIGATN	147	211,003	236
8	Mountain Village/CMS	1812 S Mountain Av	MF	146	209,837	235
9	Holiday Inn Express Hotels & Suites, Parks - Median	2280 S Haven Av	WATERCOM, IRRIGATN	145	208,469	234
10	Sir James LP	3351 E Honeybrook Wy	MF	145	208,282	233
11	Reliable Properties	1373 E Fourth St	IRR	143	206,208	231
12	Lighthouse Transport LLC	2019 S Business Pw A	COM	143	205,387	230
13	U S Post Office	2300 E Airport Dr	COM	142	204,955	230
14	Chaffey High School Dist	3850 E Riverside Dr	IRRIGATN	139	199,685	224
15	Corona School	1140 N Corona Av	COM	132	190,267	213
16	Cintas Corporation	2150 S Proforma Av	WATERCOM	129	185,645	208
17	Country Meadows	1855 E Riverside Dr	MF	116	167,659	188
18	Security Capital	2800 E Riverside Dr	WATERMF	109	156,326	175
19	Crothall Healthcare Inc	5410 E Francis St	COM	100	144,317	162
20	Creekside Master/East	1 Millcreek & Riverside	IRRIGATN	94	135,461	152
21	Rancho Ontario Corp	2200 S Walker Av	IRR	92	132,278	148
22	Coca Cola USA	1650 S Vintage Av	COM	87	125,928	141
23	U P S	3121 E Jurupa St	IRRIGATN	87	124,747	140
24	Creekside West Village	2601 S Deer Creek Loop	WATERCOM	86	124,157	139
25	Clement Pappas	1755 E Acacia St	IND	77	110,362	124
26	Coastal Ontario LLC	1701 E D St	WATERMF	69	99,950	112
27	The Ontario Center	4250 E Inland Empire Bl	IRRIGATN	69	99,130	111
28	The Casitas Apts	1900 S Campus Av	MF	67	97,042	109
29	Casa Partners III L.P.	1661 E G St	WATERMF	67	96,566	108
30	Ontario Montclair	2121 S Bon View Av	IRRIGATN	66	94,651	106
31	Arrowhead, Propak California Corp	5772 E Jurupa St	WATERCOM	65	93,816	105
32	John Laing Homes	948 N Turner Av	WATERMF	63	90,662	102
33	Ontario High School	901 W Francis St	WATERCOM	61	87,595	98

Table 4-9 (Continued)
High Water Users

No.	Customer	Cutomer Address	Usage Type	Average Consumption		
				gpm	gpd	AFY
34	Colony Terrace Lp	2550 E Riverside Dr	WATERMF	58	83,045	93
35	Doubletree Hotel Ontario	222 N Vineyard Av	WATERCOM	57	82,296	92
36	Park Vista	1031 S Palmetto Av	WATERMF	55	78,797	88
37	Ontario Convention Ctr	2000 E Convention Center Wy	WATERCOM,IRRIGATN	54	77,414	87
38	Equity Residential Prop, Erp Operating Part	1005 N Center Av	IRRIGATN, WATERMF	53	75,600	85
39	State/Cal/Transp#8	2300 S Euclid/60 on ramp	IRRIGATN	52	75,499	85
40	Mountain Shadows Owners	1300 N Elderberry Av	WATERMF	49	70,416	79
41	Plasthec	1945 S Grove Av	IRRIGATN	46	66,269	74
42	Inland Empire	2450 E Philadelphia St	WATERCOM	45	64,526	72
43	Unifirst Corp	700 S Etiwanda Av	WATERCOM	44	63,504	71
44	Fairfields Ontario Towne LLC, Ontario Center Owners Assoc	950 N Duesenberg Dr	WATERMF, IRRIGATN	42	60,437	68
45	Cal Mex Nursery	3791 S Archibald Av	IRRIGATN	42	60,437	68
46	Oasis Growers Inc	3215 E Chino Av	IRRIGATN	42	60,062	67
47	Grace Yokley School	2947 S Turner Av	WATERCOM	42	59,832	67
48	Parks - Median	4750 E Jurupa St	IRRIGATN	41	59,098	66
49	Wiltgey School	1450 E G St	WATERCOM	40	57,715	65
50	Scandia Recreation Ctr	1155 S Wanamaker Av	IRRIGATN	40	57,614	65
51	Fruit Growers Supply	225 S Wineville Av	WATERCOM	39	56,275	63
52	Allegiance Health Care	4551 E Philadelphia St	IRRIGATN	37	53,813	60
53	Park Centre	850 N Center Av	WATERMF	37	53,424	60
54	Innkeepers Hospitality	700 N Haven Av	WATERCOM	36	51,941	58
55	Samoa Village#2	2300 S Sultana Av	WATERMF	35	50,846	57
56	Estancia Apartments	1720 E D St	WATERMF	35	49,896	56
57	Grove Manor	720 S Cypress Av	WATERMF	35	49,694	56
58	Parks - Median	4650 E Jurupa St	IRRIGATN	34	49,306	55
59	Culligan Water	1925 S Burgundy Pl	WATERCOM	34	48,600	54
60	Creekside School	3742 E Lytle Creek Loop	WATERCOM	34	48,485	54
61	Travelcenter Of	4265 E Guasti Rd	WATERCOM	32	46,757	52
62	Ap-Transpark Llc	2910 E Inland Empire Bl	WATERCOM	32	46,310	52
63	SW Reg Council of Carpenters	3250 E Shelby St	IRRIGATN, WATERCOM	31	43,920	49
64	Total Logistic Control, LLC	104 S Wanamaker Av	WATERCOM	30	42,696	48
65	Skechers USA Co., The Complete Logistics Co.	1670 S Champagne Av., 1670 S Etiwanda Av A	IRRIGATN, WATERCOM	30	42,566	48
66	Mission Woods Inc.	1309 W Mission Bl	WATERMF	29	42,422	48

Table 4-9 (Continued)
High Water Users

No.	Customer	Cutomer Address	Usage Type	Average Consumption		
				gpm	gpd	AFY
67	Sunstone Hotel Properties Inc.	2200 E Holt Bl	IRRIGATN	29	41,818	47
68	Chino Valley Unified	2840 S Parco Av	WATERCOM	28	41,011	46
69	Dairy Fresh Products	601 S Rockefeller Av	WATERCOM	28	40,867	46
70	Fresh Start Bakeries, Thoroughbred Properties Inc.	1220 S Baker Av	WATERCOM, IRRIGATN	28	40,910	46
71	Inland Framing & Developement	607 W Holt Bl	WATERCOM	28	40,349	45
72	Chem Lab	5180 E Airport Dr	WATERCOM	28	40,277	45
73	Bridgestone, Parks - District	4000 E Mission Bl	IRRIGATN	28	40,334	45
74	Pier 1 Imports	3000 E Philadelphia St	IRRIGATN	28	39,960	45
75	Ta Operation Corporation	4327 E Guasti Rd	WATERCOM	28	39,629	44
76	K Mart #8287 ,K Mart Dist Center	5600 E Airport Dr	WATERCOM	27	39,139	44
77	Kaiser Permanente	2295 S Vineyard Ave	WATERCOM	25	36,662	41
78	Mountain View School	2825 E Walnut St	WATERCOM	25	35,856	40
79	La Terraza Apartments	551 E Riverside Dr	WATERMF	25	35,410	40
80	Hyundai Motors	5700 E Francis St	IRRIGATN, WATERCOM	25	35,395	40
81	Inland Christian Hm	1950 S Mountain Av	WATERMF, WATERCOM, IRRIGATN	24	34,690	39
82	Metric Partners, Residence Inn	2025 E Convention Center Wy	WATERCOM	24	34,085	38
83	Americold Logistics, LLC 141	5361 E Santa Ana St	IRRIGATN	23	33,394	37
84	Ranch View School	3300 S Old Archibald Ranch Rd	IRRIGATN	23	33,394	37
85	Liu, Charles Y., Ontario Stoneridge	1253 W Stoneridge Ct	WATERMF, IRRIGATN	23	33,379	37
86		800 N Benson Av	IRRIGATN	23	32,702	37
87	Dominga High School	557 W Fifth St	WATERCOM	23	32,501	36
88	Trio Glen Community Assoc.	1751 E Flora St	WATERRES	22	31,622	35
89	Steris-Isomedix	1000 S Sarah Pl	IRRIGATN	22	31,522	35
90	Mid Cities	1360 E D St	WATERMF	22	31,190	35
91	Centrelake Assn	3261 E Guasti Rd	IRRIGATN	21	30,571	34
92	New Country 693	251 E Riverside Dr	WATERMF	21	30,528	34
93	Mountain Gate Apts	1072 E Nocta St	WATERMF	21	30,197	34
94	Crown Toyota	1201 S Kettering Dr	WATERCOM	21	30,168	34
95	DS Hotel Investment	1801 E G St	WATERCOM	20	29,333	33
96	Internatioal Paper, Majestic CCC IV LLC	3551 E Francis St	WATERCOM, IRRIGATN	20	29,203	33
97	Liberty Hardware	5555 E Jurupa St	IRRIGATN	20	29,074	33
98		755 N Mountain Av	IRRIGATN	20	29,059	33

Table 4-9 (Continued)
High Water Users

No.	Customer	Cutomer Address	Usage Type	Average Consumption		
				gpm	gpd	AFY
99	Sears Logistics Serv	5691 E Philadelphia St #100	IRRIGATN	20	29,088	33
100	Brittany Park, Philadlephia 103 Partners	926 W Philadelphia St # 99	WATERMF, IRRIGATN	20	29,002	32
101	Bellevue Cemetery	1225 W I St	IRRIGATN	20	28,426	32
102	Mag Instruments	2001 S Hellman Av	IRRIGATN, WATERCOM	20	28,238	32
103	Oaks Middle School	1205 S Oaks Av	IRRIGATN, WATERCOM	20	28,152	32
104	U Line	2950 E Jurupa St	IRRIGATN, WATERCOM	19	27,691	31
105	Wong,Thomas	405 N Vineyard Av	WATERCOM	19	27,461	31
106	Arroyo School	1700 E Seventh St	WATERCOM	19	27,490	31
107	Majestic CCC IV, Majestic Ryder Logistics	4061 E Francis St	IRRIGATN, WATERCOM	19	27,403	31
108	Merchant Of Tennis	1625 S Proforma Av	IRRIGATN	19	26,870	30
109	Mariposa School	1605 E D St	WATERCOM	19	26,827	30
110	Vargas-Montoya,Jaime	5505 E Jurupa St	WATERCOM	18	26,611	30
111	Plott Nursing Home LLC	800 E Fifth St	WATERCOM	18	26,323	29
112	Sunkist	620 E Sunkist St	WATERCOM	18	26,208	29
113	California Commerce Cntr Owner's Assoc	3660 E Airport Dr	IRRIGATN	18	26,150	29
114	Cels Enterprises, Adaya Asset Slover Ave. LP , Celestica Corporation	3980 E Earlstone Dr	IRRIGATN,WATERCOM	18	26,107	29
115	Embarq Logistics	2777 E Cedar St	IRRIGATN	18	25,862	29
116	Bedford-Prop Inv	1555 S Dupont Av	WATERCOM	18	25,675	29
117	Harris Place Apts	451 E Riverside Dr	WATERMF	18	25,517	29
118	RREEF Management Company	3281 E Guasti Rd	WATERCOM	18	25,301	28

4-9 Recycled Water

The City's existing recycled water use in OMC is estimated at 1,547 AFY as of January 2010. The recycled water is supplied by Inland Empire Utilities Agency's (IEUA) recycled water system. There are currently 147 recycled customer meters in the City.

The City's Recycled Water Master Plan is based upon increasing the recycled water use in OMC to 6,898 AFY, including 1,944 AFY in currently vacant areas, and 3,407 AFY in future conversions from potable water to recycled water along the planned recycled water pipeline alignments.

The Recycled Water Master Plan determined the need for 11,487 AFY of recycled water in NMC.

4-10 Water Conservation

Title 6, Chapter 8A, The Water Conservation Plan of the City's Municipal Code addresses water conservation issues. The reference for this Chapter is Ordinance 2907, which became effective June 16, 2009.

Voluntary conservation is encouraged to limit the amount of water used to the amount absolutely necessary for health, business, and irrigation. The following elements of conservation apply at all times on a voluntary basis:

- Avoid hose washing of sidewalks, walkways, driveways, parking areas or other paved surfaces, except as required for sanitary purposes.
- Wash motor vehicles, trailers, boats and other types of mobile equipment using a hand held bucket or a hose equipped with a positive shutoff nozzle for quick rinses, or at the immediate premises of a commercial car wash or with recycled wastewater for approved uses.
- Avoid using water to clean, fill or maintain levels in decorative fountains, ponds, lakes or other similar aesthetic structures unless such water is part of a recycling system.
- Encourage restaurants, hotels, cafés, cafeterias or other public places where food is sold, served or offered for sale, to serve drinking water only to those customers expressly requesting water.
- Promptly repair all leaks from indoor and outdoor plumbing fixtures.
- Avoid watering lawn, landscape or other turf area more often than every other day and during the hours between 6:00 a.m. and 6:00 p.m.
- Avoid causing or allowing the water to run off landscape areas into adjoining streets, sidewalks or other paved areas due to incorrectly directed or maintained sprinklers or excessive watering.

The City maintains water conservation information on their website for viewing by the public. Information includes water use efficiency and conservation tips, links to other websites pertaining to water conservation, and links to IEUA's website where indoor and outdoor rebates are offered for residents of the IEUA service area. Indoor and outdoor rebates are also offered to commercial businesses.

As the City continues to educate the community about water use efficiency and conservation, it is expected that water use will decline in the future by at least 5 percent.

4-11 Senate Bill SBx7-7 2009

Senate Bill SBx7-7 (i.e. The Water Conservation Act of 2009) was enacted in November 2009, requiring all water suppliers to increase water use efficiency. The bill requires the State of California Department of Water Resources (DWR) in consultation with other state agencies, to develop a single standardized water use reporting form that can be used by both urban and agricultural water agencies.

For urban water conservation, the legislation sets an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020. Statewide, incremental progress towards this goal must be made by reducing per capita water use by at least 10 percent by December 31, 2015. SBx7-7 recognizes and accounts for the investment of urban retail water suppliers in providing recycled water for beneficial uses. In other words, recycled water use can be used to reduce the City's per capita urban water use. Because the City plans to implement recycled water for the entire NMC and future developments in OMC as well as convert some of the existing OMC users to recycled water, this will help the City comply with the 20 percent water use reduction required by SBx7-7.

Some of the most pertinent requirements of the legislation are as follows:

- Each urban retail water supplier shall develop water use targets and an interim water use target by July 1, 2011 (*completed by City)*.
- An urban retail water supplier shall include in its water management plan the baseline daily per capita water use, water use target, interim water use target, and compliance daily per capita water use. The Department of Water resources, through a public process and in consultation with the California Urban Water Conservation Council (CUWCC), shall develop technical methodologies and criteria for the consistent implementation of this part. The 2010 Urban Water Management Plan (UWMP) must be approved by the governing entity by July 1, 2011 and submitted to DWR by July 30, 2011 (*completed by City*).
- The Department of Water Resources shall adopt regulations for implementation of the provisions relating to process water.
- A Commercial, Institutional, Industrial (CII) task force is to be established that will develop and implement urban best management practices for statewide water savings.
- Effective 2016, urban retail water suppliers who do not meet the water conservation requirements established by this bill are not eligible for state water grants or loans.

DWR published a document entitled "*Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (For the Consistent Implementation of the Water Conservation Act of 2009)*" on October 1, 2010. Nine methodologies are discussed in this document as follows:

1. Methodology 1: Gross Water Use
2. Methodology 2: Service Area Population
3. Methodology 3: Base Daily Per Capita Water Use
4. Methodology 4: Compliance Daily Per Capita Water Use
5. Methodology 5: Indoor Residential Use
6. Methodology 6: Landscaped Area Water Use
7. Methodology 7: Baseline Commercial, Industrial, and Institutional Water Use
8. Methodology 8: Criteria for Adjustments to Compliance Daily Per Capita Water Use
9. Methodology 9: Regional Compliance

SECTION 5

WATER SUPPLY

5-1 Sources of Supply

The City's existing potable water supply consists of imported water from the Water Facilities Authority (WFA) and Chino Basin Desalter Authority (CDA) and the groundwater from Chino Basin, extracted via the City's wells. The City currently owns 32 wells. Four wells are either abandoned or destroyed, five (5) of the wells are inactive, while the other 23 wells are operational. Over the last ten years, the City has imported an average of 12,735 AFY and pumped 30,605 AFY from the groundwater basin. Therefore, about 29 percent of the City's water supply is imported.

5-2 Imported Water Supply

Water is imported into Southern California through two major water supply systems:

1. The Colorado River Aqueduct, constructed and operated by Metropolitan Water District of Southern California (MWD), transports water from the Colorado River to MWD's service area.
2. The State Water Project, owned and operated by the State of California Department of Water Resources (DWR), transports water from the Sacramento-San Joaquin Delta through the California Aqueduct.

The City's imported water supply over the last ten years is shown in Table 5-1.

Table 5-1
Imported Water Supply

Year	WFA Supply		CDA Supply		Total Supply	
	(AFY)	(mgd)	(AFY)	(mgd)	(AFY)	(mgd)
2000	9,258	8.3	-	-	9,258	8.3
2001	8,907	8.0	-	-	8,907	8.0
2002	9,325	8.3	-	-	9,325	8.3
2003	13,207	11.8	-	-	13,207	11.8
2004	15,143	13.5	-	-	15,143	13.5
2005	13,406	12.0	-	-	13,406	12.0
2006	12,256	10.9	2,852	2.5	15,108	13.5
2007	12,826	11.5	5,352	4.8	18,178	16.2
2008	8,747	7.8	7,528	6.7	16,275	14.5
2009	3,494	3.1	5,047	4.5	8,541	7.6
Average	**10,657**	**9.5**	**5,195**	**4.6**	**12,735**	**13.0**

2000-2008 data from City's General Production Reports
2009 data from Ontario System Operations file

5-2.1 Water Facilities Authority

The Water Facilities Authority (WFA) was formed in 1980 as a Joint Powers Authority by the Cities of Chino, Chino Hills, Ontario and Upland, and the Monte Vista Water District. It was formed to construct and operate water treatment facilities that provide a supplemental supply of potable water to its member agencies. The WFA currently owns and operates the Agua de Lejos Water Treatment Plant located at the Benson Avenue and 18th Street, in the City of Upland. It is a conventional surface water treatment facility that treats and disinfects imported water supplies, primarily State Water Project water that is purchased from MWD through IEUA. The current rated capacity of the plant is 81 mgd. The City of Ontario owns 25 mgd or 31.4 percent of the treatment plant capacity.

The water from Agua de Lejos Water Treatment Plant is conveyed to two locations that connect with the City's existing water system. The first turnout (Turnout 1) is located adjacent the 1212-1A and 1212-1B Reservoirs at the northwest corner of Eighth Street and Fern Avenue. It has a 16 mgd capacity. The second turnout (Turnout 2) is located adjacent the 1212-3 Reservoir at the southeast corner of Campus Avenue and A Street. It has a 9 mgd capacity. The maximum volume of water that the City can receive from their WFA connections is therefore 25 mgd.

Based on historical records for 2000 through 2009, the average annual WFA supply has been 10,657 AFY (9.5 mgd), as shown in Table 5-1. The maximum annual supply was 15,143 AFY (13.5 mgd) in 2004. The minimum annual supply was 3,494 AFY (3.1 mgd) in 2009. The peak monthly flow was 1,861 AF (19.6 mgd) in August of 2003. A significant drop in supply from WFA has occurred over the past three years. This is primarily attributable to the addition of several groundwater wells to the City's system.

5-2.2 Chino Basin Desalter Authority

The City of Ontario is a member of the Chino Basin Desalter Authority (CDA), a joint powers agency created on September 25, 2001. Other members of the CDA include Jurupa Community Services District (JCSD), Santa Ana River Water Company (SARWC), IEUA, Western Municipal Water District (WMWD) and the Cities of Chino, Chino Hills, and Norco. The CDA purifies brackish groundwater extracted from the lower Chino Basin with the Chino 1 and Chino 2 Desalter facilities and distributes drinking water to member agencies. Each of the member agencies has "take or pay" contracts to purchase water produced by the CDA.

CDA owns and operates the two groundwater treatment desalination systems, Chino Desalter 1 (CDA I) and Chino Desalter 2 (CDA II). Both facilities include groundwater extraction wells, pumps and pipelines that provide water to advanced treatment facilities that include processes for pretreatment, filtration, air stripping of volatile organic compounds, ion exchange for removal of nitrates, and reverse osmosis for removal of salts. The treated water is then blended and disinfected to produce high quality drinking water that is delivered to member agencies through pipelines, pumps, and reservoirs.

CDA I is located in the City of Chino south of Kimball Avenue, west of Euclid Avenue. There are 14 supply wells feeding the desalter facilities. CDA I produces 14.2 mgd or 15,900 AFY of high-quality drinking water. The City receives about 1,500 AFY of water from the CDA I facility. The point of connection from CDA's facilities to the City's domestic water system (Zone 1010) is located near the intersection of Archibald Avenue and the extension of Schaeffer Avenue.

CDA II is located at 11202 Harrel Street in Mira Loma, California. There are 8 supply wells feeding the desalter facilities. CDA II produces 9.3 mgd or 10,400 AFY of high quality drinking water. The City receives about 3,500 AFY of water from the CDA II facility. The point of connection from CDA's facilities to the City's domestic water system is located near the intersection of Philadelphia Street and Milliken Avenue.

5-3 Groundwater Supply

The City extracts groundwater from the Chino Groundwater Basin (Chino Basin or Basin), which is one of the largest groundwater basins in the Southern California area with storage capacity estimated at five to seven million acre-feet. It collects roughly 140,000 acre-feet of water each year. Chino Basin encompasses about 235 square miles of the upper Santa Ana River watershed and lies within portions of San Bernardino, Riverside, and Los Angeles counties. The location of the groundwater basin is illustrated in Figure 5-1.

5-3.1 Chino Basin Judgement

The Chino Basin Judgement (Judgement) was entered by the California State Superior Court for San Bernardino County on January 27, 1978. The Judgement adjudicates water rights in the Chino Basin and establishes the Watermaster to account for and implement the management of the basin. The Judgement declared that the initial operation safe yield of the Chino Basin is 145,000 AFY. There are three pools of water users: agricultural, non-agricultural (industrial users), and appropriative (water municipalities and other government entities). The safe yield is allocated at 82,800 AFY to the agricultural pool, 7,366 AFY to the non-agricultural pool, and 54,834 AFY to the appropriative pool. The Judgement was expanded in 2000 and 2007 with the addition of Peace Agreements I and II, respectively, which further clarified the Watermaster's operations.

Per the Judgement, the City of Ontario has appropriative rights to 16,337.40 AFY and its share of the initial operating safe yield is 11,373.82 AFY or 20.74 percent.

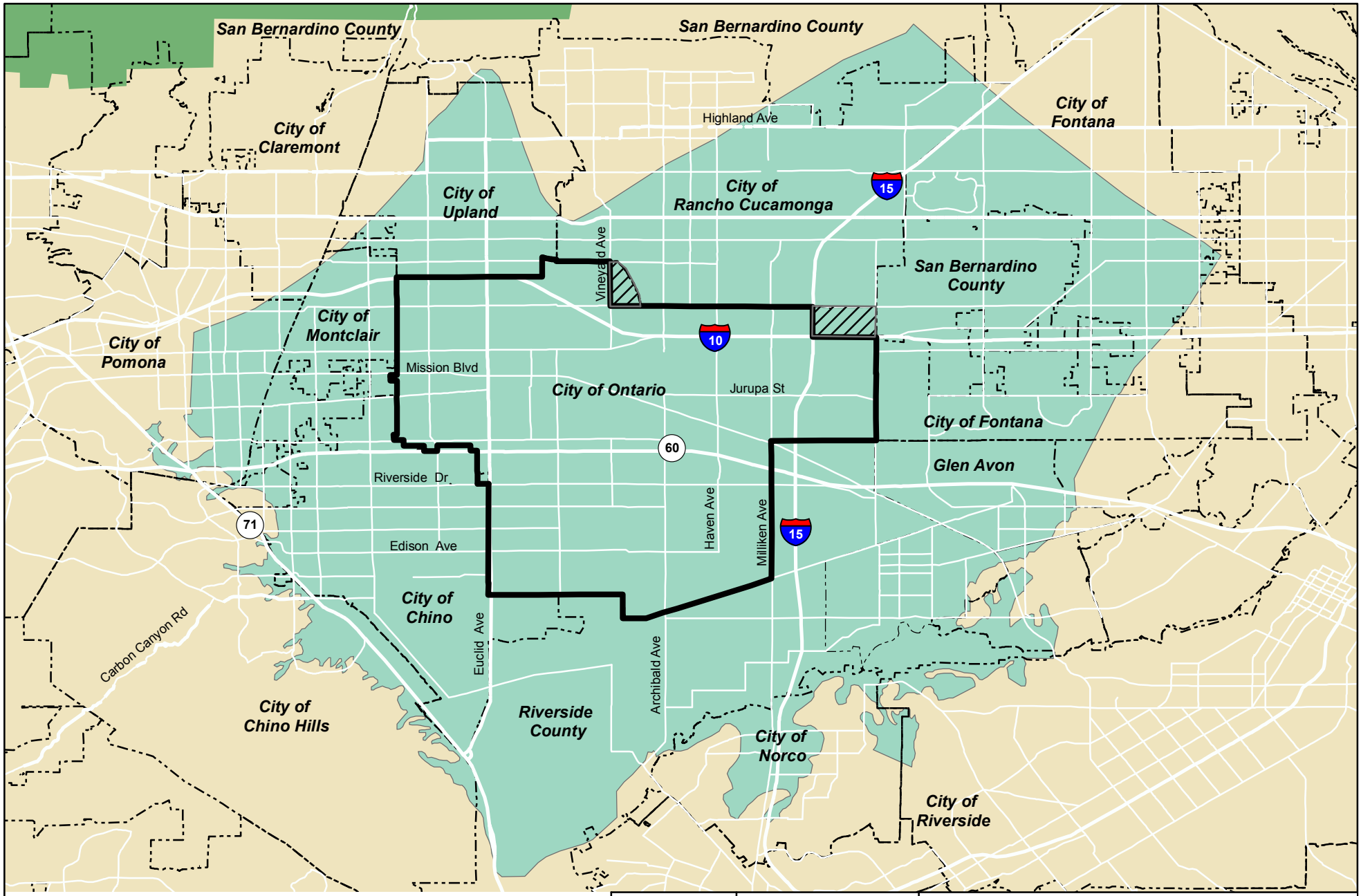
5-3.2 Watermaster

The Chino Basin Watermaster (Watermaster) is a governmental body responsible for managing water use and supplies within Chino Basin. The Watermaster's primary responsibilities include the following:

- Maintain and increase the water supply
- Sustain and improve water quality
- Ensure that water will be fairly shared
- Provide cooperative leadership
- Study and increase understanding of the basin

The Watermaster is comprised of three stakeholder groups based on how they use water obtained from the basin. The groups are called Pools and are represented by Pool Committees:

- Overlying Agricultural Pool Committee, representing dairymen, farmers, and the State of California;
- Overlying Non-Agricultural Pool Committee, representing area industries;
- Appropriative Pool Committee, representing local cities, public water districts, and private water companies.


San Bernardino County
San Bernardino County
City of Claremont
City of Upland
City of Rancho Cucamonga
City of Fontana
Highland Ave
15
Vineyard Ave
San Bernardino County
City of Montclair
City of Pomona
10
Mission Blvd
City of Ontario
Jurupa St
City of Fontana
60
Glen Avon
Riverside Dr
71
Haven Ave
Milliken Ave
15
Edison Ave
City of Chino
Carbon Canyon Rd
Euclid Ave
Archibald Ave
City of Chino Hills
Riverside County
City of Norco
City of Riverside
Legend
Service Area Boundary
Chino Groundwater Basin
N
Miles
0 0.5 1 2
ONTARIO
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Chino Groundwater Basin
Figure 5-1

Representatives from the three Pools form an Advisory Committee to oversee the regular activities of the Watermaster. The Pool Committees handle business affecting their own members and then make recommendations to the Advisory Committee. The Advisory Committee, in turn makes recommendations to the Watermaster Board of Directors, consisting of nine members appointed by the San Bernardino County Superior Court.

5-3.3 Optimum Basin Management Program

The Optimum Basin Management Program (OBMP) was adopted by the Watermaster after a 1998 court decree required the development of a detailed plan outlining issues facing Chino Basin and solutions to resolve them. The program was supposed to address water quality problems within the Chino groundwater basin and increase and improve the water supply available from this source. The OBMP identifies groundwater recovery in the southern portion of the basin as a way to improve basin water supplies.

The OBMP and the specific actions contained within it, has guided the Watermaster's activities ever since its adoption. The OBMP includes nine major tasks:

1. Comprehensive monitoring program for documenting changes in water level, quality, and flow by testing at wells within the Basin
2. Comprehensive recharge program
3. Water supply plan for the impaired areas of the Basin to improve water quality and supply
4. Regional supplemental water program
5. Comprehensive groundwater management plan for monitoring zone 1 to stop land subsidence
6. Cooperative programs with the Regional Board and other agencies to improve Basin management
7. Salt management program
8. Groundwater storage management program
9. Conjunctive use programs

5-3.4 Dry Year Yield Storage Program

The Dry Year Yield (DYY) Storage Program is a cooperative conjunctive use program involving MWD, IEUA, CBWM, Three Valleys Municipal Water District (TVMWD) and Chino Basin groundwater producers. Under the DYY Program, MWD is allowed to store up to 100,000 AFY of water in the Chino Basin when surplus water is available during wet years and to produce 33,000 AFY in dry, drought, or emergency periods.

The City of Ontario authorized execution of an agreement with IEUA to participate in the DYY program in 2003. Participation means that the City agrees to reduce its use of imported water compared to the previous year by a fixed amount, known as their "shift obligation". The City's shift obligation is 8,076 AFY. This means that during years when MWD calls for extraction, the City's

WFA production would be reduced by 8,076 AFY compared to the previous year and it would extract this amount from the designated DYY wells.

DYY funds were recently used for the construction of three groundwater wells (Wells 45, 46, and 47) and an ion-exchange facility located at John Galvin Park to treat water extracted from Well 44 and Well 52. When MWD calls for stored water delivery, the City will operate these facilities, to meet its shift obligation. MWD would pay for the cost of operations and the City would pay MWD (through IEUA) the full service water rate. The City can use the DYY facilities to meet its normal water demands during other periods but is responsible for the O&M costs.

This program allows the City to be less reliant upon imported water supplies. The additional groundwater capacity allows the City to increase the percentage of groundwater supply used to meet peak demands.

5-4 Water Quality

Imported water quality and local groundwater quality per the City's 2009 Water Quality Report is shown in Table 5-2.

Imported water is generally of good quality with nitrate and total dissolved solid concentrations well below the established maximum contaminant levels.

Groundwater quality in Chino Basin is generally good with better quality in the northern portion of the basin where recharge occurs. Salinity (TDS) and nitrate-nitrogen concentrations increase in the southern portion of the basin. Areas of high nitrate concentrations are shown in Figure 5-2. The City of Ontario has inactivated or abandoned several wells (Well 3, 4, 9, 15, and 50) due to high nitrate and perchlorate concentrations detected above the maximum contaminant levels (MCL).

5-5 Future Imported Water Supply

In the future, water supply capacity provided from WFA will remain at 25 mgd as described in Subsection 5-2.1.

The City's Chino II product water entitlements from CDA will increase by 3,533 AFY following the completion of the Chino II expansion project. The total supply from CDA II will be about 7,033 AFY. The total supply from CDA I will remain at 1,500 AFY. New facilities are being designed so that the CDA II product water can be delivered to the City's 1010 Zone in the vicinity of the intersection of Milliken Avenue and Riverside Drive.

Table 5-2
City of Ontario 2009 Water Quality Report

Substance (Units)	MCL (AL) [MRDL]	PHG (MCLG) [MRDLG]	Local Ground Water		Imported Water, WFA		Purchased Water, JCSD					
							CDA1		CDA2		IXP	
			Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)
Primary Drinking Water Standard												
Aluminum (ppm)	1	0.6	ND	ND	0.11	0.071-0.19	NP	NP	NP	NP	NP	NP
Arsenic (ppb)	10	0.0	ND	ND	1.3	ND-2.8	NP	NP	NP	NP	NP	NP
Barium (ppm)	1	2	0.007	ND-0.13	NP	NP	NP	NP	NP	NP	NP	NP
Chlorine, free (ppm)	[4]	[4]	0.63	0-1.89	NP	NP	NP	NP	NP	NP	NP	NP
Chlorine, total (ppm)	[4]	[4]	0.72	0.01-1.99	1.3	0.4-2.7	NP	NP	NP	NP	NP	NP
Chromium, Total (ppb)	50	(100)	8.2	3.6-12	NP	NP	3.9	3.9	3.2	3-6	6	2.6-8.5
Combined Filter Effluent Turbidity (NTU)	TT	NA	NA	NA	0.03	0.03-0.18	NA	NA	NA	NA	NA	NA
Copper (ppm) (measured at consumer's tap)	(1.3)	0.3	90th percentile: 0.22	0 of 50 samples exceeded AL	NA	NA	NA	NA	NA	NA	NA	NA
Dibromochloropropane (ppt)	200	1.7	34	58-180	NP	NP	NP	NP	NP	NP	NP	NP
Fluoride (ppm)	2	1	0.2	0.1-0.3	0.15	0.12-0.20	0.2	0.2	ND	ND-0.2	0.1	0.1-0.2
Gross Alpha Particle Activity (pCi/L)	15	(0)	1.19	1-1.37	3.5	ND-6.4	ND	ND	ND	ND	ND	ND-6.7
Gross Beta Particle Activity (pCi/L)	50	(0)	NA	NA	4.2	ND-7.0	NP	NP	NP	NP	NP	NP
Haloacetic Acids [HAA5] (ppb)	60	NA	6	ND-20	10.4	6.2-15.9	NA	NA	ND	ND-7.5	ND	ND
Lead (ppb) (measured at consumer's tap)	(15)	0.2	90th percentile: ND	4 of 59 samples exceeded AL	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate [as nitrate] (ppm)	45	45	13	4-35	NP	NP	14	9.0-20	14	3-22	28	9-34
Nitrate [as nitrogen] (ppm)	10	10	2.8	1.1-6.2	0.46	ND-0.77	NP	NP	NP	NP	NP	NP
Nitrate and Nitrite [as nigrogen] (ppm)	10	10	NA	NA	0.46	ND-0.77	NP	NP	NP	NP	NP	NP
Perchlorate (ppb)	6	6	0.58	ND-4.5	NP	NP	ND	ND	ND	ND	ND	ND-4.7
Tetrachloroethylene [PCE] (μg/L)	5	0.06	ND	ND	NP	NP	ND	ND	ND	ND	ND	ND-0.92
Total Coliforms (% positive samples)	5	0	0.1	0-0.56	0	0	0	0	0	0	0	0
Total Trihlomehtnes [TTHM] (ppb)	80	NA	13.1	ND-99	56.6	30.1-72.1	ND	ND	0.8	ND-1	4.5	4.3-4.7
Trichloroethylene [TCE] (ppb)	5	1.7	ND	ND	NP	NP	ND	ND	ND	ND	ND	ND-0.99
Uranium (pCi/L)	20	0.43	NA	NA	2.7	2.4-3.2	NA	NA	ND	ND	ND	ND-5.8

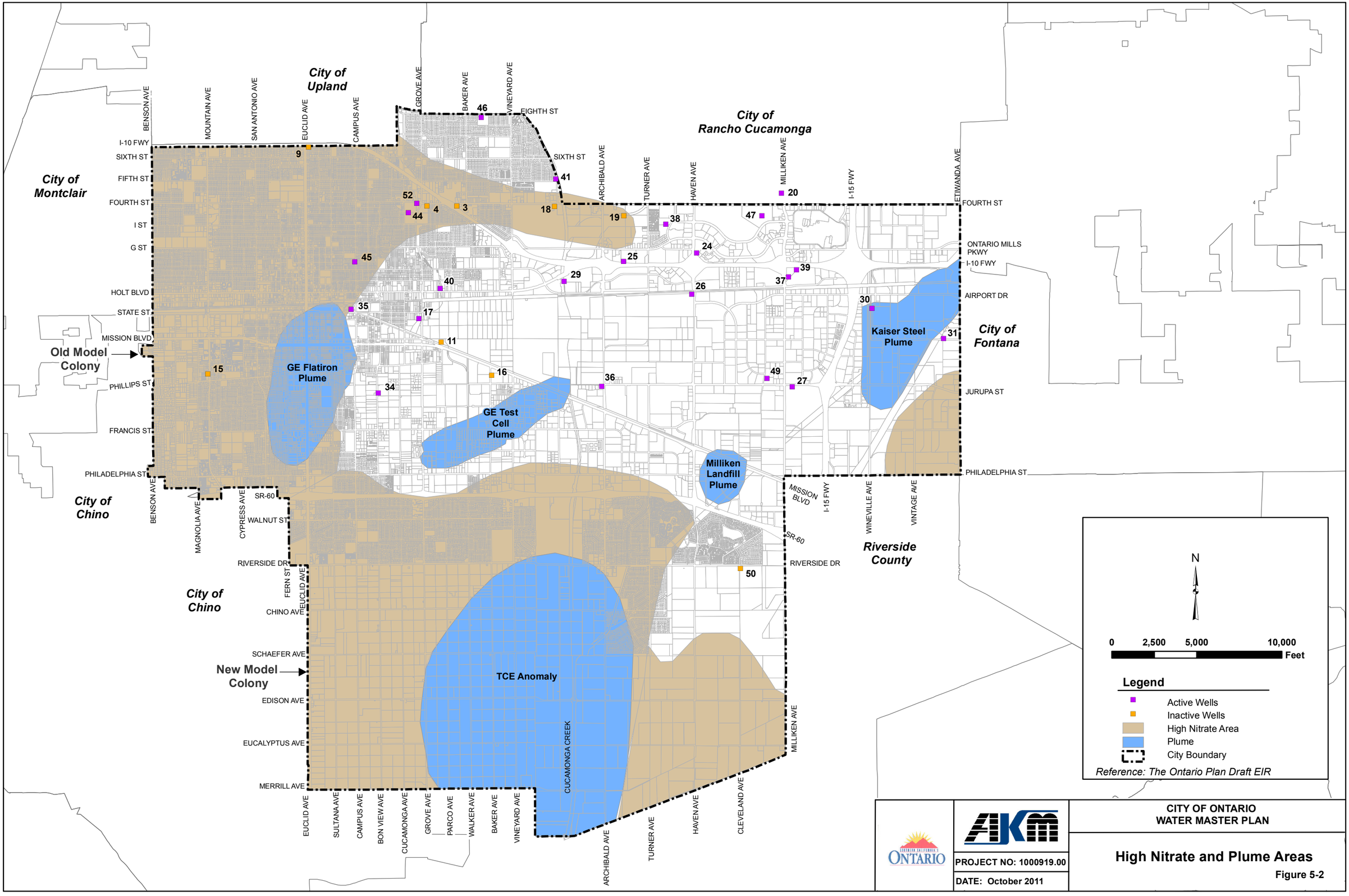
Table 5-2 (continued)
City of Ontario 2009 Water Quality Report

Substance (Units)	MCL (AL) [MRDL]	PHG (MCLG) [MRDLG]	Local Ground Water		Imported Water, WFA		Purchased Water, JCSD					
							CDA1		CDA2		IXP	
			Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)
Secondary Drinking Water Standards - Sodium and Hardness												
Aluminum (ppb)	200	600	ND	ND	110	71-190	NP	NP	NP	NP	NP	NP
Chloride (ppm)	500	NA	11	3-65	83	73-92	86	86	78	12-120	98	16-170
Color (Color Units)	15	NA	0.01	ND-3	NP	NP	ND	ND	3.4	2.9-5.6	4.5	3.3-5.7
Copper (ppm)	1	NA	0.002	ND-0.18	NP	NP	NP	NP	NP	NP	NP	NP
Total Hardness [$CaCO_3$] (ppm)	NA	NA	149	86-260	113	100-130	190	190	159	91-190	235	150-290
Foaming Agents [MBAS] (ppb)	500	NA	10	ND-90	NP	NP	NP	NP	NP	NP	NP	NP
Odor (T.O.N.)	3	NA	ND	ND	1	1	NP	NP	NP	NP	NP	NP
Sodium (ppm)	NA	NA	20	12-35	69	67-72	32	32	24	16-30	31	23-38
Specific Conductance (μS/cm)	1,600	NA	389	300-670	555	520-610	548	530-595	476	320-600	685	420-1000
Sulfate (ppm)	500	NA	18.8	5-72	49	35-58	10	10	7	ND-17	20	12-36
Total Dissolved Solids (ppm)	1,000	NA	249	160-450	330	300-370	344	284-408	311	160-480	465	240-640
Turbidity (Units) (NTU)	5	NA	0.07	ND-0.9	0.09	0.05-0.33	NP	NP	NP	NP	NP	NP

Substance (Units)	Notification Level	Local Ground Water		Imported Water, WFA		Purchased Water, JCSD					
						CDA1		CDA2		IXP	
		Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)	Amount Detected	Range (Low - High)
Unregulated Contaminants											
Boron (ppb)	1,000	NA	NA	178	130-250	120	120	ND	ND	ND	ND
Chromium VI (ppb)	NA	NA	NA	0.34	0.24-0.58	NA	NA	1	0.7-3.7	4.5	1.3-6.9
Trichloropropane [1,2,3-TCP] (ppb)	0.005	ND	ND	NP	NP	0.017	0.013-0.021	ND	ND	0.006	ND-0.035
Vanadium (ppb)	50	NA	NA	6.9	6.2-8.2	NP	NP	NP	NP	NP	NP

Notes:

AL: Action Level
CDA: Chino Basin Desalter Authority
MCL: Maximum Contaminant Level
MCLG: Maximum Contaminant Level Goal
MRDL: Maximum Residual Disinfection Level
MRDLG: Maximum Residual Disinfection Level Goal
NA: Not Applicable
ND: Not Detected
NL: Notification Level
NP: Not Provided
NTU: Nephelometric Turbidity Units
pCI/L: picocuries per liter
PHG: Public Health Goal
ppb: parts per billion
ppm: parts per million
PDWS: Primary Drinking Water Standard
T.O.N.: threshold odor number
TT: Treatment Technique
μmhos/cm: micromhos per centimeter
WFA: Water Facilities Authority


City of Upland
City of Rancho Cucamonga
City of Montclair
City of Fontana
City of Chino
Riverside County
Old Model Colony
New Model Colony
GE Flatiron Plume
GE Test Cell Plume
Milliken Landfill Plume
Kaiser Steel Plume
TCE Anomaly
BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST
MISSION BLVD
WINEVILLE AVE
VINTAGE AVE
SR-60
RIVERSIDE DR
WALNUT ST
MAGNOLIA AVE
CYPRESS AVE
FERN ST
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
SULTANA AVE
BON VIEW AVE
CUCAMONGA AVE
PARCO AVE
WALKER AVE
CUCAMONGA CREEK
CLEVELAND AVE
9
52
4
3
44
46
41
18
19
38
47
20
24
25
45
29
40
39
37
26
30
35
17
11
31
15
16
36
49
27
34
50
N
0
2,500
5,000
10,000
Feet
Legend
Active Wells
Inactive Wells
High Nitrate Area
Plume
City Boundary
Reference: The Ontario Plan Draft EIR
ONTARIO
AKM
CITY OF ONTARIO
WATER MASTER PLAN
PROJECT NO: 1000919.00
DATE: October 2011
High Nitrate and Plume Areas
Figure 5-2

SECTION 6

EXISTING SYSTEM

6-1 General

The City's existing domestic water system consists of the following:

- 5 primary pressure zones (Zone 925, 1010, 1074, 1212, and 1348)
- Over 2.8 million feet (546 miles) of transmission and distribution pipe, 2-inches through 42-inches in diameter
- 6,811 fire hydrants
- 36,658 water meters
- 23 active wells and 5 inactive wells
- 12 reservoirs with a total volume of 75 MG
- 4 active booster pump stations, 1 inactive booster pump station
- 16 pressure reducing stations
- 5 inter-agency connections
- 2 Connections to Water Facilities Authority
- 2 Connections to Chino Desalter Authority
- 1 Ion Exchange Treatment Facility
- 2 altitude valves
- 36,658 domestic water services

Table 6-1
Water Meter Type

Meter Type	Number of Meters
Single Family Residential	29,473
Multiple Family Residential	2,069
Commercial	3,285
Industrial	278
Landscape Irrigation	1245
Other	308
Total	**36,658**

A breakdown of the water meters by customer classes are shown in Table 6-1.

The existing water service area includes only a very small portion of New Model Colony- Edenglen by Brookfield Homes (located south of Riverside Drive, east of Mill Creek Avenue), and Colony High School (located south of Riverside Drive and west of Mill Creek Avenue). The majority of the existing residents and businesses of NMC use private groundwater wells for their water supply.

The existing domestic water system is shown on Figure 6-1. The hydraulic schematic of the existing water system is shown on Figure 6-2.

6-2 Pressure Zones

The existing system is divided into the 5 pressure zones entitled: 925 Zone, 1010 Zone, 1074 Zone, 1212 Zone, 1348 Zone. It should be noted that the 925 Zone does not currently have any existing demands. The 925 Zone will serve the future New Model Colony developments. The largest pressure zone in the system is the 1212 Zone, which covers about 38 percent of the existing water service area. Details of each pressure zone are shown in Table 6-2.

WFA
Aqua de Lejos
Water Treatment Plant

RES1348-1A
RES1348-1B
RES1348-1C

RES1212-1A
RES1212-1B

SAW
Conn

BP-3
BP-4

RES1212-3

WFA
Conn

WFA
Conn

City of
Upland

City of
Rancho Cucamonga

City of
Montclair

City of
Chino

City of
Chino

City of
Fontana

Riverside
County

Old Model
Colony

New Model
Colony

BP-9A
BP-9B

RES1074-1A
RES1074-1B

BP-1A
BP-1B
BP-1C
BP-2

RES1010-1

RES1010-2A
RES1010-2B

RES925-2A

Ontario

CDA II
Conn

CDA I
Conn

PRS2
PRS3
PRS4
PRS5
PRS6
PRS7
PRS8
PRS9
PRS10
PRS11
PRS12
PRS13
PRS14
PRS15
PRS17
PRS18

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
EIGHTH ST
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST
MISSION BLVD
WINEVILLE AVE
VINTAGE AVE
SR-60
RIVERSIDE DR
BENSON AVE
MAGNOLIA AVE
CYPRESS AVE
WALNUT ST
FERN ST
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
CUCAMONGA CREEK
EUCLID AVE
SULTANA AVE
CAMPUS AVE
BON VIEW AVE
CUCAMONGA AVE
GROVE AVE
PARCO AVE
WALKER AVE
BAKER AVE
VINEYARD AVE
HAVEN AVE
CLEVELAND AVE
MILLIKEN AVE

N

0 2,500 5,000 10,000 Feet

Legend

- Booster Pump Station
- Pressure Reducing Station
- Reservoir
- Active Well
- Inactive Well
- 1010 Zone Pipe
- 1074 Zone Pipe
- 1212 Zone Pipe
- 1348 Zone Pipe
- CDA Pipe
- WFA Pipe
- City Boundary
- New Model Colony
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone

CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Existing Water System

Figure 6-1

1500'
1400'
1300'
1200'
1100'
1000'
900'
800'
700'
600'
500'
400'
300'
200'

WFA AGUA DE LEJOS WTP
1618'
1618'
JOINT AGENCY PRS
1474'
30"
NO. 2 TURNOUT/ PRS
1350'
1454'
16"
≈ 9 MGD FROM WFA NO.2
1348' (1A)
1348' (1B)
1348' (1C)
3.00 MG
2.00 MG
3.75 MG
1348'
8.75 MG (3 RES.)
1212' (1A)
1212' (1B)
1212' (2)
1212' (3)
20.00 MG
2.00 MG
0.37 MG
10.00 MG
1212'
32.00 MG
(3 RES.)
1180'
1348' ZONE
4,308 AFY
(11.4 %)
1020'
BP: "B"
XXXX GPM
1232'
1454'
NO. 1 TURNOUT/ PRS
SAW
850 AF/Y
1095'
24"
≈ 16 MGD FROM WFA NO. 1
ALT. VALVE
1074' (1A)
1074' (1B)
2.75 MG
2.00 MG
1074'
4.75 MG (2 RES.)
PHASE 2: 1212' TO 925'
1298 GPM
1315 GPM
1282 GPM
CDA II ONTARIO BPS
1110'
CDA II VIA JCSD
3,500 AFY
2,170 GPM
PRS
(PHASE 2)
PRS
(LAT. B)
PRS
(LAT. A)
1010' (1)
1010' (2A)
1010' (2B)
1010'
23.50 MG
(3 RES.)
5.50 MG
9.00 MG
9.00 MG
925' (2A)
6.00 MG
925' 6 MG (1 RES.)
WELLS : 49
2760 GPM
150 HP
BP: 3
100 HP
4
2979 GPM
1803 GPM
PRS :
6" 15 52 PSI
6" 47 PSI
46
2500 TBD
200 HP
BP: 9A
200 HP
9B
2137 GPM
2159 GPM
1212' ZONE
17,835 AFY
(47.3 %)
865'
PRS:
4" 14 45 PSI
8" 40 PSI
FROM CVWD
PRS:
6" 6 65 PSI
8" 9 65 PSI
4" 65 PSI
8" 10 60 PSI
4" 89 PSI
10" 85 PSI
6" 70 PSI
4" 11 62 PSI
8" 57 PSI
4" 12 79 PSI
6" 73 PSI
10" 68 PSI
GALVIN WTP
OUT OF SERVICE
MWD
930'
1074' ZONE
8,026 AFY
(21.3 %)
825'
ALT. VALVE
ION-EX
880'
1010' ZONE
7,538 AFY
(20.0 %)
735'
47
1600 TBD
WELLS : 9 18 19 20 24 25 26 27 29 30 31 37 38 41
1200 GPM 580 GPM 786 GPM 1803 GPM 1280 GPM 865 GPM 1061 GPM 2503 GPM 1810 GPM 2958 GPM 2953 GPM 2424 GPM 2557 GPM
BP: 3686 GPM 1A 250 HP
3500 GPM 1B 200 HP
4766 GPM 1C 350 HP
2200 GPM 2 250 HP
FACILITIES IN PLACE TO BOOST TO 1348' ZONE
PRS:
3" 7 55 PSI
4" 50 PSI
8" 45 PSI
4" 8 55 PSI
8" 50 PSI
12" 40 PSI
4" 13 60 PSI
6" 55 PSI
10" 50 PSI
WELLS : 40 11 15 16 17 35 36 45 3 4 44 52
5305 TBD 240 GPM 300 GPM 1383 GPM 3020 GPM 1658 GPM 2500 GPM 1080 GPM 1240 GPM 2500 GPM 2500 GPM
PRS:
DEM
DEM
4" 2 62 PSI
8" 58 PSI
8" 52 PSI
4" 3 65 PSI
8" 60 PSI
8" 55 PSI
8" 4 64 PSI
12" 57 PSI
4" 90 PSI RELIEF
4" 5 65 PSI
6" 60 PSI
8" 50 PSI
WELL : 50 2500 GPM
34 2074 GPM
CDA I (930 GPM) (1,500 AFY) ARCHIBALD BPS
39 2413 GPM
PRS :
4" 17
10"
4" 18
10"
14"

LEGEND :

WELLS : INACTIVE ACTIVE
RES. = RESERVOIR INACTIVE ACTIVE
SAME SITE =
BP = BOOSTER PUMP INACTIVE ACTIVE
CDA = CHINO BASIN DESALTING AUTHORITY
PRS. = PRESSURE REDUCING STATION INACTIVE ACTIVE
SAW = SAN ANTONIO WATER CO. ABANDONED
WFA = WATER FACILITIES AUTHORITY
AFY = ANNUAL CONSUMPTION FOR 08'
(%) = PERCENT OF TOTAL CONSUMPTION
HYDROELECTRIC FACILITY =
ALTITUDE VALVE =
BLENDING STATION =
TURNOUT / PRS
ION EXCHANGE PLANT ION-EX

BOOSTER LINE
PRV LINE
RES. DEDICATED FILL LINE
WFA FACILITY

NITRATE LEVELS (MG/L)

<20 20-30 31-40 41-50 >50

CITY OF ONTARIO
AKM
PROJECT NO. 1000919.00
DATE: March 2011

CITY OF ONTARIO
WATER MASTER PLAN

Existing Water System
Hydraulic Schematic

Figure 6-2

Table 6-2
City of Ontario Pressure Zones

Pressure Zone Name[1]	Pressure Zone Name[2]	Area (sq. mi.)	Area (Ac)	Pipe Length (ft)	Hydraulic Grade Line (ft)	Ground Elevation Range (ft)	Static Pressure Range[3] (psi)
1348	13th Street	3.1	1,954	370,591	1,348	1,020 - 1,180	73 - 142
1212	8th Street	18.7	11,957	1,285,311	1,212	865 - 1,095	51 - 150
1074	4th Street	7.5	4,780	596,218	1,074	825 - 930	62 - 108
1010	Phillips Street	9.0	5,783	615,906	1,010	735 - 880	56 - 119
925[4]	Francis Street	10.5	6,733	15,341	925	635 - 800	54 - 126
	Total	**48.8**	**31,206**	**2,883,366**			

[1] *Nomenclature used in this report.*

[2] *Nomenclature used in previous Water Master Plan.*

[3] *Calculated based on HGL and ground elevation range.*

[4] *There is no existing demands in the 925 Zone. The water entering Reservoir 925-2A is pumped out to the 1212 Zone. Brookfield Homes and Colony High School are currently connected to the 1010 Zone.*

6-3 Transmission and Distribution System

The potable water system includes 546 miles of transmission and distribution pipe, ranging in size from 2-inches through 42-inches. A summary of the system pipes by diameter, material, and date of construction is shown on Figure 6-3, Figure 6-4 and Figure 6-5, respectively.

Figure 6-3
Length of Pipe by Size

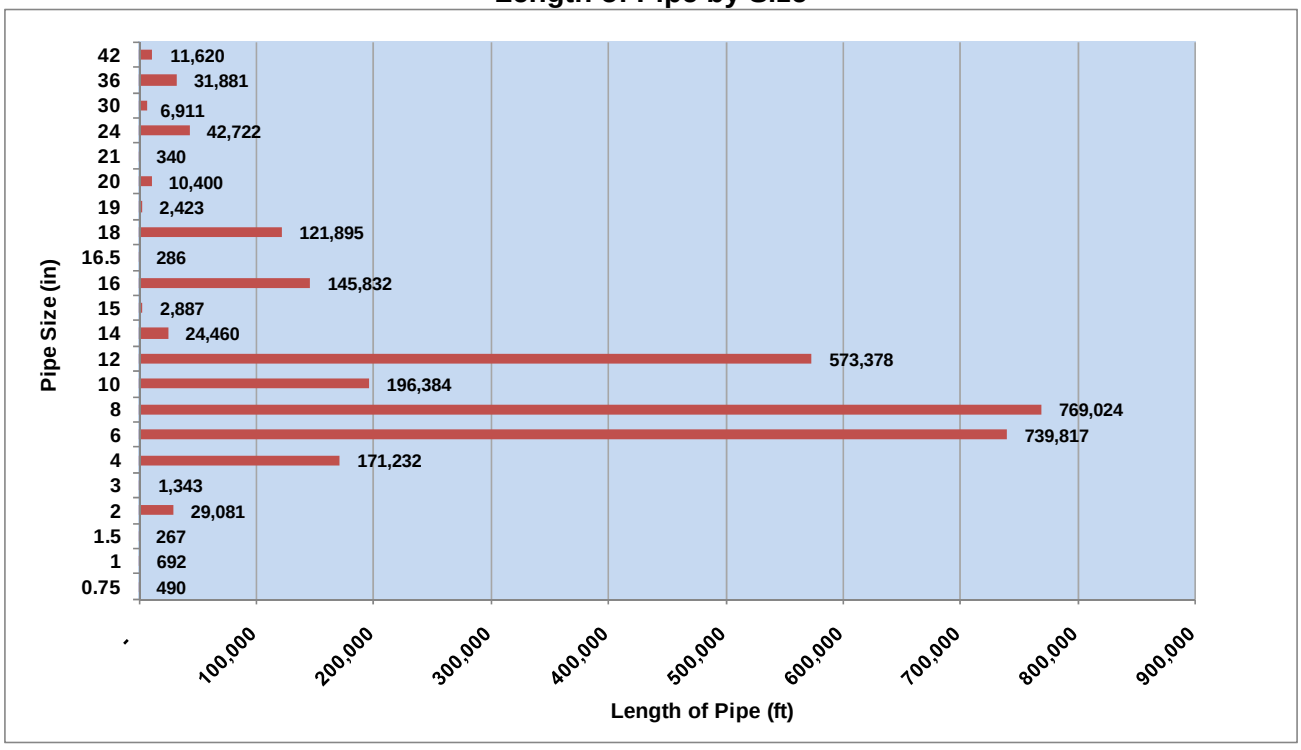


Figure 6-4
Length of Pipe by Material

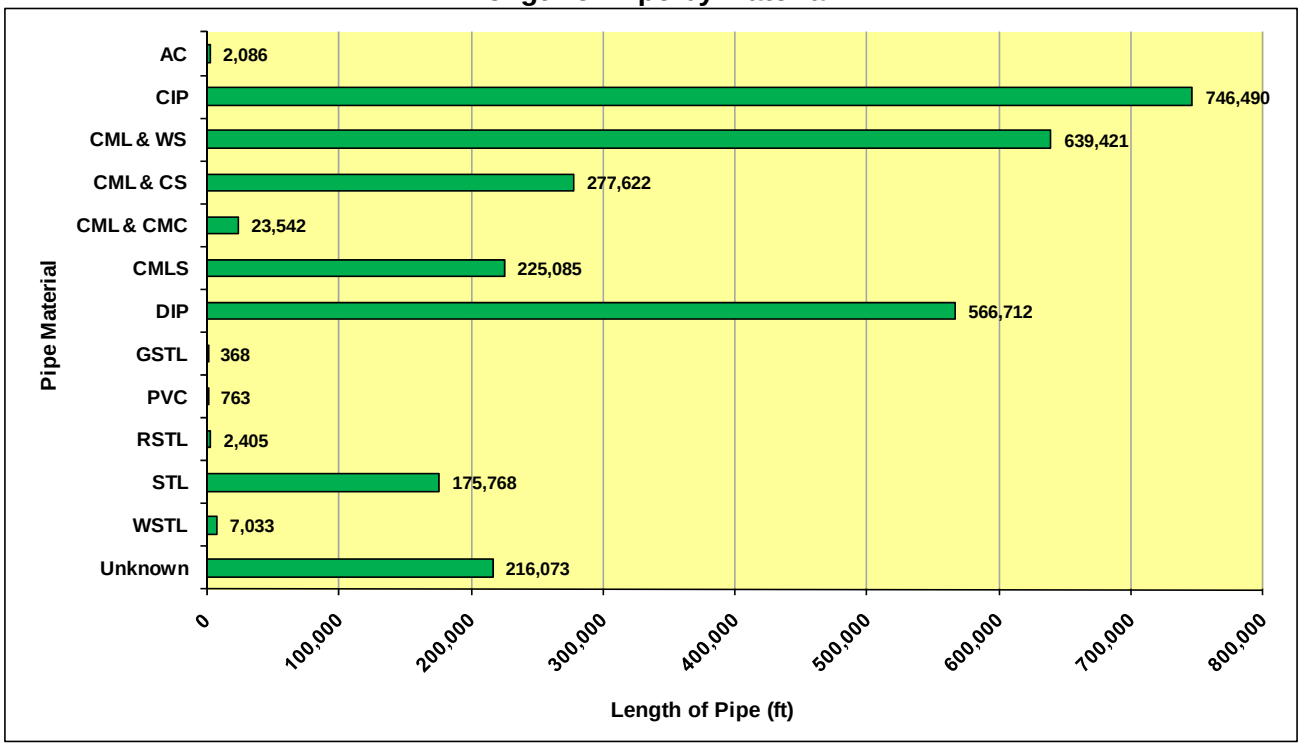
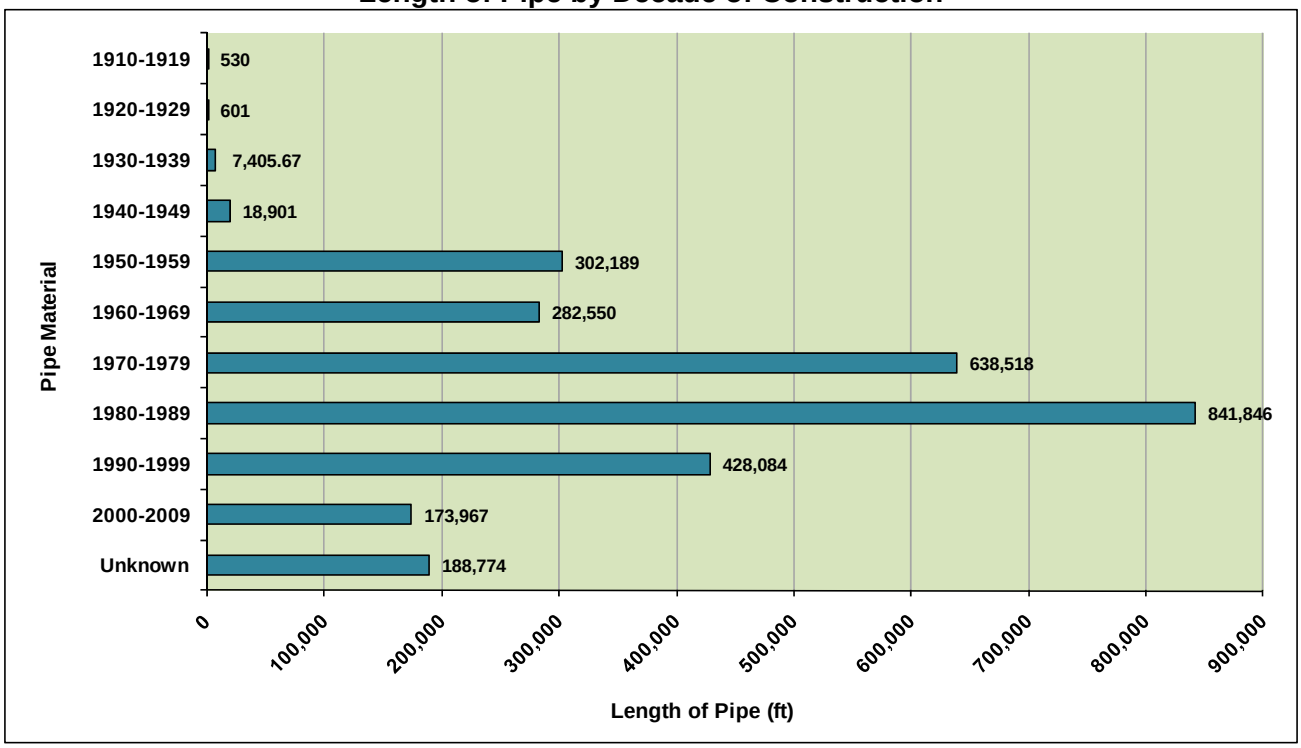


Figure 6-5
Length of Pipe by Decade of Construction



6-4 Wells

The total well capacity is about 51,100 gpm or 73.6 mgd. Well information and characteristics are provided in Table 6-3. There are 32 wells within the City's water system: twenty three (23) are currently active, five (5) are inactive, and four (4) are abandoned/destroyed.

The status of the inactive wells is summarized below:

- Well 9 is inactive due to high nitrates and perchlorates and will be abandoned. The Well 9 property is large enough for the construction of a new well and a treatment facility.
- Well 11 was constructed in 1958. It is located at the Ontario International Airport property. While the water quality meets the primary and secondary standards, it produces sand even after a new sand separator was installed in 2003. It is inactive and will be abandoned.
- Well 15 is inactive due to high nitrates and perchlorates and will be abandoned.
- Well 16, constructed in 1960, is inactive due to the production of sand and traces of oil from the oil-lubricated pump. It should be abandoned.
- Well 50 is inactive due to color and increasing perchlorate levels. It is recommended that a feasibility study be done to determine potential solutions to this problem.

Additional information regarding the wells is as follows:

- Wells 3, 4, and 19 have been abandoned and Well 18 was destroyed due to high nitrates and perchlorates, and facility condition.
- Wells 3 (1962) and Well 4 (1919) were abandoned due to high levels of nitrate and perchlorate. These wells had also exceeded their useful lives. The production of Wells 3 and 4 has been replaced by Well 44 and 52, which are treated for nitrate and perchlorate removal by the Dry Year Yield Ion Exchange Plant.
- Wells 29 and 31 production need to be treated for nitrates, and Well 40 production needs to be treated for perchlorate.

6-5 Reservoirs

The City's water system includes twelve (12) reservoirs ranging in capacity from 2 million gallons to 20 million gallons. The City's total reservoir capacity is currently 75 MG of which approximately 32 MG is within the 1212 Zone. The hydraulic gradient in each pressure zone is controlled by the high water elevation of the reservoirs that feed the zones by gravity.

All the existing reservoirs in the City are less than 60 years old with the exception of Reservoir 1212-3, which was constructed in 1926. The average life expectancy of concrete reservoirs and steel tanks is about 100 years, provided that reservoirs are properly maintained and repainted or recoated every 15-20 years. Thus, most of the City reservoirs are expected to be in fairly good condition and no improvements based on age are recommended except for Reservoir 1212-3, due to its age and condition. The characteristics of each existing storage reservoir are shown in Table 6-4.

Table 6-3
Wells Characteristics

Well Data																			Motor Specifications		
Well Number	Location	Status	Year Drilled	Pressure Zone	Capacity (gpm)	Static GWL (ft)	Draw-down (ft)	Ground Elevation (ft)	Hydraulic Grade (ft)	Discharge Pressure (psi)	Backup Power (Y/N)	Pump Model	Pump Mfg	No of Stages	Pump RPM	Edison Test Date	Capacity (gpm)	TDH	Motor Mfgr	HP	Motor RPM
49	1495 S. Dupont Ave.	Active	Unknown	925	2,760	299	23	901	924	10	Y	14MD	Peerless	5	1780	7/25/08	2,760	345	US	350	Unknown
			Zone 925 Capacity		**2,760**																
34	1425 S. Bon View Ave.	Active	1983	1010	2,074	332	101	906	1,003	42	N	15H277	Ingersoll Dresser	12	1175	7/17/08	2,074	530	GE	500	1180
39	4397 Guasti Ave.	Active	2002	1010	2,413	350	24	984	1,006	9.5	N	15EMM	Ingersoll Dresser	4	1775	7/17/08	2,413	396	US	350	Unknown
50	3900 W. Riverside Dr.	Inactive	-	1010	-	-	-	-	-	-	N	14MD	Peerless	6	1,780	-	-	-	-	-	-
			Zone 1010 Capacity		**4,487**																
3	1530 E. 4th St.	Abandoned	1962	1074	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
4	1326 E. 4th St.	Abandoned	1919	1074	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
11	600 S. Grove Ave.	Inactive	1958	1074	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
15	1200 S. Mountain Ave.	Inactive	1960	1074	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
16	1300 S. Baker Ave.	Inactive	1960	1074	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
17	500 S. Grove Ave.	Active	1963	1074	1,363	356	57	959	1,093	58	N	Unknown				10/3/08	1,363	547	USEM	300	1780
35	652 E. Main St.	Active	1983	1074	3,020	401	72	978	1,059	35	N	17 MQH	Byron Jackson	11	1170	7/25/08	3,020	554	US	500	1180
36	1400 S. Archibald Ave.	Active	1986	1074	1,658	296	47	891	1,078	81	N	Unknown				7/17/08	1,658	530	US	350	1770
40	1335 East Holt Bl.	Active	2003	1074	3,305	388	39	981	1,087	46	Y	17MQ-H	Byron Jackson	5	1770	7/25/08	3,305	532	US	600	1785
44	964 Cucamonga Ave.	Active	2003	1074	2,500			1,059			N	15ETMH	Flowserve	7	1770	Not Available	2,500	635	USEM	600	1800
45	665 N .Campus Ave.	Active	2006	1074	2,500			1,022			N	17MQL	Flowserve	5	1775	Not Available	2,500	560	Unknown	500	Unknown
52	1230 E. 4th St,	Active	Unknown	1074	2,500			1,053			N	15ETMH	Flowserve	7	1770	Not Available	2,500	665	USEM	600	1800
			Zone 1074 Capacity		**16,846**																
9	1555 N. Columbia Ave.	Inactive	1958	1212	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
18	2232 E. 4th St	Destroyed	1963	1212	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
19	800 N. Archibald Ave.	Abandoned	1965	1212	-	-	-	-	-	-	N	-	-	-	-	-	-	-	-	-	-
20	9600 S. Milliken Ave.	Active	1977	1212	786	401	86	-	-	78	N	11CLC	Goulds	13	2860	Nov 09	786	667	GE	300	1770
24	700 N. Haven Ave.	Active	1969	1212	1,803	373	21	990	1,226	102	N	14KHM	Aurora	11	1770	7/17/08	1,803	629	US	450	1780
25	2930 E. Inland Empire Bl.	Active	1971	1212	1,280	373	17	980	1,239	112	N	12EHM	Flowserve	12	1770	7/11/08	1,280	649	USEM	300	1780
26	3400 E. Airport Dr.	Active	1971	1212	865	334	38	958	1,224	115	N	11M 7000	Fairbanks Morse	13	1770	7/25/08	865	638	US	300	1770
27	4300 E. Jurupa St.	Active	1971	1212	1,061	298	24	906	1,239	144	N	12CHC	Goulds	9	1770	10/3/08	1,061	653	Newman	250	1775
29	2400 E. Airport Dr.	Active	1979	1212	2,503	359	36	961	1,229	116	N	Unknown				7/11/08	2,503	662	GE	500	Unknown
30	220 S. Wineville Ave.	Active	1978	1212	1,810	321	4	967	1,244	120	N	14M160	Ingersoll Dresser	7	1775	10/3/08	1,810	602	Westing-house	600	1800
31	5719 E. Santa Ana St,	Active	1979	1212	2,958	259	22	938	1,248	134	N	16KHL	Verti-Line	8	1770	7/17/08	2,958	617	US	600	Unknown
37	4327 E. Guasti	Active	1994	1212	2,953	346	30	977	1,222	106	N	15EHM	Ingersoll Dresser	6	1775	7/17/08	2,953	620	USEM	600	1780
38	837 N. Center	Active	1997	1212	2,424	408	35	1,013	1,228	93	N	15MQH	Byron Jackson	7	1770	7/25/08	2,424	658	US	500	1775
41	1252 North Hellman Ave.	Active	2003	1212	2,557	444	46	1,032	1,219	81	Y	Unknown				7/11/08	2,557	677	US	600	Unknown
47	4255 E. Concours St.	Active	Unknown	1212	3,500			1,016			Y	17MQH	Flowserve	5	1775	Not Available	3,500	655	Unknown	800	Unknown
			Zone 1212 Capacity		**24,500**																
46	1670 W. 8th St.	Active	2006	1348	2,500			1,135			Y	17MQL	Flowserve	8	1775	Not Available	2,500	900	Unknown	800	Unknown
			Zone 1348 Capacity		**2,500**																
			Total Capacity		**51,093**																

Table 6-4
Existing Storage Reservoir Characteristics

Pressure Zone	Reservoir ID	Reservoir Name	Location	Shape[(1)]	Volume (MG)	Bottom Elevation (ft)	High Water Elevation (ft)	Height (ft)	Width x Length (ft)	Dia (ft)	Material	Year of Const.
925	2A		Northeast corner of Dupont Ave and Jurupa St	Cylindrical	6	893	925	32.0	-	188	Concrete	2003
			Total Zone 925 Volume		**6**							
1010	1	Reservoir 10	Southwest corner of Campus Ave and Main St	Cylindrical	5.50	979.3	1,009.3	30.0	-	178	Steel	1982
1010	2A	Reservoir 11	Southeast corner of Miliken Ave and San Bernardino Freeway	Cylindrical	9	980	1,010	30.0	-	226	Concrete	2001
1010	2B	Reservoir 12		Cylindrical	9	980	1,010	30.0	-	226	Concrete	2007
			Total Zone 1010 Volume		**23.50**							
1074	1A	Reservoir 8	Southeast corner of Cucamonga Ave and Fourth St	Rectangular	2.75	1,054.4	1,074	19.6	140 x 140	-	Concrete	1978
1074	1B	Reservoir 9	Southeast corner of Cucamonga Ave and Fourth St	Rectangular	2	1,058.8	1,074	15.2	118 x 158	-	Concrete	1957
			Total Zone 1074 Volume		**4.75**							
1212	1A	Reservoir 4	Southwest corner of Fern Ave and Euclid Pl	Rectangular	20	1,186	1,212	26.0	278 x 458	-	Concrete	1959
1212	1B	Reservoir 5	Southwest corner of Fern Ave and Euclid Pl	Rectangular	2	1,193	1,208	15.0	166 x 180	-	Concrete	1958
1212	3	Reservoir 7	East side of Campus Ave, north of 8th Street	Irregular	10	1,180	1,205	25.0	218 x 398	-	Concrete	1926
			Total Zone 1212 Volume		**32**							
1348	1A	Reservoir 1	Southwest corner of Campus Ave and 13th St	Rectangular	3	1,328.4	1,347.7	19.3	125.5 x 162.5	-	Concrete	1972
1348	1B	Reservoir 2		Rectangular	2	1,327.6	1,348.0	20.5	107 x 125.5	-	Concrete	1955
1348	1C	Reservoir 3		Rectangular	3.75	1,328.9	1,349.5	20.6	125.5 x 199.5	-	Concrete	1958
			Total Zone 1348 Volume		**8.75**							
			Total System Volume		**75**							

(1) Reservoirs with hopper bottoms and sloped walls are considered regular shapes (rectangular/cylindrical) as these irregularities in the shape account for insignificant impact on volume.

6-6 Booster Pump Stations

The City's system includes five booster pump stations. One station, housing Booster B (BP-B), is inactive. Details of each booster station are summarized in Table 6-5.

The booster pump station housing booster pumps 1A, 1B, 1C, and 2 is located adjacent the 1074 Zone reservoirs, east of Cucamonga Avenue and south of Fourth Street. It was constructed in 1960. It takes suction from the 1074 Zone. Booster Pump 1A, 1B, and 1C are vertical turbine pumps that pump into the 1212 Zone. Booster Pump 2 is a vertical turbine pump that pumps into the 1348 Zone. Currently, these pumps are rarely used.

The booster pump station housing booster pumps 3B and 4B is located adjacent Reservoir 1212-3, on Campus Avenue, north of Eighth Street. It was constructed in 1959 and rehabilitated in 2004. It takes suction from Reservoir 1212-3. There are two horizontal split case pumps that pump into the 1348 Zone.

The booster pump station housing booster pumps 9A and 9B is located east of Euclid Avenue just south of the I-10 Freeway. It was constructed in 1960. It takes suction from the 1212 Zone. There are two horizontal split case pumps that pump into the 1348 Zone.

The booster pump station housing booster pump B is located east of Euclid Avenue, north of Eighth Street. This is where the old Reservoir 1212-2 was located. The pump station is inactive and is planned to be abandoned.

The Ontario Booster Pump Station was constructed in 2008 and is located at 4251 East Jurupa Avenue, east of Dupont Avenue. It currently takes suction from Reservoir 925-2A, which was constructed to ultimately serve the new 925 Zone (New Model Colony). Currently, there is no demand in New Model Colony. Therefore, the water is moved from Reservoir 925-2A to the 1212 Zone via three pumps at the Ontario Booster Pump Station.

6-7 Pressure Reducing Stations

The City's system includes sixteen (16) pressure reducing stations (PRS). The details of each PRS are shown in Table 6-6. Most of the stations have two or more pressure reducing valves (PRVs), a main valve and one or more bypass valves. The main valve, the smallest in diameter, typically has the highest pressure setting. Bypass valves are larger in diameter and have slightly lower pressure settings than the main valve. The bypass valve will open when the system pressure drops below the main valve's pressure setting and the main valve cannot supply enough water. If the downstream pressure continues to fall below the bypass valve pressure setting, the second bypass valve will open to provide additional water. In addition, pressure relief valves are generally present at each PRS. These valves protect the water system from abnormally high pressures should the regulating valves fail to work properly.

Table 6-5
City Booster Pump Stations Characteristics

No.	Location of Booster Pump Station	Date of Construction	Name	Suction Zone	Discharge Zone	RPM	Horse Power	Pump Type	Pump Model	Pump Mfg	Stages	Edison Test Date	TDH	Capacity (gpm)	Comment
1	East of Cucamonga Ave, south of 4th St	1960	Galvin Booster 1A	1074	1212	1800	250	VT	14FHC	Goulds	3	7/20/07	149	3,686	
			Galvin Booster 1B	1074	1212	1780	200	VT	16ENL	Flowserve	2	-	150	3,500	Design Point
			Galvin Booster 1C	1074	1212	1770	350	VT	Unknown		2	7/20/07	162	4,766	
			Booster 2	1074	1348	1800	250	VT	14HMC	Goulds	4	-	300	2,200	Design Point
2	Campus Ave, north of Eighth St	1959	Booster 3	1212	1348	1770	150	HSC	8A-16	Peerless	-	7/25/08	153	2,979	
			Booster 4	1212	1348	1760	100	HSC	6AE16	Peerless	-	7/25/08	159	1,803	
3	East of Euclid Ave, south of I-10 Freeway	1960	Booster 9A	1212	1348	1775	200	HSC	411-BF	Aurora	-	7/25/08	224	2,137	
			Booster 9B	1212	1348	1778	200	HSC	411-BF	Aurora	-	7/25/08	230	2,155	
4	East of Euclid Ave, north of Eighth St	Unknown	Booster B	1212	1348	1760	60	HSC	5823	Fairbanks Morse	-	-	Unknown		Inactive
5	4251 East Jurupa Ave, east of Dupont Ave	2008	Ontario Booster Pump 1	925	1212	Unknown	150	Unknown	Unknown			7/18/08	305	1,298	
			Ontario Booster Pump 2	925	1212	Unknown	150	Unknown	Unknown			7/18/08	309	1,315	
			Ontario Booster Pump 3	925	1212	Unknown	150	Unknown	Unknown			7/18/08	314	1,282	

Table 6-6
Pressure Regulating Stations

Station No.	From Zone	To Zone	Diameter (inch)	Pressure Setting (psi)	Ground Elevation (feet)
2	1074'	1010'	4	62	840
			8	58	
			8	52	
3	1074'	1010'	4	65	834
			8	60	
			8	55	
4	1074'	1010'	4	90	838
			8	64	
			12	57	
5	1074'	1010'	4	65	830
			6	60	
			8	50	
6	1212'	1074'	6	65	893
			8	60	
7	1212'	1010'	3	55	876
			4	50	
			8	45	
8	1212'	1010'	4	55	878
			8	50	
			12	40	
9	1212'	1074'	4	65	920
			8	60	
10	1212'	1074'	4	89	856
			8	85	
			10	70	
11	1212'	1074'	4	62	918
			8	57	
12	1212'	1074'	4	79	866
			6	73	
			10	68	
13	1212'	1010'	4	60	866
			6	55	
			10	50	
14	CVWD	1212'	4	45	1,040
			8	40	
15	1348'	1212'	6	52	1,094
			6	47	
17	1010'	925'	4		728
			10		
18	1010'	925'	4		788
			10		
			14		

PRS 17 and PRS 18 are the two newest stations, intended to ultimately provide water from the 1010 Zone to the 925 Zone. PRS 17 is complete but not in use due to lack of 925 Zone water mains and power to the site. PRS 18 is in limited use, just enough to move water in the large diameter water mains of the 925 Zone.

6-8 Altitude Valves

The existing system has two altitude valves that regulate reservoir operations. The altitude valves are operated based on levels in Reservoirs 1010-2 and 1010-1. Details are shown in Table 6-7.

Table 6-7
Altitude Valves

From Zone	To Zone	Location	Level Setting (ft)	Diameter
1074	1010	Reservoir 1010-2A	Open < 25.5 ft	12
			Closed > 29 ft	
1212	1010	Reservoir 1010-1	Open < 24 ft	12
			Closed > 28 ft	

** Level Settings from 2005 WMP*

6-9 Imported Water Connections

The City has two Water Facilities Authority (WFA) turnouts, two points of connection with the Chino Basin Desalter Authority (CDA), and one point of connection to the San Antonio Water Company (SAWC). The locations and details are listed in Table 6-8.

Table 6-8
Imported Water Connections

ID	Source	To Zone	Location	Comment
WFA Turnout 1	WFA	1212	Northwest corner of Eighth St and Fern Ave (adjacent Reservoir 1212-1A and 1212-1B)	16 mgd Capacity
WFA Turnout 2	WFA	1348	Southeast corner of Campus Ave and A St (adjacent Reservoir 1212-3)	9 mgd Capacity
CDA I	*CDA I	1010	Intersection of Archibald Ave and extension of Schaefer St	Total supply from CDA 1 averages 1,500 AFY
CDA II - Lat A	**CDA II	925	Intersection of Philadelphia St and Milliken Ave	Total supply from CDA2 averages 3,500 AFY
CDA II - Lat B	**CDA II	1010	Intersection of Philadelphia St and Milliken Ave	
SAW	SAW	1212	Intersection of Eighth St and San Antonio Ave	Inactive

**CDA I is the Chino Basin Desalter Facility No. 1*

***CDA II is the Chino Basin Desalter Facility No. 2*

6-10 Inter-Agency Connections

The City's water system has five inter-agency connections with neighboring cities or water utilities. These inter-agency connections allow the City to obtain water from or provide water to adjacent water systems. The inter-agency connections and their locations are listed in Table 6-9.

Table 6-9
Inter-Agency Connections

No.	Location	From	To	Connection Size (in)	Comments
1	Milliken Ave & 6th St.	CVWD	City of Ontario 1212 Zone	12	PRS 14
2	Sixth St & Corona Ave	City of Ontario 1348 Zone	CVWD	6	
3	Sixth St & Vineyard Ave	City of Ontario 1348 Zone	CVWD	6	
4	Campus Ave & Richland St	City of Ontario 1348 Zone	City of Upland	8	Connected to City of Upland Reservoir
5	Benson Ave & State St	City of Ontario 1212 Zone	City of Chino	10	Connected to City of Chino Reservoir

6-11 Water Treatment

Operated by the City for over thirty years to treat raw Colorado River water from the MWD Upper Feeder, the John Galvin Water Treatment Plant was deactivated in 1993 because the treatment process did not meet the requirements of the Surface Water Treatment Rule.

As a part of participating in the DYY program, the John Galvin Water Treatment Plant site (southeast corner of Cucamonga Avenue and Fourth Street) was chosen for the location of a new ion-exchange facility. The ion-exchange plant was completed in 2008 and treats water extracted from Well 44 and Well 52. The groundwater is treated for nitrates and perchlorates and is then fed into Reservoirs 1074-1A and 1074-1B. The facility includes a bypass blending system where groundwater can be blended with Zone 1212 water prior to entering Reservoir 1074-1A and 1074-1B. The treated and bypass blending capacities depend on the groundwater quality being treated at the time. The maximum well water concentrations are 70 mg/L nitrate and 8 micrograms/L perchlorate. The treated well water has concentrations of less than 35 mg/L nitrate and less than 4.6 micrograms/L perchlorate.

SECTION 7

CRITERIA

7-1 General

Performance criteria are established to evaluate the adequacy of various water system components through a systematic analysis. Necessary improvements are identified and recommended for inclusion in a Capital Improvement Program (CIP). Some criteria are based upon experience and their application is at the discretion of the water purveyor. This includes service pressures, storage capacity, and sources of supply. Other criteria, such as water quality and fire protection, are based on federal, state and local jurisdictional requirements. This section details the criteria which will serve as the benchmark for evaluating the City's water system. A summary of the service criteria is listed in Table 7-1.

Table 7-1
Service Criteria

Description	Criteria	Existing Requirement	Ultimate Requirement
1. Source of Supply			
a. Total	Maximum Day Demand (except for closed zones which shall be Maximum Day Demand plus Fire Flow Demand or Peak Hour, whichever is greater)	37,409 gpm	72,315 gpm
b. Local Supply	Average Day Demand	23,380 gpm	46,339 gpm
2. Reservoir Capacity			
a. Operational Storage	30% of Maximum Day Demand for NMC 25% of Maximum Day Demand for OMC	13.5 mg	27.4 mg
b. Emergency Storage	100% of Average Day Demand	33.7 mg	66.7 mg
c. Fire Suppression	Highest Fire Flow Requirement		
Residential			
Rural	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Low Density	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Low-Medium Density	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Medium Density	2,000 gpm for 2 hours	0.24 mg	0.24 mg
High Density	3,500 gpm for 4 hours	0.84 mg	0.84 mg
Retail / Service			
Neighborhood Commercial	2,500 gpm for 3 hours	0.45 mg	0.45 mg
General Commercial	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Office Commercial	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Hospitality	4,000 gpm for 4 hours	0.96 mg	0.96 mg
Employment			
Business Park	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Industrial	3,500 gpm for 4 hours	0.84 mg	0.84 mg
Other			
Airport	4,000 gpm for 4 hours	0.96 mg	0.96 mg

Table 7-1
Service Criteria (continued)

Description	Criteria	Existing Requirement	Ultimate Requirement
Mixed Use	3,500 gpm for 4 hours	0.84 mg	0.84 mg
Open Space	1,500 gpm for 2 hours	0.18 mg	0.18 mg
Public Facility	3,000 gpm for 3 hours	0.54 mg	0.54 mg
Public School	2,500 gpm for 3 hours	0.45 mg	0.45 mg
3. Booster Pump Stations	➢ Capable of delivering Maximum Day Demand plus Fire Flow or Peak Hour Demand of service area, whichever is greater ➢ Stand-by pump equal in size to the largest duty pump ➢ Flow meters, suction and discharge pressure gauges, and telemetry equipment for alarm and status notification at each station ➢ Provisions for emergency power at all stations		
4. Minimum Pipe Size	12-inch in commercial and industrial areas 8-inch in all other areas		
5. Maximum Velocities	➢ 5 ft/s at Average Day Demand ➢ 7 ft/s at Maximum Day Demand (5 ft/s for PVC pipe) ➢ 7 ft/s at Fire Flow Demand (5 ft/s for PVC pipe)		
6. Static Pressures	➢ Minimum 40 psi ➢ Desired 60 - 80 psi ➢ With pressure regulation over 80 psi		
7. Dynamic Pressures	Minimum 40 psi during Peak Hour Demand		
8. Fire Flows and Pressures			
Residential			
Rural	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant		
Low Density	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant		
Low-Medium Density	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant		
Medium Density	2,000 gpm for 2 hours with 20 psi residual pressure at fire hydrant		
High Density	3,500 gpm for 4 hours with 20 psi residual pressure at fire hydrant		
Retail / Service			
Neighborhood Commercial	2,500 gpm for 3 hours with 20 psi residual pressure at fire hydrant		
General Commercial	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant		
Office Commercial	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant		
Hospitality	4,000 gpm for 4 hours with 20 psi residual pressure at fire hydrant		
Employment			
Business Park	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant		
Industrial	3,500 gpm for 4 hours with 20 psi residual pressure at fire hydrant		
Other			
Airport	4,000 gpm for 4 hours with 20 psi residual pressure at fire hydrant		
Mixed Use	3,500 gpm for 4 hours with 20 psi residual pressure at fire hydrant		
Open Space	1,500 gpm for 2 hours with 20 psi residual pressure at fire hydrant		
Public Facility	3,000 gpm for 3 hours with 20 psi residual pressure at fire hydrant		
Public School	2,500 gpm for 3 hours with 20 psi residual pressure at fire hydrant		

7-2 Service and Operational Criteria

7-2.1 Source of Supply

Any water system must be capable of meeting all demands imposed upon the system. This can be achieved through multiple supply sources, storage, or a combination of both. Generally, the determination is based upon water availability, existing storage capacity, and economics. It is prudent to secure water supplies from multiple sources so that demands can be met at reasonable levels when one or more water sources are not available.

California Code of Regulations Related to Drinking Water require a minimum source of supply of one maximum day demand of the service area. Under this criterion, reservoirs are typically needed to regulate hourly fluctuations in demand, provide fire flow and supplement supply during an outage of a source for an extended duration.

As much of the average day demand shall be supplied by local sources as feasible.

7-2.2 Storage

Typically for a water system, three categories of storage are of importance: operational, emergency, and fire suppression. The entire system as well as each individual pressure zone is evaluated to determine the system's ability to meet storage criteria.

Operational Storage

Operational storage serves to equalize variations in sources of supply and demand over short periods of time (daily or weekly) and to fight fires. Utilizing the daily demand hydrograph, the component of operational storage needs to account for the difference in supply and demand, which can be determined with an extended period simulation of the system over a day or a week, etc.

The operational storage might typically be based on one maximum day demand if groundwater storage is not available. For the City of Ontario's system, operational storage criterion is based on 30 percent of the maximum day demand for New Model Colony and 25 percent of the maximum day demand for Old Model Colony. Greater daily demand fluctuations are anticipated in New Model Colony due to its residential character compared to the mixed residential and industrial character of Old Model Colony.

Emergency Storage

Emergency storage is used in the event of an interruption in the primary water supply source. It is assumed that most outages can be mitigated within 7 days. Accordingly, many agencies that depend solely on imported water utilize 7 average days of storage as their emergency storage criterion. It is reasonable to expect that groundwater sources will be available during an outage of the imported water supply. Therefore, the required emergency storage volumes may typically be reduced by an agency's groundwater supply capacity. The City of Ontario's emergency storage volume can be reduced by the actual production capacity of its wells. The only requirement would be that the facilities be capable of pumping the water needed during an emergency from the wells

to the higher zones. Since the City's well capacity of 51,100 gpm exceeds the existing average day demand (23,380 gpm) and the ultimate average day demand (46,339 gpm), the emergency storage criteria is set to one average day demand.

Unlike operational and fire storage, which shall be available for all individual zones, emergency storage can be available at one or a few storage sites. Again, the only requirement would be that the facilities be capable of moving the water needed during an emergency from the location of the storage to other zones.

Fire Suppression Storage

Fire suppression storage, shown in Table 7-1, is the volume required to supply the service area with the required fire flows, which range from 1,500 to 4,000 gpm for a duration of two (2) to four (4) hours.

The required storage determined as described above shall be increased 15 percent of the reservoir volume so that this portion of the volume is available for variations in elevation, and to provide submergence over the reservoir outlet pipe.

7-2.3 Booster Pump Stations

Booster pump stations are typically sized to deliver the maximum day demand plus fire flow or the peak hour demand of the service areas, whichever is greater. The exception is closed service zones supplied by either a hydropneumatic pumping system or a variable speed pumping system. Under these circumstances, the booster pumps must meet maximum day demand plus fire flow requirements or there must be a separate fire pump installed to meet the fire flow requirements.

All booster pump stations shall incorporate a standby pump of the same size as the largest duty pump. This ensures that there is a replacement for the largest duty pump during maximum day demand conditions, while one of the pumps at the station is being repaired or replaced. It typically takes pump manufacturers 12 to 16 weeks for delivery of a new pump and motor unit once the order is placed and shop drawings are approved.

7-2.4 System Pressures

Most water utilities set 60 to 80 pounds per square inch (psi) as the average static pressure throughout the system. The water system shall also be capable of maintaining a minimum residual pressure of 40 psi during the peak hour demand. A residual pressure of 20 psi must be maintained at the fire hydrant outlet in developed areas during fire flow.

In areas where pressures exceed 80 psi, the Uniform Plumbing Code requires customers to install "an approved type pressure regulator preceded by an adequate strainer" on their service connections to protect domestic plumbing and water heaters.

7-2.5 Transmission and Distribution Pipelines

The distribution system shall be sized and designed to provide redundant service at adequate pressures for normal use as well as at fire flow conditions. In most cases, this can be accomplished by looping the system. Looping through easements or other areas which are not easily accessible shall be avoided. Provisions shall be made for supplying each service zone from at least two sources where feasible.

In order to maintain adequate system pressures and prolong the life of the pipe, flow velocities shall be limited. The system shall operate at velocities of 1 to 3 feet per second (fps) normally, with a maximum velocity of 5 to 7 fps at intermittent peak flows. The pipe velocity at fire flows shall not exceed 7 fps. Velocity in PVC pipes shall not exceed 5 fps.

The pressure in the system at any given point for a particular flow is dependent on a number of variables including pipe size, roughness and length. These components all contribute to the magnitude of pressure losses in the system. The system shall be designed and operated to maintain system losses to less than 10 feet for each 1000 feet of pipe length under any condition, subject to satisfying all other criteria.

All pipes shall be sized to provide adequate fire flows. To achieve this, when a single, unlooped pipe provides fire service to an area, a minimum diameter of 8-inch shall be maintained to the last hydrant. All mains shall be constructed with a minimum diameter of 8-inches. In commercial and industrial areas, the minimum diameter required is 12-inches. These pipe size recommendations shall be adhered to for all new design and construction projects, as well as any waterline replacement/upgrade projects.

7-2.6 Fire Suppression

The fire flow requirements used for this study are based upon the City's 2005 Water Master Plan, the Uniform Fire Code, and the City's Design Guidelines and Specifications Water System Design Criteria dated August 2009. Fire flows shown in Table 7-1 are required to be delivered at a minimum residual pressure of 20 psi at the fire hydrant outlet.

All fire hydrants shall be installed at 300-foot intervals with the exception of fire hydrants located on arterial roads, which will be spaced at 500-foot intervals on alternate sides of the roadway (1000 feet separation same side).

7-2.7 Service Life of Facilities

All facilities have useful lives for which relatively trouble-free service can be expected. Once exceeded, these facilities become less reliable, expensive to maintain and are subject to failure. Therefore, facility age is considered in the assessment of all water systems and in formulating future replacement projects.

The determination of the useful life is dependent upon multiple considerations. Table 7-2 shows the useful lives that are generally accepted as prudent planning criteria. They shall be one of the considerations in determining the phasing of facility replacement.

Table 7-2
Planning Criteria for Facility Useful Life

Facility	Useful Life (Years)
Steel Reservoirs	40
Concrete Reservoirs	50
Lined and Coated Ductile Iron/Steel Pipe	50
PVC Pipe	50
Asbestos Cement Pipe	50
Cast Iron and Steel Pipe (Lining or coating of non-current practice)	35
Pump Stations/Wells/Treatment Facilities	
Structure	50
Piping	40
Valves	20
Mechanical	15
Electrical	15
Well Casing	20 - 60

7-2.8 Operational Flexibility

Operational Flexibility is achieved by providing multiple sources of supply, back-up or stand-by facilities, and looped distribution system piping. Criteria to be applied include:

- Provide multiple sources of supply
- Provide looped system whenever possible
- For wells, provide standby generators and automatic transfer switches to deliver at least the average day demand into the system. For other wells, provide portable generator connection and manual transfer switches.
- Provide standby generators and automatic transfer switches at all booster pump stations
- Provide emergency interconnections with neighboring agencies

7-2.9 Distribution System Maintenance Program

Regular maintenance of a distribution system is an essential part of a properly operated water distribution system. Maintenance shall include periodic flushing and cleaning of the system, servicing of valves and hydrants, conducting leak surveys, replacement and repairs, and disinfection of repaired sections. Each maintenance and repair activity shall be documented. This work shall be performed in accordance with the Title 22, Chapter 16 (California Waterworks Standards) and AWWA G200 Standards.

Flushing and Cleaning

Flushing shall be performed to remove any accumulated sediments or other impurities which have been deposited in the system pipes. It will also help to restore system capacity. It is important that system flushing be performed systematically to remove the debris. The minimum flushing velocity shall be 2.5 fps.

Cleaning, will require proper access to the pipelines, shall be conducted on the sections that require it based upon the information collected and documented during regular maintenance activities.

Servicing of Valves and Hydrants

Valves are often found inaccessible, inoperable, or closed and shall therefore be tested and exercised regularly. In the event of a line break, it is important that valves operate properly so that the break can be isolated for repair. Records of repair shall require a notation of the time at which valves are closed and reopened so that valves do not remain closed inadvertently. In 2007, the City hired a contractor to systematically exercise all the valves in the City's system. The work was completed in 2009. The valve exercising program will continue with each valve being exercised every five years.

Hydrants shall be periodically inspected for leaks at the hose outlets. Leaking hydrants shall be removed and/or reconditioned and then replaced.

Valve exercising and hydrant maintenance program can be implemented in conjunction with the flushing program.

Leak Surveys

Comparison of pumping and purchase records, and customer meter readings and other uses such as system flushing can indicate if excessive leakage is occurring in the system. Leak surveys shall be conducted when excessive leakage is suspected.

Water Main Replacement and Repair

Water mains shall be repaired and/or replaced when pipes are found to be broken, corroded, or leaking. The method of repair shall consider if the line is scheduled for replacement, its location in the system, and the conditions which led to the failure. Following the repair or replacement of any pipe, the line shall be flushed and disinfected in accordance with the applicable requirements.

7-2.10 Storage Tank and Reservoir Maintenance

The storage tanks shall be inspected periodically by a qualified diver at no more than 5 year intervals. The reports from diving inspections shall be utilized in scheduling the subsequent inspection program, as well as the maintenance/repair projects.

7-2.11 Water Quality

The quality of water served by the City has to be in accordance with the Federal standards as well as the State of California Department of Public Health (CDPH) standards as set forth in Title 22 of the California Code of Regulations.

The basic water quality standards are established by the Safe Drinking Water Act (SDWA), which was passed by the Congress in 1974. Amendments to the SDWA were enacted in 1986 and 1996. The SDWA mandated the U.S. Environmental Protection Agency (EPA) to develop primary drinking water standards or maximum contaminant levels (MCL'S) in public water supplies.

The CDPH has responsibility for the State's drinking water program. It is accountable to the EPA for enforcement of the SDWA and for adoption of standards that are at least as stringent as that of the EPA. Since California conducts independent risk assessments, some of its standards are more stringent than the standards of the Federal Government.

The maximum contaminant levels are the maximum permissible levels of contaminants in water, which enter the distribution system of a public water system. MCL'S for bacteriological quality, haloacetic acids, and trihalomethanes are measured within the distribution system. The Federal and State MCL'S are enforceable and must be met by appropriate public drinking water systems.

The Federal maximum contaminant level goals (MCLG's) establish the maximum level of contaminant with an adequate margin of safety that would cause no known or anticipated adverse effect on the health of consumers. MCLG's are non-enforceable health goals based on health considerations only. In California, the Office of Environmental Health Hazard Assessment sets Public Health Goals (PHGs), which are similar to MCLGs in that they are non-enforceable health goals based on health considerations. In California, the exceedance of a PHG triggers a requirement to notify the governing body, and to hold a public meeting during which the cost of treating the water to remove the contaminant is discussed.

The secondary MCL's are established to protect public welfare and to provide pure, wholesome and potable water. They are measured at the point of delivery to the consumer. They involve protection of the taste, odor and appearance of the water. Federal secondary MCL's are not enforceable. The State secondary MCL's are enforceable for all new systems and new sources developed by existing systems.

Notification Levels (NLs) and Response Levels (RLs), (formerly known as "action levels") are set by CDPH based on actual contamination of drinking water supplies, or in anticipation of possible contamination. If an NL is exceeded, notification of the governing body is required. If an RL is exceeded, removal of the source from service is recommended by CDPH. Public notification is not required for NL or RL exceedances, but is recommended by the Department of Public Health.

Since the 1986 Amendments, several rules have been promulgated by the EPA. These include:

- Lead and Copper Rule - (June 7, 1991 and revised October 10, 2007 which requires monitoring) requires treatment techniques consisting of optimal corrosion control treatment, source water treatment, public education and lead service line replacement.
- Consumer Confidence Report Rule - (August 19, 1998) requires community water systems to prepare and provide to their customers annual consumer confidence reports on the quality of the water delivered by the systems. This rule allows customers to make health-based decisions regarding their drinking water consumption.
- Radionuclides - (December 7, 2000) This rule finalized the MCLG's, MCL's, and monitoring, reporting and public notification requirements for uranium, combined radium-226 and radium-228, gross alpha particle radioactivity, and beta particle and photon radioactivity.
- Public Notification Rule - (June 5, 2000) requires owners and operators of public water systems to notify customers when they fail to comply with the requirements of the National

Primary Drinking Water Regulations; have a variance or exemption from the drinking water regulations; or are facing other situations posing a risk to public health. The rule sets the requirements that the public water systems must follow regarding the form, manner, frequency, and content of a public notice.

- Unregulated Contaminant Monitoring Rule - (January 11, 2001) requires EPA to establish a program to monitor unregulated contaminants, and to publish a list of contaminants to be monitored. The first two rounds of monitoring (UCMR1 and UCMR2) have been completed, and development of the contaminant list for the third round of monitoring (UCMR3) is in progress.

- Surface Water Treatment Rule - (June 29, 1989) requires all public water systems using surface water supplies and groundwater under the influence of surface water to filter and disinfect for protection against Giardia lamblia, Legionella, enteric viruses and heterotrophic bacteria.

  The State surface water treatment regulations resulted from a series of amendments to the National Primary Drinking Water Regulations. The State regulations became effective on June 5, 1991. In California, all public water systems must filter all their surface water and part of their groundwater under the influence of surface water.

- Interim Enhanced Surface Water Treatment Rule - (February 16, 1999) The purposes of this rule are to improve control of microbial pathogens including specifically the protozoan Cryptosporidium in drinking water; and address risk tradeoffs with disinfection by-products. The rule establishes a MCLG of zero for Cryptosporidium; 2-log Cryptosporidium removal requirements for systems that filter; strengthened combined filter effluent turbidity performance standards and individual filter turbidity provisions; disinfection benchmark provisions to assure continued levels of microbial protection while facilities take the necessary steps to comply with the new disinfection byproduct standards; inclusion of Cryptosporidium in the definition of groundwater under the direct influence of surface water and in the watershed control requirements for unfiltered public water systems; requirements for covers on new finished water reservoirs; and sanitary surveys for all surface water systems regardless of size. This rule builds upon the treatment technique requirements of the Surface Water Treatment Rule.

- Total Coliform Rule - (June 29, 1990) Establishes microbiological standards and monitoring requirements for all public water systems. Compliance is based upon the presence or absence of total coliforms in a sample rather than on an estimate of coliform density. The State regulations are identical to the Federal regulations.

- Arsenic Rule - (January 2001) This rule established a MCL of 0.01 mg/L for arsenic.

- Filter Backwash Rule – This rule applies to conventional or direct filtration treatment systems and recycled spent filter backwash water for protection from Cryptosporidium. It requires that all recycled flows be conveyed to the head of the treatment system for complete treatment.

- Disinfectants and Disinfection by Products Rule -This rule is required by the 1986 Amendments. It must balance the need for protection from cancer causing chemicals that

result from disinfection of drinking water (the by-products) with the need to eliminate the microbes through disinfection.

The first stage of this rule was the Draft Disinfectants/Disinfection By-Products Rule (D/DBPR), proposed on July 29, 1994. The compounds affected by the first stage were as follows:

Chlorine
Chloramines
Chlorine Dioxide

Total Trihalomethanes (TTHMS)
Total Haloacetic Acids (THAAS)
Total Organic Carbon (TOC)
Bromate
Chlorite

The Stage 1 rule proposed MCLS of 0.080 mg/l for trihalomethanes, 0.060 mg/l for total haloacetic acids, 0.010 mg for bromate, 1.0 mg/l for chlorite, determined as the annual average of quarterly measurements. The proposed maximum residual disinfection level for chlorines and chloramines was 4.0 mg/l and for chlorine dioxide was 0.08 mg/l.

The Stage 2 rule requires an evaluation of water distribution systems, known as an Initial Distribution System Evaluation (IDSE), to identify the locations with high disinfection byproduct concentrations. These locations are then used by the systems as the sampling sites for Stage 2 DBPR compliance monitoring. The MCL for two groups of disinfection byproducts are calculated for each monitoring location in the distribution system. The rule also requires each system to determine if they have exceeded an operational evaluation level, which is identified using their compliance monitoring results.

- Groundwater Rule – (October 11, 2006) This rule addresses the risk of bacteriological contamination of groundwater sources through an approach that relies on four major components: periodic sanitary surveys, source water monitoring, corrective actions, and compliance monitoring.

In addition to the SDWA requirements, Assembly Bill 733 (passed in 1996), required water purveyors with 10,000 or more customers to submit an estimate of the total cost of providing fluoridation facilities at each source of supply.

The CDPH California Waterworks Standards, revised and adopted March 9, 2008, describes disinfection requirements (Article 5) and additive regulations (Article 7) for public water systems. New or repaired water mains, reservoirs, and wells must be disinfected and sampled for bacteriological quality in accordance with American Water Works Association Standards. Direct and indirect additives cannot be in contact with the drinking water unless certified as meeting the specifications of the NSF International/American National Standard Institute (NSF/ANSI).

A summary of the federal and state water quality standards are presented in Tables 7-3 and 7-4.

Table 7-3
Primary Drinking Water Standards

Contaminant	USEPA		CDPH	
	MCL (mg/l)	Date	MCL (mg/l)	Effective Date
Inorganics				
Aluminum	-	-	1	2/25/1989
Antimony	0.006	07/92	0.006	9/8/1994
Arsenic	0.01	2001	0.01	2004
Asbestos (fibers>10 micrometers)	7 MFL[a]	01/91	7 MFL[a]	9/8/1994
Barium	2	01/91	1	1977
Beryllium	0.004	07/92	0.004	9/8/1994
Cadmium	0.005	01/91	0.005	9/8/1994
Chromium (total)	0.1	01/91	0.05	5/30/1905
Copper (AL)			1.3	
Cyanide (as free cyanide)	0.2	07/92	0.15	6/12/2003
Fluoride	4	04/86	2	04/98
Lead (AL)	0.015[b]	06/91	0.015[b]	12/11/1995
Mercury	0.002	6/24/1977	0.002	1977
Nickel	Remanded		0.1	9/8/1994
Nitrate	(as N) 10	6/24/1977	(as NO3) 45	1977
Nitrite (as N)	1	01/91	1	9/8/1994
Total Nitrate/Nitrite (as N)	10	01/91	10	9/8/1994
Perchlorate			0.006	2004
Selenium	0.05	01/91	0.05	9/8/1994
Thallium	0.002	07/92	0.002	9/8/1994
Radionuclides				
Uranium	30 µg/L	12/7/2000	20 pCi/L	1/1/1989
Combined radium-226 & 228	5 pCi/L	6/24/1977	5 pCi/L	1977
Cross Alpha particle activity	15 pCi/L	6/24/1977	15 pCi/L	6/24/1977
Gross Beta particle activity	4 millirem/yr	6/24/1977	4 millirem/yr	2003
Strontium-90	8 pCi/L	6/24/1977	8 pCi/L[c]	1977
Tritium	20,000 pCi/L	6/24/1977	20,000 Pci/L[c]	1977

Table 7-3 (cont)
Primary Drinking Water Standards

Contaminant	USEPA		CDPH	
	MCL (mg/l)	Date	MCL (mg/l)	Effective Date
Volatile Organic Chemicals (VOCS)				
Benzene	0.005	06/87	0.001	2/25/1989
Carbon tetrachloride	0.005	06/87	0.0005	4/4/1989
Chlorobenzene	0.1		0.1	
1,2-Dichlorobenzene	0.6	01/91	0.6	9/8/1994
1,4-Dichlorobenzene	0.075	06/87	0.005	4/4/1989
1,1-Dichloroethane	-	-	0.005	6/24/1990
1,2-Dichloroethane	0.005	06/87	0.0005	4/4/1989
1,1-Dichloroethylene	0.007	06/87	0.006	2/25/1989
cis-1,2-Dichloroethylene	0.07	01/91	0.006	9/8/1994
trans-1,2-Dichloroethylene	0.1	01/91	0.01	9/8/1994
Dichloromethane	0.005	07/92	0.005	9/8/1994
1,2-Dichloropropene	-	-	0.005	2/25/1989
1,3-Dichloropropane	0.005	01/91	0.0005	6/24/1990
Ethylbenzene	0.7	01/91	0.3	6/12/2003
Monochlorobenzene	0.1	01/91	0.07	9/8/1994
Styrene	0.1	01/91	0.1	9/8/1994
1,1,2,2-Tetrachloroethane	-	-	0.001	2/25/1989
Volatile Organic Chemicals (VOCS)				
Tetrachloroethylene (PCE)	0.005	01/91	0.005	5/1/89
Toluene	1	01/91	0.15	9/8/1994
1,2,4 Trichorobenzene	0.07	07/92	0.005	9/8/1994
1,1,1-Trichloroethane	0.2	06/87	0.2	2/25/1989
1,1,2-Trichloroethane	0.005	07/92	0.005	9/8/1994
Trichloroethylene (TCE)	0.005	06/87	0.005	2/25/1989
Trichlorofluoromethane (Freon)	-	-	0.15	6/24/1990
1,1,2-Trichloro-1,2,2-Trifuoroethane	-	-	1.2	6/24/1990
Vinyl Chloride	0.002	06/87	0.0005	4/4/1989
Xylenes	10	01/91	1.75	2/25/1989

Table 7-3 (cont)
Primary Drinking Water Standards

Contaminant	USEPA		CDPH	
	MCL (mg/l)	Date	MCL (mg/l)	Effective Date
Non-Volatile Synthetic Organic Chemicals (SOCS)				
Acrylamide	TT[e]	01/91	TT[e]	9/8/1994
Alachlor	0.002	01/91	0.002	9/8/1994
Atrazine	0.003	01/91	0.001	6/12/2003
Bentazon	-	-	0.018	4/4/1989
Benzo(a)pyrene (PAHs)	0.0002	07/92	0.0002	9/8/1994
Carbofuran	0.04	01/91	0.018	6/24/1990
Chlordane	0.002	01/91	0.0001	6/24/1990
Dalapon	0.2	07/92	0.2	9/8/1994
1,2-Dibromo-3-chloropropane (DBCP)	0.0002	01/91	0.0002	5/3/1991
Di(2-ethylhexyl)adipate	0.4	07/92	0.4	9/8/1994
Di(2-ethylhexyl)phthalate	0.006	07/92	0.004	6/24/1990
2,4-D	0.07	01/91	0.07	9/8/1994
Dinoseb	0.007	07/92	0.007	9/8/94
Dioxin (2,3,7,8-TCDD)	0.00000003	07/92	0.00000003	9/8/1994
Diquat	0.02	07-92	0.02	9/8/1994
Endothall	0.1	07/92	0.1	9/8/1994
Endrin	0.002	07/92	0.002	9/8/1994
Epichlorahydrin	TT[e]	01/91	TT[e]	9/8/1994
Ethylene dibromide	0.00005	01/91	0.00005	9/8/1994
Glyphosate	0.7	07/92	0.7	6/24/1990
Heptachlor	0.0004	01/91	0.00001	6/24/1990
Heptachlor epoxide	0.0002	01/91	0.00001	6/24/1990
Hexachlorobenzene	0.001	07/92	0.001	9/8/1994
Hexachlorocyclopentadiene	0.05	07/92	0.05	9/8/1994
Lindane	0.0002	01/91	0.0002	9/8/1994
Methoxychlor	0.04	01/91	0.03	6/12/2003
Molinate	-	-	0.02	4/4/1989
Oxamyl (Vydate)	0.2	07/92	0.05	6/12/2003
Pentachlorophenol	0.001	01/91	0.001	9/8/1994
Picloram	0.5	07/92	0.5	9/8/1994
Polychlorinated biphenyls (PCBs)	0.0005	01/91	0.0005	9/8/1994
Simazine	0.004	07/92	0.004	9/8/1994
Thiobencarb	-	-	0.07	4/4/1989
Toxaphene	0.003	01/91	0.003	9/8/1994
2,4,5-TP (Silvex)	0.05	01/91	0.05	9/8/1994

Table 7-3 (cont)
Primary Drinking Water Standards

Contaminant	USEPA		CDPH	
	MCL (mg/l)	Date	MCL (mg/l)	Effective Date
Disinfectants				
Chloramines (as Cl2)	MRDL=4.0		MRDL=4.0	
Chlorine (as Cl2)	MRDL=4.0		MRDL=4.0	
Chlorine dioxide (as ClO2)	MRDL=0.8		MRDL=0.8	
Disinfection Byproducts				
Total trihalomethanes (TTHMs)	0.08	1/1/2002[d]	0.1	3/14/1983
Total haloacteic acids (HAA5)	0.06	1/1/2002[d]	0.06	
Bromate	0.01	1/1/2002[d]	0.01	
Chlorite	1.0	1/1/2002[d]	1.0	
Microorganisms				
Cryptosporidium	TT		TT	
Giardia Lamblia	TT		TT	
Heterotrophic plate count (HPC)	TT		TT	
Legionella	TT		TT	
Total Coliforms (incl. fecal coli & E.coli)	5%		5%	
Turbidity	TT		TT	
Viruses (enteric)	TT		TT	

a. MFL = Million fibers per liter, with fiber length > 10 microns

b. Regulatory Action Level; if system exceeds, it must take certain actions such as additional monitoring, corrosion control studies and treatment, and for lead, a public educaiton program; replaces MCL.

c. MCLs are intended to ensure that exposure above 4 millirem/yr does not occur.

d. Effective for surface water systems serving more than 10,000 people; effective for all others 1/1/04

e. TT = treatment technique, because an MCL is not feasible

Table 7-4
Secondary Drinking Water Standards

Contaminant	USEPA MCL (mg/l)	CDPH MCL (mg/l)
Aluminum	0.05 to 0.2	0.2
Chloride	250	250 (Recommended)
Color	15 color units	15
Copper	1.0	1.0
Corrosivity	non-corrosive	
Fluoride	2	
Foaming agents	0.5	0.5
Iron	0.3	0.3
manganese	0.05	0.05
Methyl-*tert*-butyl either (MTBE)		0.005
Odor	3 threshold odor numbers	3 threshold odor numbers
pH	6.5 - 8.5	
Silver	0.1	0.1
Sulfate	250	250 (Recommended)
Thiobencarb		0.001
Total dissoved solids (TDS)	500	500 (Recommended)
Turbidity		5 units
Zinc	5	5

7-2.12 Future Regulations

Future regulations proposed by the USEPA and CDPH that may affect the City of Ontario's future water quality, supply, and treatment standards are presented in Table 7-5.

As the supplier of the imported water, WFA and CDA are responsible for meeting the primary and secondary standards for imported water. The City is responsible for maintaining quality, including disinfectant residuals, in its system; and to meet the primary and secondary standards for well water.

Table 7-5
Future Regulations Proposed by the USEPA and CDPH

Regulation	Potential Contaminants	Comments	Anticipated Review Date
Revisions to Total Coliform Rule (TCR)	Total Coliforms Fecal Cloriform / *E. coli*	The TCR, promulgated in 1989, may be revised by EPA. Revisions are anticipated to include addressing or monitoring finished water quality in the distribution system.	Uncertain
Distribution System Rule	Microbiological Contaminates	Possible changes may include intrusion of facilities, pressure transient monitoring, finished water storage monitoring; and provisions for monitoring nitrification, corrosion, permeation and leaching.	Uncertain
Perchlorate	Perchlorate	A Drinking Water Equivalent Level (DWEL) of 24.5 ppb was established as part of the Integration Risk Information System (IRIS) assuming 100% exposure of drinking water. Contribution of perchlorate exposure from food is under review. Uncertain as to if EPA will regulate perchlorate in drinking water. Note: CDPH's MCL Perchlorate is 0.006 mg/l.	Uncertain
Radon Rule	Radon	At each entry point to the water system, initial monitoring of 4 consecutive quarters may be required. Final EPA rule with Alternative MCL (AMCL) limits was originally scheduled for 2009.	Uncertain

7-3 Design Criteria

Water system improvements shall be designed in accordance with the criteria set forth in the City's latest version of "Design Guidelines and Specifications – Water System Design Criteria", unless otherwise approved in writing by the City. Subsection 7-3.1 and 7-3.2 describe design criteria that is not included in the City's current design document.

7-3.1 Wells

The wells shall be designed in accordance with the Water Well Standards: State of California Bulletin 74-81 and Bulletin 74-90 (supplement to Bulletin 74-81), the most recent AWWA Standard A-100, Department of Public Health requirements, and sound engineering judgment.

The pumps shall be placed low enough in the casing so that subsequent lowering shall not be necessary. All well screens shall be below the pump intake to preclude cascading of water into the well casing even with the lowest expected pumping water level. The casing diameter shall be at least 4 inches larger than the largest pump/column pipe dimension, and maximum velocity shall not exceed 5 fps. Total screen area shall be sized to maintain a velocity of less than 0.1 foot per second at the maximum anticipated flow. Additionally, the casings diameters shall be selected to allow lining the wells in the future without losing significant capacity. The use of higher grade materials, such as stainless steel shall be considered to increase the useful life of the wells.

The well design shall include a 4-inch diameter camera tube extending to below the pump intake elevation, and a sounding tube. A separate air line with a depth gauge and an air connection shall be provided at every well. Flow meters, pressure gauges, and telemetry equipment shall be included to continuously monitor the wells. Either permanent emergency generators with automatic transfer switches or portable generator connections with manual transfer switches shall be provided at each well site. Sufficient standby power generation capacity shall be provided to pump at least the average day demand into the system.

7-3.2 Booster Pump Stations

The pump stations shall be equipped with modern pump controllers, flow meters, suction and discharge pressure gauges, proper isolation valves, and telemetry equipment. Facilities that will minimize pressure transients at start-up, shut-down, and power failure shall be provided. Flow meters and pressure gauges are essential tools for monitoring pump performance and demand conditions in the service area. Telemetry equipment is used to remotely monitor the status of the facility, and notify personnel in the event of a failure.

Pump stations shall be constructed of fireproof materials and be provided with peripheral sprinkler systems to prevent fire damage. Furthermore, power to the pump stations shall be provided through underground service to minimize possibility of damage during fires.

Standby generators and automatic transfer switches shall be provided to operate the pump stations during commercial power outages.

7-3.3 Pressure Reducing Stations

Pressure reducing stations supplying service zones shall be constructed with sufficient valves to deliver the entire range of demands and the fire flows within their proper operating range. Wherever possible, a minimum of two pressure reducing stations shall serve these zones. Pressure reducing stations shall be constructed with a pressure relief valve at the downstream end to preclude excessive pressures in the service area in case of malfunctioning of the pressure reducing valves. Each pressure reducing station shall be equipped with flow meters and telemetry equipment so that their operation can be remotely monitored through the SCADA system, and alarm conditions, such as open pressure relief valve can be addressed in a timely manner.

SECTION 8

HYDRAULIC MODEL

8-1 General

A computer model of the City's water system was utilized to aid in the evaluation of the adequacy of the existing facilities under present and future demand conditions.

Hydraulic analyses were performed using the Innovyze (formerly MWHSoft) InfoWater program, which is a commercially available hydraulic software package that is designed to simulate steady state and extended period operations of water systems.

The City's existing hydraulic model, developed for the 2006 Water and Recycled Water Master Plan, was used as the basis for the model. For this study, pipelines and facilities that had been constructed since mid-2004 and not included in the original model were added per the City's Water GIS and as-built construction plans.

The model primarily includes the domestic water pipelines that are owned by the City. Water service laterals are not included. Modeling information associated with each pipe includes size, length, and roughness. Other information included in the model database are pipe diameter, year of installation, zone, and pipe material. Modeling information associated with each node includes elevation, water demand, and diurnal pattern of demand. Node and facility elevations were obtained from the City's 2-foot contour information, provided in GIS shapefile format. The elevations are based on the National American Vertical Datum (NAVD) of 1988.

8-2 Demand Distribution

Existing Demands

The water demand distribution for the existing system was based upon water meter data provided for calendar year 2008. Geocoded meter data was provided by the City. It was found that the geocoding was not precise in the sense that each meter was not placed exactly inside or in front of the parcel it was associated with. The meters were determined to be located close enough to the correct locations that the data was still used to distribute the demands in the model.

Theissen polygons were created around each model node or cluster of model nodes. The demands were then aggregated and assigned to the appropriate modeling node. They were then universally increased to match the existing water use, depending on which scenario is being modeled (average day, maximum day, etc.). This method of distributing demands inherently accounted for any high water users within the existing service area.

The water demands are assigned to the following database fields:

- Demand Type 1: Commercial and Industrial Users
- Demand Type 2: Irrigation Users
- Demand Type 3: Residential Users
- Demand Type 10: Large Users

Ultimate Demands

The ultimate demands, described in Subsection 4-7.2 of this report, were distributed in the ultimate system model as follows:

1. Existing development areas in OMC - Demands remained the same in OMC, as long as the area is currently developed and future land use changes are not planned.
2. Vacant areas in OMC – Theissen polygons were used to apply ultimate demands to appropriate model nodes in each vacant area.
3. Densification areas in OMC – Existing demands were removed. Theissen polygons were used to apply ultimate demands to appropriate model nodes in each densification area.
4. Future development areas in NMC – Ultimate demands were calculated based on TAZ land use information and applied to model node selected to represent service to each TAZ area.
5. Mixed use areas in OMC and NMC – Ultimate demands were divided by the number of model nodes in each mixed use area and then applied to each node.

The water demands are assigned to the following database fields:

- Demand Type 1: Existing Commercial and Industrial Users in OMC and
  Future Commercial and Industrial Areas in NMC
- Demand Type 2: Existing Irrigation Users in OMC
- Demand Type 3: Existing Residential Users in OMC and
  Future Residential Areas in NMC
- Demand Type 4: Schools in NMC
- Demand Type 5: Vacant Land in OMC
- Demand Type 6: Mixed Use Commercial Areas in OMC and NMC
- Demand Type 7: Mixed Use Residential Areas in OMC and NMC
- Demand Type 8: Commercial Densification Areas in OMC
- Demand Type 9: Residential Densification Areas in OMC
- Demand Type 10: Existing Large Users in OMC

8-3 Diurnal Curves

The developed diurnal curves discussed in Section 4-6 were specified at each node.

8-4 Pump Controls

Booster pump and well pump controls were provided by City staff and are listed in Table 8-1 and Table 8-2, respectively. These pump controls were implemented by the system in September 2010.

Table 8-1
Booster Pump Controls

Booster Pump	Reference Reservoir	Action	If Reference Reservoir is	[1]Level (Off Peak)	[2]Level (Mid Peak)	[3]Level (Peak)
Galvin Booster 1A	1074-1A	open	above	18.5	18.5	18.5
		closed	below	17.0	17.0	17.0
Galvin Booster 1B	1074-1A	open	above	17.8	17.8	17.8
		closed	below	15.8	15.8	15.8
Galvin Booster 1C	1074-1A	open	above	18.2	18.2	18.2
		closed	below	16.8	16.8	16.8
Booster 2	1074-1A	open	above	18	18	18
		closed	below	16.5	16.5	16.5
Booster 3B	1348-1A	open	below	14.0	14.0	14.0
		closed	above	15.5	15.5	15.5
Booster 4B	1348-1A	open	below	13.5	13.5	13.5
		closed	above	15.0	15.0	15.0
Booster 9A	1348-1A	open	below	13.0	13.0	13.0
		closed	above	14.5	14.5	14.5
Booster 9B	1348-1A	open	below	15.0	15.0	15.0
		closed	above	17.0	17.0	17.0
Booster B	1348-1A	Inactive				
Ontario Booster Pump 1	925-2A	open	above	21	21	21
		closed	below	18	18	18
Ontario Booster Pump 2	925-2A	open	above	21.5	21.5	21.5
		closed	below	18.5	18.5	18.5
Ontario Booster Pump 3	925-2A	open	above	20.5	20.5	20.5
		closed	below	17.5	17.5	17.5

[1] Off Peak time is from 6 pm to 6 am
[2] Mid Peak time is from 6 am to 12:30 pm
[3] Peak time is from 12:30 pm to 6 pm

Table 8-2
Well Pump Controls

Well	Reference Reservoir	Action	If Reference Reservoir is	[1]Level (Off Peak)	[2]Level (Mid Peak)	[3]Level (Peak)
Well 17	1074-1A	Manually run when needed				
Well 20	1212-3	closed	above	18.7	15.2	14.8
		open	below	17.7	14.2	13.8
Well 24	1212-3	closed	above	19.5	16.0	15.5
		open	below	18.5	15.0	14.5
Well 25	1212-3	closed	above	19.8	18.0	15.8
		open	below	18.8	17.0	14.8
Well 26	1212-3	closed	above	19.0	15.5	14.8
		open	below	18.0	14.5	13.8
Well 27	1212-3	closed	above	19.3	15.5	14.8
		open	below	18.3	14.5	13.8
Well 29	1212-3	closed	above	20.0	18.3	16.0
		open	below	19.0	17.3	15.0
Well 30	1212-3	closed	above	20.8	19.0	16.8
		open	below	19.8	18.0	15.8
Well 31	1212-3	closed	above	21.0	19.3	19.3
		open	below	20.0	18.3	18.3
Well 34	1010-1A	closed	above	26.0	25.0	24.3
		open	below	24.0	23.0	22.3
Well 35	1074-1A	closed	above	15.5	15.5	14.5
		open	below	13.0	13.0	12.0
Well 36	1074-1A	closed	above	15.0	15.0	14.0
		open	below	12.5	12.5	11.5
Well 37	1212-3	closed	above	21.3	19.5	17.0
		open	below	20.3	18.5	16.0
Well 38	1212-3	closed	above	20.5	18.8	16.5
		open	below	19.5	17.8	15.5
Well 39	1010-2A	closed	above	23.0	23.0	23.0
		open	below	21.0	21.0	20.0
Well 40	1074-1A	closed	above	16	16	15
		open	below	13.5	13.5	12.5
Well 41	1212-3	closed	above	20.3	18.5	16.3
		open	below	19.3	17.5	15.3
Well 44	1074-1A	Only runs with Well 52 and Ion Exchange Plant				
Well 45	1074-1A	closed	above	16.5	16.5	15.5
		open	below	14	14	13
Well 46	1348-1A	closed	above	16.5	16.5	16.5
		open	below	14.5	14.5	14.5
Well 47	1212-3	closed	above	21.5	20.5	17.2
		open	below	20.5	19.5	16.2
Well 49	925-2A	closed	above	24.0	20.0	20.0
		open	below	21.5	17.0	17.0
Well 50	1010-1A	Inactive				
Well 52	1074-1A	Only runs with Well 52 and Ion Exchange Plant				

[1] Off Peak time is from 6 pm to 6 am

[2] Mid Peak time is from 6 am to 12:30 pm

[3] Peak time is from 12:30 pm to 6 pm

8-5 Friction Factors

The friction factors established in for the 2006 Water and Recycled Water Master Plan were utilized in the hydraulic model for this study as well. The friction factors used are shown in Table 8-3.

Table 8-3
C-factors used in Model

Diameter	AC Pipes	PVC Pipes	Mortar Lined Pipes	Steel/ Cast Iron Pipes (before 1950)	Steel/ Cast Iron Pipes (after 1950)
<= 4-inch	125	135	110	80	110
6-inch	125	135	110	80	110
8-10 inch	125	135	110	80	110
12-16 inch	130	140	115	90	115
16-20 inch	130	140	115	90	115
20-24 inch	130	140	115	90	115
24-30 inch	140	150	120	100	120
30-36 inch	140	150	120	100	120

SECTION 9

SYSTEM ANALYSIS

9-1 Introduction

The established system criteria and the computer model were utilized in analyzing the system, and evaluating its adequacy. The system was analyzed under average day, maximum day, peak hour, and maximum day plus fire flow conditions. Survey of the City's source of supply, storage, and pumping facilities were also conducted.

Existing system deficiencies were identified and mitigation projects were formulated based upon the results of the model runs, the survey, and input from City staff. Proposed projects were added in the hydraulic model to test the operation of the system after implementation.

A capital improvement program was developed as a result of these analyses. Recommended projects and cost estimates are discussed in Section 11 of this Master Plan Report.

9-2 Source of Supply

Any water system must be capable of meeting all demands imposed upon the system. This can be achieved through multiple supply sources, storage, or a combination of both. Generally, the determination is based upon water availability, existing storage capacity, and economics. It is prudent to secure water supplies from multiple sources so that demands can be met at reasonable levels when one or more water sources are not available.

California Code of Regulations Related to Drinking Water requires a minimum source of supply of one maximum day demand of the service area. Under this criterion, reservoirs are typically needed to regulate hourly fluctuations in demand, provide fire flow and supplement supply during an outage of a source for an extended duration.

The criterion established requires a source of supply equal to one maximum day demand, with one average day demand from local sources.

9-2.1 Existing Source of Supply

Per the criterion, the City's existing source of supply should be greater or equal to 37,409 gpm (maximum day demand) with 23,380 gpm (average day demand), from local sources.

The City's existing source of supply is shown in Table 9-1. The total existing supply sources is equivalent to 71,554 gpm which exceeds the criteria of one

Table 9-1

Existing Source of Supply

Source	Capacity		
	AFY	mgd	gpm
Existing Wells	82,403	73.57	51,093
WFA at Aqua de Lejos WTP	28,000	25.00	17,361
CDA from CDA I	1,500	1.34	930
CDA from CDA II	3,500	3.13	2,170
Total	**115,403**	**103.04**	**71,554**

maximum day demand of 37,409 gpm. The total source of supply from wells or local sources is 51,093 gpm which exceeds the criteria of one average day demand of 23,380 gpm.

The existing source of supply by zone is detailed in Table 9-2.

Table 9-2
Existing Supply by Zone

Zone	MDD (mgd)	Well Capacity (mgd)	WFA Supply Capacity (mgd)	CDA Supply Capacity (mgd)	Total Supply (mgd)	Surplus/ Deficit (mgd)
925		3.97			3.97	3.97
1010	10.77	6.46		4.46	10.92	0.15
1074	11.47	24.26			24.26	12.79
1212	25.48	35.28	20.10		55.38	29.90
1348	6.15	3.6	4.90		8.50	2.35
Total	**53.87**	**73.57**	**25.00**	**4.46**	**103.03**	**49.16**

9-2.2 Ultimate Source of Supply

Per the criterion, the City's ultimate source of supply would need to be greater or equal to 72,315 gpm (maximum day demand) with 46,339 gpm (average day demand) from local sources.

The ultimate source of supply is detailed in Table 9-3 and Table 9-4. Altogether, the ultimate system will include 9 additional wells with 7 of the wells serving the 925 zone.

The City already has an additional well drilled (Well 43) and sites identified for three more (Well 42, 48, and 51).

Table 9-3
Ultimate Source of Supply

Source	Capacity		
	AFY	mgd	gpm
Existing Wells	82,403	73.57	51,093
Future Wells[1]	36,288	32.40	22,500
WFA at Aqua de Lejos WTP	28,000	25.00	17,361
CDA from CDA I	1,500	1.34	930
CDA from CDA II	7,033	6.28	4,361
Total	**155,224**	**138.59**	**96,245**

[1] *Future well capacities assumed to be 2,500 gpm each. 9 wells planned.*

[2] *Facilities are being designed so CDA/Ontario has the ability to deliver 7,033 AFY through new facitilities to the City's 1010 Zone at Milliken Avenue and Riverside Drive*

The total capacity of the existing wells meets the criteria of one average day demand under ultimate conditions. However, additional wells are needed to be able to supply the maximum day demand efficiently when water from one or more of the imported supply sources may not be available, and to operate the wells during the off-peak periods.

Table 9-4
Ultimate Supply by Zone

Zone	MDD (mgd)	Existing Well Capacity (mgd)	Added Well Capacity (mgd)	WFA Supply Capacity (mgd)	CDA Supply Capacity (mgd)	Total Supply (mgd)	Surplus/ Deficit (mgd)
925	28.06	3.97	25.20			29.17	1.11
1010	17.39	6.46			7.62	14.08	-3.31
1074	13.93	24.26				24.26	10.33
1212	36.57	35.28	7.20	20.10		62.58	26.01
1348	8.18	3.60		4.90		8.50	0.32
Total	**104.13**	**73.57**	**32.40**	**25.00**	**7.62**	**138.59**	**34.46**

The estimated useful life of well casings is 60 years. The oldest active well is Well 17, which was constructed in 1963. Well 24 was constructed in 1969, and Wells 25, 26, and 27 were constructed in 1971. Depending upon the condition of the casings, these wells may be lost in the next 15 to 20 years. Because nine new wells are planned, additional replacement wells have not been included in the CIP for these wells.

9-3 Storage

9-3.1 Capacity Evaluation Criteria

Operational Storage

For the City of Ontario's system, operational storage criterion is based on 30 percent of the maximum day demand for NMC, and 25 percent of maximum day demand for OMC due to the diversity of demands in OMC.

Emergency Storage

The City's emergency storage criterion is set at one average day demand. For a system that depends mostly on groundwater supplies, this amount of emergency storage is adequate and is primarily for response in operations due to a loss of a major source of supply.

Fire Suppression Storage

Fire suppression storage is the volume required to supply the service area with the required fire flows, which range from 1,500 to 4,000 gpm for a duration of two (2) to four (4) hours.

The fire flow suppression storage and operational storage is increased by 15 percent so that a portion of the reservoir volume is available for variations in elevation, and to provide submergence over the reservoir outlet pipe. The emergency storage volume is not increased by 15 percent in order to keep the required storage volumes at reasonable amounts. In an emergency, the emergency storage volume, as well as the operational storage volume and the fire suppression storage volume would all be available for use.

9-3.2 Existing Storage Analysis

Table 9-5 shows the existing storage capacity in each zone, and the reservoir capacity needed.

A deficit of 6.68 MG is calculated in the 1074 Zone. The storage surplus in the 1212 Zone could be transferred through PRS 6, 9, 10, 11, and 12 to the 1074 Zone to make up for this deficit. Plans to construct two additional reservoirs in the 1212 Zone at 8 MG each would address the storage deficit in the 1074 Zone (see Ultimate Storage Analysis). Water could also be pumped from the 1010 Zone to the 1074 Zone. This would require the construction of a new booster pump station.

Table 9-5
Existing Storage Analysis

Zone	1348	1212	1074	1010	925	Total System
Average Day Demand (mgd)	3.85	15.92	7.17	6.73	-	33.67
Maximum Day Demand (mgd)	6.15	25.48	11.47	10.77	-	53.87
[1]Fire Flow Demand (gpm)	3,500	4,000	3,500	3,500	-	-
Fire Flow Duration (hrs)	4	4	4	4	-	-
[2]Fire Suppression Storage (MG)	0.84	0.96	0.84	0.84	-	-
[3]Operational Storage (MG)	1.54	6.37	2.87	2.69	-	13.47
[4]Emergency Storage (MG)	3.85	15.92	7.17	6.73	-	33.67
Fire + Operational + Emergency Storage (MG)	6.22	23.25	10.87	10.26	-	50.62
[5]Total Storage Required (MG)	6.58	24.35	11.43	10.79	-	53.16
[6]Existing Available Storage (MG)	8.75	32.00	4.75	26.50	6.00	78.00
Zone Surplus / Deficit (MG)	2.17	7.65	-6.68	15.71	6.00	24.84

[1] Highest fire flow required in zone

[2] Fire flow multiplied by duration

[3] 30% of maximum day demand for NMC, 25% of maximum day demand for OMC

[4] One average day demand

[5] (1.15 (fire suppression+operational storage))+emergency storage

[6] Includes Ontario's puchased rights of 3 MG in the JCSD 1110 reservoir - storage accounted for in 1010 Zone

9-3.3 Ultimate Storage Analysis

Table 9-6 shows the ultimate storage capacity in each zone and the reservoir capacity needed.

1212 Zone

Due to age and condition, it is assumed in the ultimate storage analysis that the 10 MG Reservoir 1212-3 will be abandoned (see Section 9-3.4 for condition assessment).

Two additional 8 MG reservoirs are recommended for the 1212 Zone. The City has acquired a site for these reservoirs near the intersection of Foothill Boulevard and Rochester Avenue in the City of Rancho Cucamonga. The reservoir site has an approximate ground elevation of 1,196 feet amsl. The City had the alignment and size of the transmission main that will connect the new 1212 Zone reservoirs to the existing system in Fourth Street between Milliken Avenue and the I-15 Freeway studied in 2005 and after the completion of the 2006 WMP (*TM*: *Hydraulic Analysis for Transmission Mains to Reservoir 1212'-4 by MWH, March 2005 and TM: Updated Hydraulic Analysis for Transmission Mains to Reservoir 1212-4A by MWH)*. Ultimately, a 30-inch diameter pipe was recommended. Three potential alignments were analyzed, with the longest alignment being about 13,600 feet. This pipe size and footage was used in this study for purposes of cost estimates in the Capital Improvement Program (see Section 11).

Table 9-6
Ultimate Storage Analysis

Zone	1348	1212	1074	1010	925	Total System
Average Day Demand (mgd)	5.11	22.86	8.70	11.34	18.71	66.72
Maximum Day Demand (mgd)	8.18	36.57	13.93	17.39	28.06	104.13
[1]Fire Flow Demand (gpm)	3,500	4,000	3,500	3,500	3,500	-
Fire Flow Duration (hrs)	4	4	4	4	4	-
[2]Fire Suppression Storage (MG)	0.84	0.96	0.84	0.84	0.84	-
[3]Operational Storage (MG)	2.05	9.14	3.48	4.35	8.42	27.44
[4]Emergency Storage (MG)	5.11	22.86	8.70	11.34	18.71	66.72
Fire + Operational + Emergency Storage (MG)	8.00	32.96	13.02	16.53	27.97	98.48
[5]Total Storage Required (MG)	8.43	34.48	13.67	17.31	29.36	103.24
[6]Existing Available Storage (MG)	8.75	22.00	4.75	26.50	6.00	68.00
Recommended Additional Storage (MG)		16.00			24.00	40.00
Total Future Available Storage (MG)	8.75	38.00	4.75	26.50	30.00	108.00
Zone Surplus / Deficit (MG)	0.32	3.52	-8.92	9.19	0.64	4.76

[1] Highest fire flow required in zone

[2] Fire flow multiplied by duration

[3] 30% of maximum day demand for NMC, 25% of maximum day demand for OMC

[4] One average day demand

[5] (1.15 (fire suppression+operational storage))+emergency storage

[6] Includes Ontario's puchased rights of 3 MG in the JCSD 1110 reservoir - storage accounted for in 1010 Zone

[6] Assumes Reservoir 1212-3 will be abandoned due to age/condition

1074 Zone

The construction of a new booster pump station is recommended to pump surplus water (9.19 mgd) from the 1010 Zone to the 1074 Zone. The storage surplus from the 1212 Zone (3.52 mgd, following the construction of two new 8 MG reservoirs) could also be transferred through PRS 6, 9, 10, 11, and 12 to the 1074 Zone in an emergency.

In lieu of constructing a new booster pump station, the City could consider constructing one additional 10 MG reservoir in the 1074 Zone. It may be possible for the City to construct the new reservoir adjacent the existing Reservoir 1074-1A and 1074-1B, which are buried reservoirs beneath John Galvin Park. This alternative is much more costly and is therefore not included in the Capital Improvement Program (see Section 11).

925 Zone

One additional 6 MG reservoir and two 9 MG reservoirs are recommended for the 925 Zone which will ultimately provide service to most of New Model Colony. The proposed 6 MG reservoir will be located adjacent the existing 6 MG reservoir (Dupont Ave and Jurupa St). The two 9 MG reservoirs are planned to be located between Bon View Avenue and Cucamoga Avenue, west of Francis Street.

9-3.4 Storage Reservoir Condition Assessment

A Reservoir Seismic Vulnerability Evaluation was conducted in 2000 by Boyle Engineering Corporation, and again in 2008 by Tetra Tech. The analyses conducted revealed that all the reservoirs had deficiencies that could potentially lead to roof damages and render them totally or partially inoperable after a seismic event. Reservoir 1212-1B and 1212-3 were determined to be under the greatest risk. Reservoir 1348-1A, 1348-1B, 1348-1C, 1212-1A, and 1074-1B were under the next greatest risk.

Recommendations from both evaluations were used as the basis of improvement projects conducted at the reservoirs over the last ten years. The remaining projects in the City's 5-year CIP include structural retrofits for the 1348 Zone Reservoirs and inlet and outlet piping seismic retrofits for Reservoir 1010-1A. These projects are included in the CIP presented in this report.

Based on review of the 2008 seismic study executive summary, the most recent tank inspection (completed September 10, 2010), and discussions with City staff, it is recommended that Reservoir 1212-3 be repaired to extend its useful life possibly for 10 to 15 years. A thorough roof inspection and repair project is recommended. Due to its age (currently 84 years old), Reservoir 1212-3 is expected to be taken out of service in the next 15 years, after the completion of Reservoir 1212-4A and 1212-4B.

Per the established criteria for concrete reservoirs, six of the City's existing reservoirs have outlived their useful life. These are Reservoir 1074-1B (1957), 1212-1A (1959), 1212-1B (1958), 1212-3 (1926), 1348-1B (1955) and 1348-1C (1958). Due to repairs completed following the latest tank inspections, the condition of these reservoirs is acceptable, with the exception of the roof of Reservoir 1212-3. Each tank should be re-inspected and its condition assessed in no more than three years following the repair work.

9-4 Model Runs and System Pressures

Existing System

The existing system was modeled with existing demands in order to confirm the system geometry and controls. Results were compared with SCADA information provided by the City.

Ultimate Maximum Day, Peak Hour Demands

Upon confirmation that the existing system model was simulating existing field conditions, the remaining hydraulic analyses for this study was primarily based upon the ultimate demands expected for the City's domestic water system. Initially, the ultimate demands were applied to the existing system plus planned facilities for the expanded 1010 Zone and the 925 Zone (see Section 10 for further descriptions). The model was run to determine areas of low pressures under maximum day peak hour conditions. These low pressure areas are shown on Figure 9-1.

Improvements were then formulated by trial and error to increase the pressures in these areas to meet the criteria of a minimum of 40 psi during peak hour conditions. These improvements are listed in Table 9-7.

Table 9-7
Peak Hour Pressures Facility Improvement Recommendations

Facility Type	Zone	Facility Description	Pipe Size (in)	Length[1] (ft)
Pressure Reducing Stations	1212 to 1074	PRS 21 - Euclid Ave and Phillips St	-	-
	1212 to 1074	PRS 22 - Vineyard Ave and Mission Blvd	-	-
	1074 to 1010	PRS 23 - Grove Ave and SR-60	-	-
Pipes	1212	Eighth St from Reservoir 1212-1A and 1B to San Antonio Ave	30	1,500
	1212	San Antonio Ave from Eighth St to Fourth St	30	5,300
	1212	Fourth St from Elderberry Ave to San Antonio Ave	18	4,300
	1212	Fourth St from San Antonio Ave to Vine Ave	18	1,450
	1212	Vine Ave from Fourth St to J St	18	700
	1212	J St from Vine Ave to Euclid Ave	18	1,600
	1212	J St east side of Euclid Ave	24	110
	1212	Campus Ave from Eighth St to Fourth St	20	5,400
	1074	Grove Ave from Phillips St to Francis St	12	4,400
	1010	Euclid Ave from PRS 2 at SR-60 to Walnut St	12	1,750
	1010	Grove Ave from PRS 3 at SR-60 to Walnut St	16	1,800
	1010	Banyan St, west of Parco Ave	6	30
	1010	Walnut St, west of Parco Ave	10	10
	1010	Maidstone St, west of Parco Ave	6	30
	1010	St. Andrews St, west of Parco Ave	8	10
			Total	**28,390**

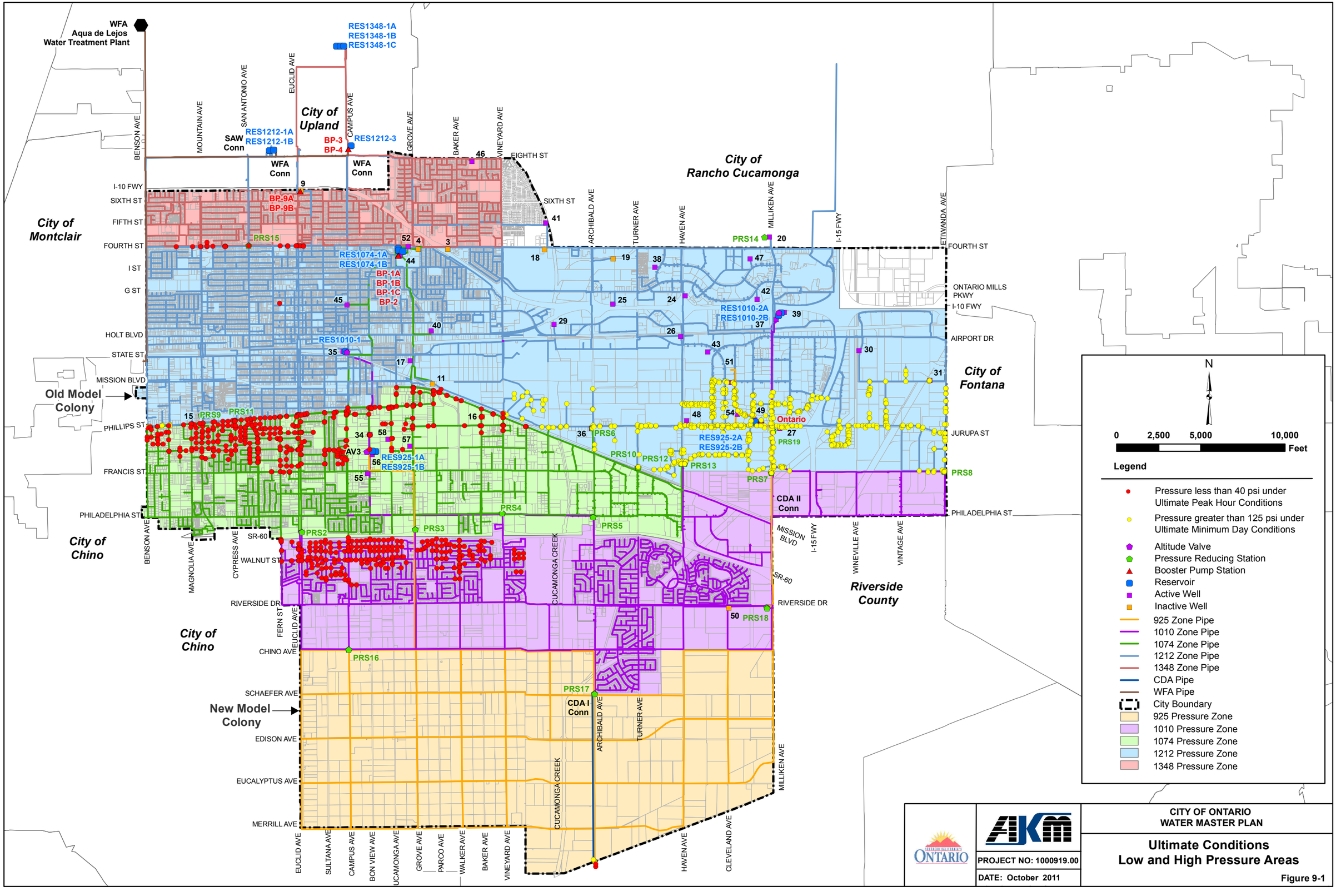
[1] *Lengths based of GIS and hydraulic model. Lengths should be verified prior to design and construction of new facilities.*

The parallel pipes listed in Table 9-7 are recommended to boost pressures in the northerly portions of the 1212 Zone, 1074 Zone and 1010 Zone. In addition, four short connections are recommended for the 1010 Zone to complete system looping and increase pressures. Each of these connections is located just west of Parco Avenue. Improvement locations are detailed on Figures 9-2 and 9-3.

Insert Figure 9-1 Ultimate Conditions, Low and High Pressure Areas

Insert Figure 9-2 Peak Hour Pressure Facility Improvement Recommendations – north

Insert Figure 9-3 Peak Hour Pressure Facility Improvement Recommendations - south



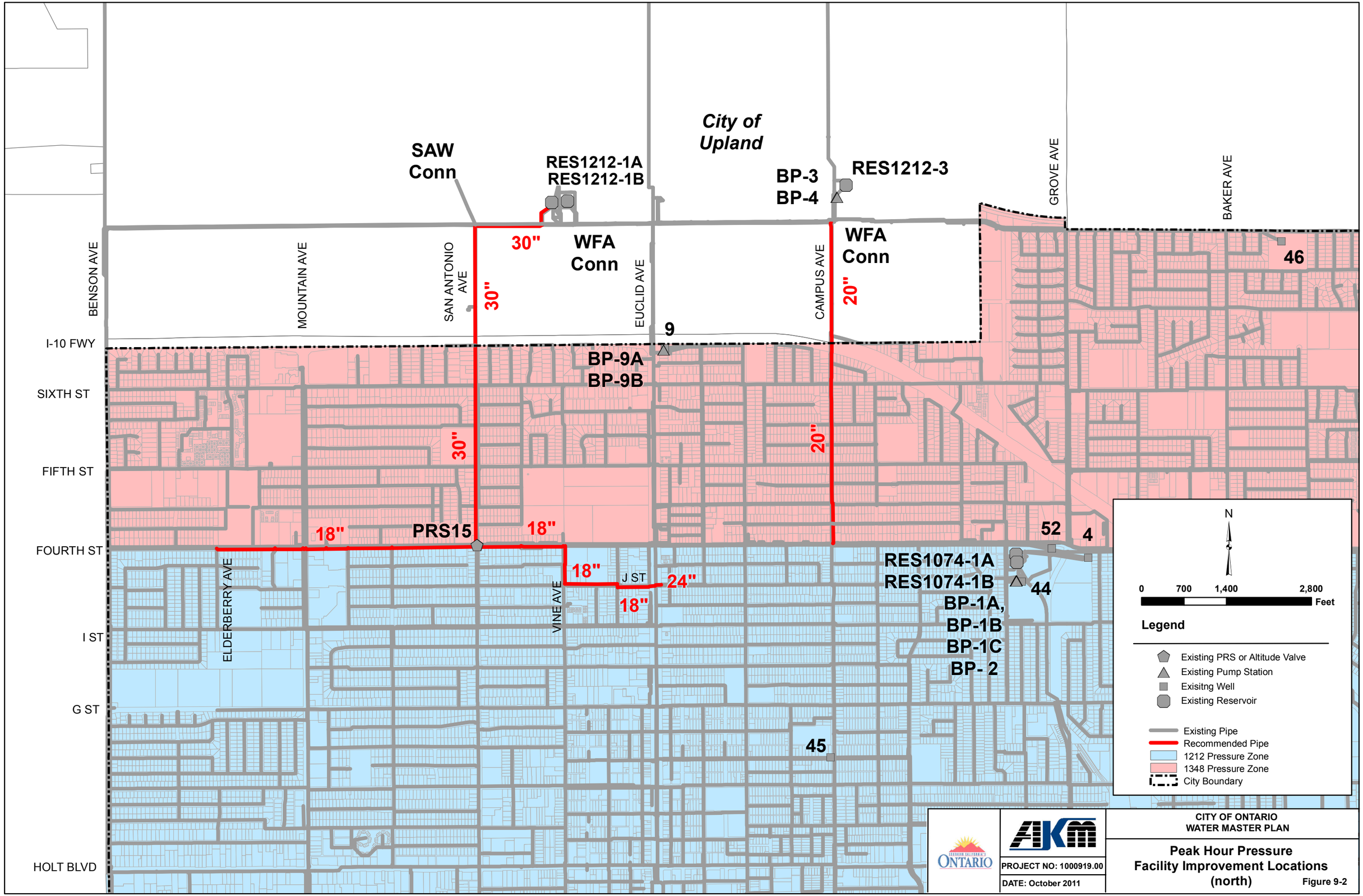
CITY OF ONTARIO
WATER MASTER PLAN

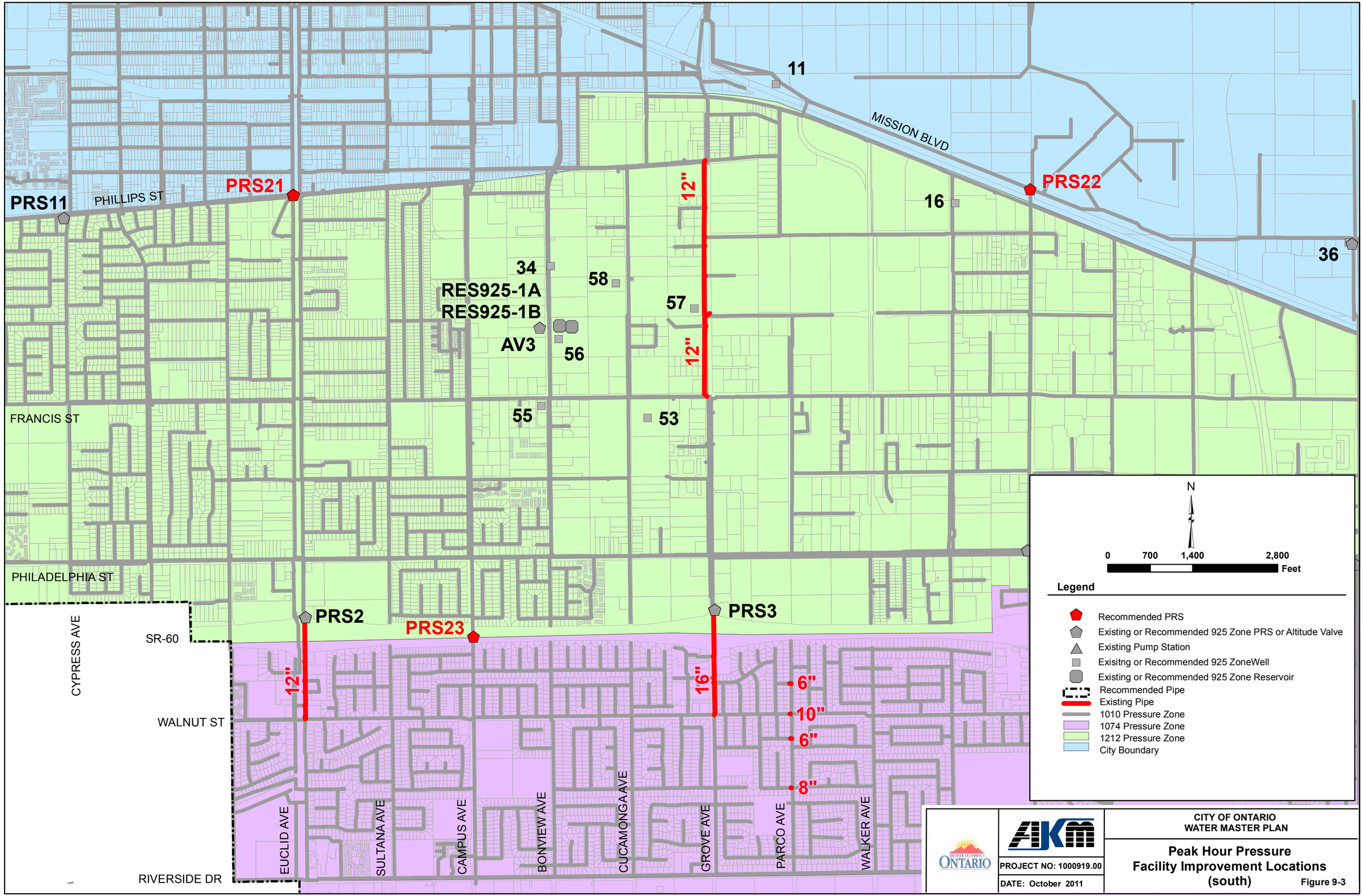
Ultimate Conditions
Low and High Pressure Areas

PROJECT NO: 1000919.00

DATE: October 2011

Figure 9-1


City of Upland
SAW Conn
RES1212-1A
RES1212-1B
BP-3
BP-4
RES1212-3
WFA Conn
WFA Conn
30"
30"
20"
20"
30"
18"
PRS15
18"
18"
24"
18"
BP-9A
BP-9B
9
46
52
4
44
45
RES1074-1A
RES1074-1B
BP-1A,
BP-1B
BP-1C
BP- 2
BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
ELDERBERRY AVE
VINE AVE
J ST
N
0
700
1,400
2,800
Feet
Legend
Existing PRS or Altitude Valve
Existing Pump Station
Exisitng Well
Existing Reservoir
Existing Pipe
Recommended Pipe
1212 Pressure Zone
1348 Pressure Zone
City Boundary
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Peak Hour Pressure
Facility Improvement Locations
(north)
Figure 9-2


PRS11
PHILLIPS ST
PRS21
PRS22
MISSION BLVD
11
16
36
34
58
57
56
55
53
RES925-1A
RES925-1B
AV3
12"
12"
FRANCIS ST
PHILADELPHIA ST
PRS2
PRS23
PRS3
12"
16"
6"
10"
6"
8"
CYPRESS AVE
SR-60
WALNUT ST
RIVERSIDE DR
EUCLID AVE
SULTANA AVE
CAMPUS AVE
BONVIEW AVE
CUCAMONGA AVE
GROVE AVE
PARCO AVE
WALKER AVE
N
0
700
1,400
2,800
Feet
Legend
Recommended PRS
Existing or Recommended 925 Zone PRS or Altitude Valve
Existing Pump Station
Exisitng or Recommended 925 ZoneWell
Existing or Recommended 925 Zone Reservoir
Recommended Pipe
Existing Pipe
1010 Pressure Zone
1074 Pressure Zone
1212 Pressure Zone
City Boundary
ONTARIO
AKM
PROJECT NO: 1000919.00
DATE: October 2011
CITY OF ONTARIO
WATER MASTER PLAN
Peak Hour Pressure
Facility Improvement Locations
(south)
Figure 9-3

Ultimate Maximum Day plus Fire Flows

System analysis was conducted with ultimate facilities and demands under maximum day plus fire flow conditions. Fire flow demands, as listed in Table 7-1 were applied at all fire nodes (nodes in close proximity to fire hydrant locations). If the fire node was located near multiple land use types, the highest fire flow demand was utilized.

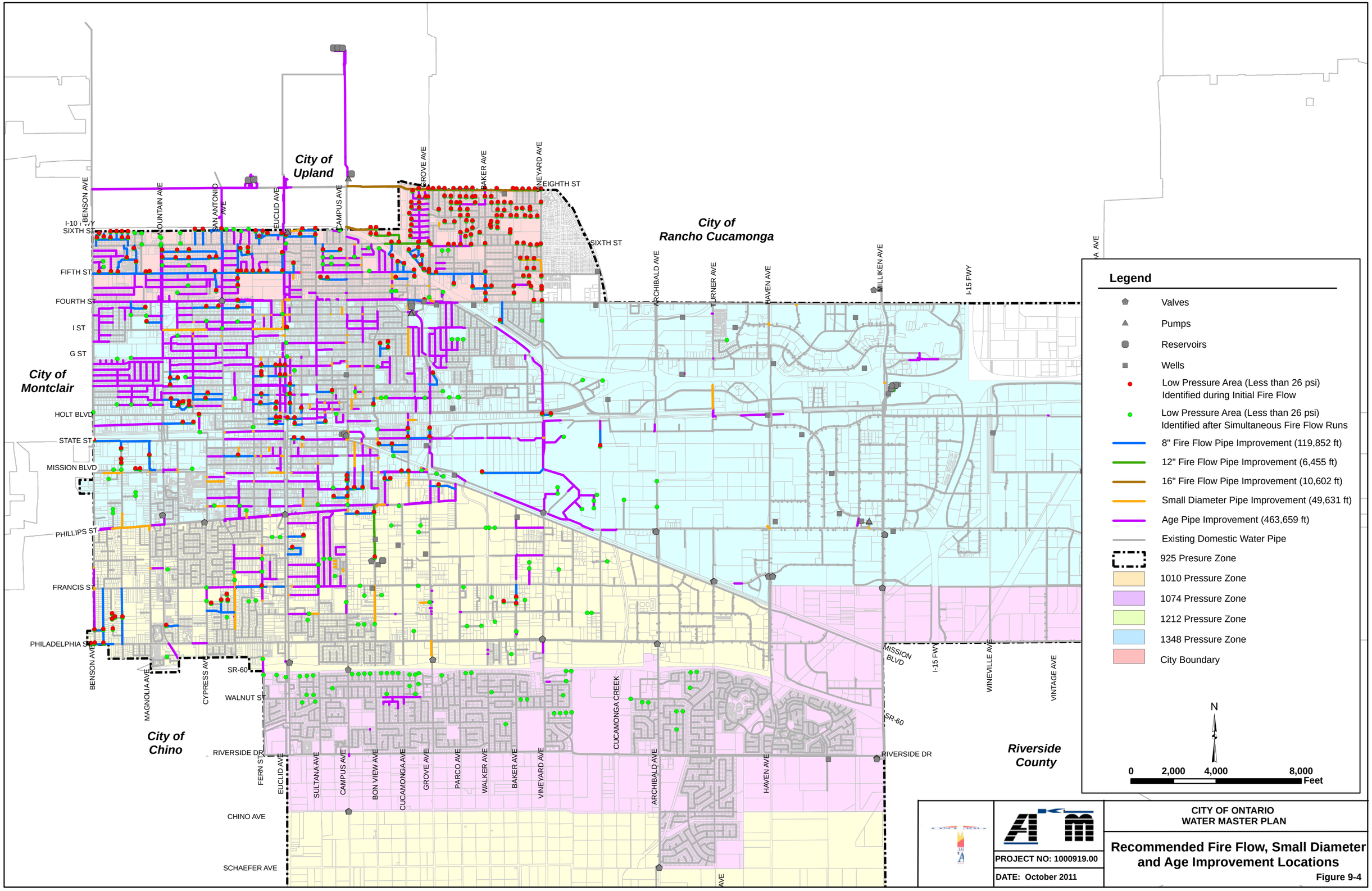
The fire flow criterion requires a residual pressure of 20 psi at the fire hydrant outlet. The hydraulic model does not include laterals from the mainline to the hydrants. It is estimated that there can be a loss of up to 6 psi through a lateral and hydrant at 1,000 to 1,500 gpm. The system evaluation is therefore based on providing 26 psi at the nearest mainline junction in the model. The analysis revealed deficiencies in the system where the required residual pressure could not be met (residual pressure < 26 psi).

Initially, the model simulation attempts to supply the entire fire flow from one location. This resulted in low residual pressures at many locations, as shown on Figure 9-4. In reality, fire fighting often takes place by using multiple fire hydrants. Therefore, the areas identified with low residual pressures were reanalyzed using a feature in the hydraulic model software called “simultaneous fire flow” analysis. Fire flows were split between multiple hydrants (typically 2 or 3) and the analysis was rerun to determine residual pressures. Often times, the system was then able to meet fire flow demands.

Finally, there were areas within the system that continued to show low residual pressures even when the simultaneous fire flow analysis was utilized. These low pressures were typically a result of small pipe sizes (4-inch and 6-inch). Improvement recommendations for additional or upsized pipes were formulated to address the fire flow deficiencies. These recommendations are shown on Figure 9-4 and a summary of the replacement pipe sizes and lengths are listed in Table 9-8. Further details of each project location are provided in Appendix 2 of this report.

Table 9-8
Summary of Facility Improvements
Needed to Meet Maximum Day
plus Fire Flow Demands

Pipe Size Replacement (in)	Length (ft)
8	119,852
12	6,455
16	10,602
Total	**136,909**



CITY OF ONTARIO
WATER MASTER PLAN

Recommended Fire Flow, Small Diameter and Age Improvement Locations

Figure 9-4

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9-5 Pipeline Replacement Program

The existing distribution system pipes were installed between 1914 and 2009. Figure 6-5 showed the system pipe length by decade of construction. The majority of the distribution system was constructed after 1960. The year of installation is unknown for about 36 miles or 35.8 percent of the existing pipes. For this study, it is assumed that the pipes with unknown year of installation predate 1960 and are therefore more than 50 years old. It is recommended that a detailed investigation be performed to determine the year of installation for all pipes in its system before replacing them.

Pipe replacements due to age are planned for all pipes constructed in or before 1960. This excludes the areas where improvements are recommended to increase peak hour pressures or fire flow pressures.

Small diameter pipe improvements are recommended for all pipes 4-inches in diameter and less. These improvement recommendations exclude the areas where improvements are recommended to increase peak hour pressures or fire flow pressures, as well as the areas where improvements are recommended due to pipe age.

The total length of pipe replacements due to age is estimated at 87.8 miles. A summary of the recommended existing water system pipeline improvements is shown in Table 9-9. Locations of fire flow, small diameter, and age improvements are shown on Figure 9-4.

Table 9-9
Summary of Existing Water System Improvements

Improvement Type	Length (feet)	Length (miles)
Pressure Improvements	28,390	5.4
Fire Flow Improvements	136,909	25.9
Age Improvements of all remaining pipes installed in or before 1960	463,659	87.8
Small Diameter Pipe Improvements (less than or equal to 4")	49,631	9.4
Total	**678,589**	**128.5**

Previously, the City conducted a pipeline replacement program where small diameter pipelines (4-inch and less) as well as pipelines identified in fire flow deficient areas were replaced. This program was not implemented in the past two years, but the City will begin the program again in FY 2011-2012. Subject to considerations such as frequent occurrence of failures in an area, street improvement projects, or other utility improvement projects, fire flow improvement projects should have higher priority over the others, with pressure improvement projects having the second highest priority. Pipe length over 50 years old will continue to increase every year. Therefore, the pipeline replacement program should be accelerated as much as possible to ascertain proper service in the future.

9-6 1010 Zone Boundary

The northeastern portion of the 1010 Zone, shown on Figure 9-5, located northeast of SR-60, is approximately 70 feet higher in average elevation than the rest of the 1010 Zone. Static pressures are therefore lower by about 30 psi than the rest of the zone. It was stated in the 2006 WMP that this area contains a number of customers with fire sprinkler systems that are designed for higher system pressures than the actual system pressures. And based on various past studies, it was recommended to rezone this area to the 1074 Zone.

The hydraulic model developed during this study did not indicate pressure problems in this area per the criteria discussed in Section 7. All maximum day, peak hour pressures exceeded the criteria of 40 psi and all fire flow demands were met with a minimum 26 psi residual pressure under maximum day conditions.

During this study, for each of the customers previously identified as receiving lower system pressures than what their sprinkler system was designed for, City staff provided the minimum criteria. The minimum criteria included a fire flow and residual pressure that the City's water system is required to supply to the customer. These fire flow demands were input into the maximum day scenario of the hydraulic model to determine the residual pressures at each location (See Appendix 5 for detailed results). Only one location, 5151 E. Philadelphia Street, resulted in a lower residual pressure than the criteria. It was therefore determined that the area in question did not need to be rezoned. The customer located at 5151 E. Philadelphia Street will have to be contacted to determine if its sprinkler system can work properly under the lower system pressure conditions or if improvements at the site are necessary.

9-7 Facility Back-up Power

Currently, the wells with standby power are Well 40 (1074 Zone), 41 (1212 Zone), 46 (1348 Zone), 47 (1212 Zone), and 49 (925 Zone).

The system has to be able to provide service during commercial power outages. All future pump stations and wells should be constructed with standby power so that at least one average day demand can be conveyed to each zone from the wells. If well capacity is not sufficient, water can be transferred via pressure reducing stations and/or booster pump stations with backup power.

Permanent back-up power should be added to Well 39. All twenty existing wells should be provided with portable generator connections and manual transfer switches. The City should purchase eight 750 KW portable generators to operate sufficient facilities to deliver one average day demand.

WFA
Aqua de Lejos
Water Treatment Plant

RES1348-1A
RES1348-1B
RES1348-1C

City of Upland

RES1212-1A
RES1212-1B

SAW Conn

BP-3
BP-4

RES1212-3

WFA Conn

WFA Conn

City of Rancho Cucamonga

City of Montclair

BP-9A
BP-9B

PRS15

RES1074-1A
RES1074-1B

BP-1A
BP-1B
BP-1C
BP-2

RES1010-1

PRS14

RES1010-2A
RES1010-2B

BP-Ontario

RES925-2A

PRS9
PRS11

PRS6

PRS12
PRS13

PRS10

PRS7

CDA II Conn

PRS8

PRS4

PRS2
PRS3
PRS5

Proposed PRS20

PRS18

CDA II Conn

PRS17

CDA I Conn

Old Model Colony

New Model Colony

City of Chino

City of Chino

Riverside County

City of Fontana

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
EIGHTH ST
SIXTH ST
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
FOURTH ST
ONTARIO MILLS PKWY
I-10 FWY
AIRPORT DR
JURUPA ST
PHILADELPHIA ST
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
MAGNOLIA AVE
CYPRESS AVE
FERN ST
CUCAMONGA CREEK
MISSION BLVD
WINEVILLE AVE
VINTAGE AVE
SULTANA AVE
PARCO AVE
WALKER AVE
CLEVELAND AVE

N

0 2,500 5,000 10,000 Feet

Legend

- Booster Pump Station
- Pressure Reducing Station
- Reservoir
- Active Well
- Inactive Well
- 1010 Zone Pipe
- 1074 Zone Pipe
- 1212 Zone Pipe
- 1348 Zone Pipe
- CDA Pipe
- WFA Pipe
- City Boundary
- 925 Pressure Zone
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone
- Possible Rezone Area

ONTARIO

AKM

PROJECT NO: 1000919.00

DATE: October 2011

CITY OF ONTARIO
WATER MASTER PLAN

Portion of 1010 Zone Considered to be Rezoned to 1074 Zone

Figure 9-5

9-8 Inter-Agency and Emergency Connections

The City's existing water system is connected with neighboring cities and water agencies through ten inter-agency connections. Currently, the City receives water from WFA and CDA on a regular basis. There are two existing CDA connections: one at Archibald Avenue and Schaefer Avenue (CDA-1) and one at Milliken Avenue and Philadelphia Street (JCSD-1/CDA2-1). In the future, when new facilities are constructed, the City will have the option to take all the CDA water from a new connection at Milliken Avenue and Riverside Drive into its 1010 Zone (JCSD-2/CDA2-2). This is the most likely future operation as it is expected to provide a significant energy savings. The existing and future inter-agency connections are listed in Table 9-10.

Table 9-10
Existing and Proposed Inter-Agency Connections

ID	Location	From		To	
Existing Inter-Agency Connections					
WFA-1	Eighth St & Fern Ave	WFA	1618'	Ontario	1212'
WFA-2	Campus Ave & A St	WFA	1618'	Ontario	1348'
CVWD-1	Sixth St & Corona Ave	Ontario	1348'	CVWD	1190' or 1310'
CVWD-2	Sixth St & Vineyard Ave	Ontario	1348'	CVWD	1190' or 1310'
CVWD-3	Milliken Ave & Sixth St	CVWD	1310'	Ontario	1212'
Chino-1	Benson Ave & State St	Ontario	1212'	Chino	980'
Upland-1	Campus Ave & Richland St	Ontario	1348'	Upland	Unknown
CDA-1	Archibald Ave & Schaefer Ave	CDA-1	Unknown	Ontario	1010'
JCSD-1/ CDA2-1	Milliken Ave & Philadelphia St	JCSD/CDA-2	1110'	Ontario	1010' or 925'
SAW - Inactive	Eighth St & San Antonio Ave	SAW	Unknown	Ontario	1212'
Future Inter-Agency Connections					
JCSD-2/ CDA2-2	Milliken Ave & Riverside Dr	JCSD/CDA-2	1110'	Ontario	1010'
Future Emergency Connections					
Chino-2	Euclid Ave & Chino Ave	Chino	980'	Ontario	925'
MVWD-1	Benson Ave & Fourth St	Ontario	1212'	MVWD	1207'
		MVWD	1355'	Ontario	1348'
Upland-2	Reservoir 1348'	Upland	Unknown	Ontario	1348'
FWC-1	Etiwanda Ave & Airport Dr	Fontana	1280'	Ontario	1212'

9-9 Water Meter Replacements

The existing system has approximately 36,658 water meters. The City had an aggressive meter replacement program in place. In 2006, 41 percent (15,000) of the water meters were reported to have been recently replaced. Since then, nearly all of the other water meters were also replaced. There are only 16 large meters remaining to be replaced.

9-10 Water System Security Upgrades

Security upgrade recommendations for the facility sites (reservoirs, wells, and booster stations) resulted from the City of Ontario's 2002 Water System Security Vulnerability Assessment. The remaining project descriptions and status are listed in Table 9-11.

Table 9-11
Water System Security Vulnerability Projects

Site	Project Description	Status as of November 2010
Reservoirs 1212-1A and 1212-1B	Retrofit vents of Reservoir 1212-1B with additional cover that is a solid sheet metal on one suface and expanded steel on the second surface	
	Repair exisitng chain link fence	Years 4 and 5 of current 5-year plan
Reservoir 1212-3	Replace perimeter fence with close mesh fence	Year 3 of current 5-year plan
	Install a fence alarm system	
Well 9	Repair or replace chain link fence on north side of site	
Well 26	Fix lighting system. Install photo-electric lights if necessary.	
Well 35 and Reservoir 1010-1	Perimeter wall should be made 8' tall	Year 2 of current 5-year plan
	Replace fence on south side of property with close mesh chain link fence	

9-11 PRS Rehabilitation

Since 2006, the City rehabilitated all of its existing pressure reducing stations. Each station was connected to the City's SCADA system with measurements of upstream pressure, downstream pressure, and flow rate.

9-12 Airport Metering and Backflow Prevention

The City has identified the metering and backflow prevention project for the Ontario International Airport to protect the City's water supply by isolating the airport's on-site water system from the public water supply. The on-site water system is outside of the public right-of-way, within secured areas, and increases maintenance time and presents difficulties in monitoring system modifications. This project consists of installation of approximately 8 meters, backflow prevention devices and related piping to isolate the on-site water system at the airport and dedicate the facilities within the airport to the Los Angeles World Airports (LAWA). (*Ref: Water and Recycled Water Master Plan, April 2006*)

SECTION 10

ULTIMATE SYSTEM

10-1 Introduction

The ultimate domestic water system will consist of five pressure zones as shown on Figure 10-1. As New Model Colony is developed, the 1010 Zone will be expanded further south to Chino Avenue and a fifth pressure zone, the 925 Zone, will be added, covering the rest of New Model Colony. A hydraulic schematic of the ultimate system is shown on Figure 10-2.

10-2 925 Zone Facilities

The future 925 Zone will provide water service to the majority of New Model Colony. This zone is generally bounded by Chino Avenue to the north, Euclid Avenue to the west, the City boundary to the south, and Milliken Avenue to the east. Some of the facilities that will ultimately serve the 925 Zone have already been constructed. Table 10-1 summarizes the existing 925 Zone facilities and the recommended facilities that are yet to be constructed. The facility locations are shown on Figure 10-3.

Table 10-1

Existing and Ultimate 925 Zone Facilities

Facility Type	Existing Facility Description		Ultimate Facility Description	
Reservoirs	Reservoir 925-2A	6 MG	Reservoir 925-2B	6 MG
			Reservoir 925-1A	9 MG
			Reservoir 925-1B	9 MG
Wells	Well 49 - 2,760 gpm	Pumps to Reservoir 925-2A	Well 48 - 2,500 gpm	Pumps to Reservoir 925-2A & 925-2B
			Well 51 - 2,500 gpm	
			Well 54 - 2,500 gpm	
			Well 55 - 2,500 gpm	Pumps to Reservoir 925-1A & 925-1B
			Well 56 - 2,500 gpm	
			Well 57 - 2,500 gpm	
			Well 58 - 2,500 gpm	
Pressure Reducing Stations	PRS17 - Capable of providing water from 1010 Zone to future 925 Zone at Archibald Ave and Schaeffer Ave		PRS16 - Capable of providing water from 1010 Zone to future 925 Zone at Chino Ave and Campus Ave	
	PRS18 - Capable of providing water from 1010 Zone to future 925 Zone at Riverside Dr and Milliken Ave			
Altitude Valves	-		AV3 - Capable of providing water from 1074 Zone to future Reservoir 925-1A and 925-1B	
Pipes	13,000 feet of pipe from Reservoir 925-2A to PRS 18		253,250 feet of pipe throughout New Model Colony (includes pipes from new wells to reservoirs and from new reservoirs to pressure zone). Proposed pipe sizes range from 12" to 42".	

**Pipe sizes recommended in 2006 WMP were maintained for this study except for pipe sizes committed to in the NMC Developer Agreement (see Figure in Appendix 3).*

WFA
Aqua de Lejos
Water Treatment Plant

RES1348-1A
RES1348-1B
RES1348-1C

RES1212-4A
RES1212-4B

City of Upland

RES1212-1A
RES1212-1B

SAW Conn

BP-3
BP-4

WFA Conn

WFA Conn

City of Rancho Cucamonga

City of Montclair

BP-9A
BP-9B

PRS15

RES1074-1A
RES1074-1B

BP-1A
BP-1B
BP-1C
BP-2

PRS14

RES1010-1

RES1010-2A
RES1010-2B

Old Model Colony

PRS9
PRS11
PRS21
PRS22

AV3

RES925-1A
RES925-1B

RES925-2A
RES925-2B

Ontario

PRS6
PRS19
PRS12
PRS13
PRS10
PRS7
PRS8
PRS4
PRS5
PRS2
PRS23
PRS3

CDA II Conn

City of Fontana

Riverside County

City of Chino

PRS18

CDA II Conn

PRS16

PRS17

CDA I Conn

New Model Colony

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
EIGHTH ST
SIXTH ST
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
FOURTH ST
ONTARIO MILLS PKWY
I-10 FWY
AIRPORT DR
JURUPA ST
PHILADELPHIA ST
MISSION BLVD
WINEVILLE AVE
VINTAGE AVE
SR-60
RIVERSIDE DR
CUCAMONGA CREEK
CLEVELAND AVE
I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
MAGNOLIA AVE
CYPRESS AVE
FERN ST
SULTANA AVE
BON VIEW AVE
PARCO AVE

N

0 2,500 5,000 10,000 Feet

Legend

- Altitude Valve
- Pressure Reducing Station
- Booster Pump Station
- Reservoir
- Active Well
- Inactive Well
- Zone 925 Pipe
- Zone 1010 Pipe
- Zone 1074 Pipe
- Zone 1212 Pipe
- Zone 1348 Pipe
- CDA Pipe
- WFA Pipe
- 925 Pressure Zone
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone
- City Boundary

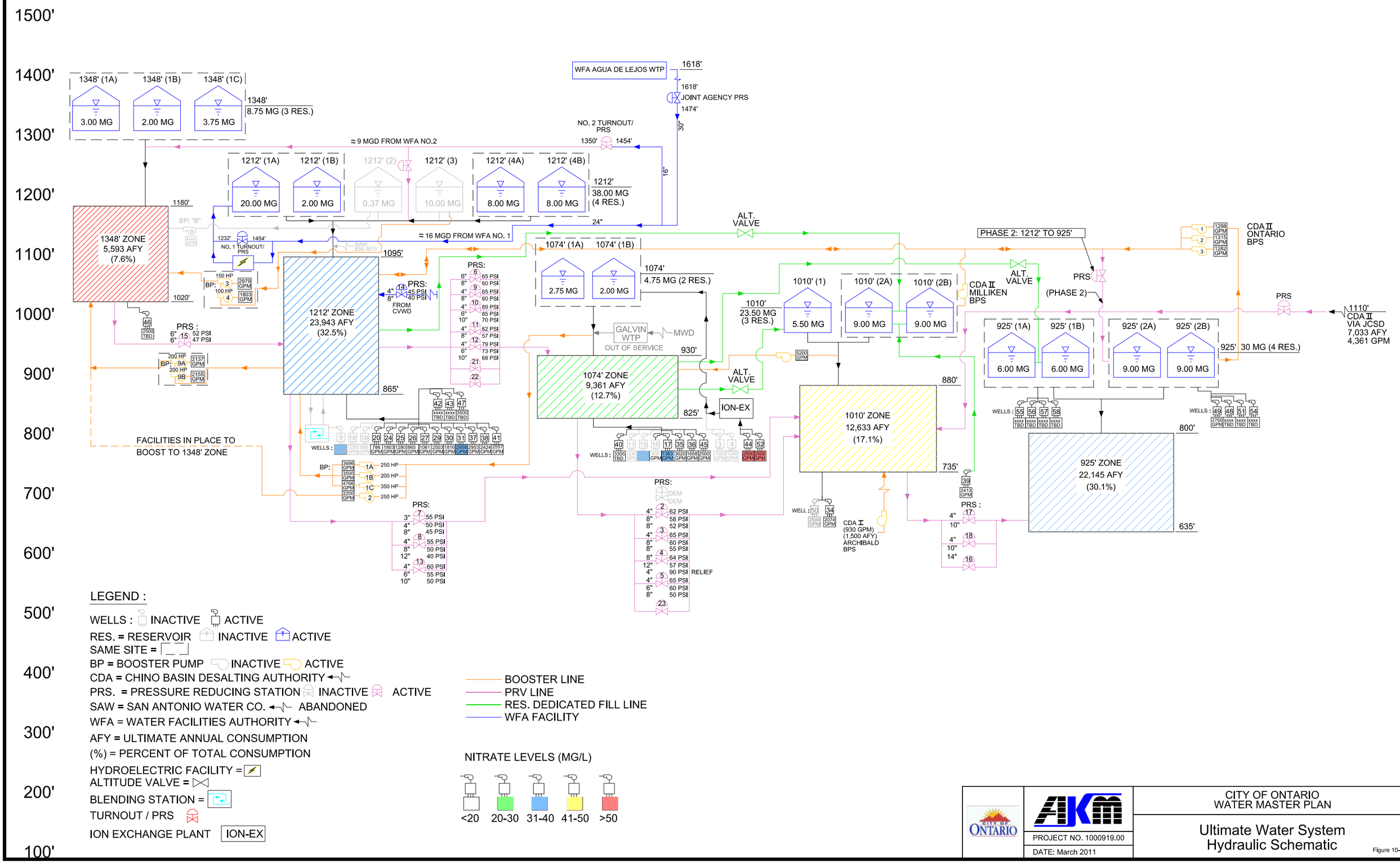
CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Ultimate Water System

Figure 10-1



CITY OF ONTARIO WATER MASTER PLAN

Ultimate Water System Hydraulic Schematic

PROJECT NO. 1000919.00

DATE: March 2011

Figure 10-2

WFA
Aqua de Lejos
Water Treatment Plant

RES1348-1A
RES1348-1B
RES1348-1C

RES1212-4A
RES1212-4B

City of Upland

City of Rancho Cucamonga

City of Montclair

City of Fontana

City of Chino

Riverside County

Old Model Colony

New Model Colony

SAW Conn

WFA Conn

BP-3
BP-4

RES1212-1A
RES1212-1B

BP-9A
BP-9B

PRS15

RES1074-1A
RES1074-1B

BP-1A
BP-1B
BP-1
BP-C
BP-2

RES1010-1

RES1010-2A
RES1010-2B

PRS14

PRS21

PRS22

PRS23

PRS16

PRS17

PRS1
PRS2
PRS3
PRS4
PRS5
PRS6
PRS7
PRS8
PRS9
PRS10
PRS11
PRS12
PRS13
PRS18
PRS19

RES925-1A
RES925-1B

RES925-2A
RES925-2B

AV3

CDA II Conn

CDA I Conn

Ontario

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
CUCAMONGA CREEK
BON VIEW AVE
PARCO AVE
WALKER AVE
SULTANA AVE
FERN ST
WINEVILLE AVE
VINTAGE AVE
CLEVELAND AVE

I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
EIGHTH ST
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST

N

0 2,500 5,000 10,000 Feet

Legend

- Recommended Altitude Valve/PRS
- Altitude Valve/PRS
- Booster Pump Station
- Recommended Well
- Well
- Recommended Reservoir
- Reservoir
- Pipe
- Recommended Pipe
- Recommended Pipe for 1010 Zone Expansion
- Recommended Pipe for 925 Zone
- 925 Pressure Zone
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone
- City Boundary

CITY OF ONTARIO
WATER MASTER PLAN

PROJECT NO: 1000919.00

DATE: October 2011

Ultimate System Improvements

Figure 10-3

10-3 Expanded 1010 Zone Facilities

The southerly boundary of the existing 1010 Zone will ultimately be expanded south to Chino Avenue from Euclid Avenue to Milliken Avenue. Currently, mainline pipes are planned in major streets as shown on Figure 10-2. The future pipes will tie into existing 1010 Zone pipes in Riverside Drive. The expanded 1010 Zone will require approximately 58,650 feet of mainline pipes. Recommended sizes range from 12-inches to 18-inches. Pipe sizes recommended in the 2006 WMP and existing agreements with developers were maintained for this study.

A new booster pump station from 1010 Zone to 1074 Zone is recommended to provide water to 1074 Zone in emergencies or when storage reserves are low. The location of this future pump station should be determined during a preliminary design study.

10-4 1212 Zone Facilities

It is recommended that the future 1212 Zone include two additional 8 MG reservoirs (1212-4A and 1212-4B) to meet the storage criteria. The City has obtained a site located north of Foothill Boulevard and west of Rochester Avenue in the City of Rancho Cucamonga. Piping has already been installed through the adjacent shopping center located on the property east of the reservoir site. The total length of 30-inch pipe required to connect the future Reservoirs 1212-4A and 1212-4B to the existing system is approximately 13,600 feet (will depend on final alignment). The new pipe is proposed to tie into an existing 24-inch waterline in Fourth Street. See Figure 10-2 for approximate locations of the recommended 1212 Zone facilities. Reservoir 1212-3 will be abandoned following the construction of Reservoir 1212-4A and 1212-4B.

Under ultimate conditions, the City may take up to 25 mgd from WFA connections in the 1212 Zone. Some of this water needs to be conveyed south through pressure reducing stations to serve other zones. Pressure reducing stations between the 1212 Zone and 1074 Zone are currently located on the east and west end of the 1074 Zone. Two additional pressure reducing stations are recommended at Euclid Avenue and Vineyard Avenue to assist in increasing pressures in the north central portion of the 1074 Zone. Another pressure reducing station is recommended between the 1074 Zone and 1010 Zone at Grove Avenue and SR-60, to increase the pressures in the northern portion of the 1010 Zone.

10-5 Facilities Recommended to Maintain Minimum Peak Hour Pressures

System analysis conducted with existing facilities and ultimate demands resulted in the identification of areas with pressures less than 40 psi under maximum day, peak hour conditions. These areas of low peak hour pressures are shown on Figure 9-1. The recommended improvements to the existing system to maintain minimum peak hour pressures are shown on Figure 9-2 and 9-3 and are listed in Table 9-5.

10-6 Facilities Recommended to Meet Maximum Day plus Fire Flow Demands

System analysis conducted with ultimate facilities and demands under maximum day plus fire flow conditions resulted in the need for additional or upsized pipes. The recommendations resulting from this analysis are shown on Figure 9-4 and in Table 9-6.

10-7 Milliken Booster Pump Station

The City's Chino II Desalter product water entitlements from CDA will increase by 3,533 AFY following the completion of the Chino II expansion project. The total supply from CDA II will be 7,033 AFY. New facilities are being designed so that the CDA II product water can be delivered to the City's 1010 Zone in the vicinity of the intersection of Milliken Avenue and Riverside Drive. Ultimately, the water will be pressure reduced through PRS 18 to supply water to the City's 925 Zone (New Model Colony).

Until New Model Colony is further developed, it is proposed to construct a pump station that will pump the CDA II water from the 1010 Zone to the 1212 Zone. The Milliken Booster Pump Station is proposed to be constructed adjacent to and take suction from Reservoir 1010-2A and 1010-2B, located on the southeast corner of Milliken Avenue and the I-10 Freeway. Per the *Chino Desalter Phase 3 Comprehensive Predesign Report (June 2010),* the Milliken Pump Stations will have a firm capacity of about 5,560 gpm.

SECTION 11

CAPITAL IMPROVEMENT PROGRAM

11-1 Introduction

The Capital Improvement Program (CIP) consists of projects that will enhance the system to meet the established criteria, properly maintain the system's assets, and replace the facilities that have reached the end of their useful lives. The goal of the CIP is to provide the City with a long-range planning tool that will allow construction of the recommended projects in an orderly manner to improve the existing system and provide for future growth. In order to accomplish this goal, it is necessary to determine the estimated cost of the needed water system improvements identified in this report, establish a basis and prioritize each of the projects.

The recommended CIP is shown in Table 11-1. Project locations are shown on Figure 11-1. Some project details are shown on Figure 11-2 through Figure 11-6.

11-2 Cost Estimates

Cost estimates have been prepared for each recommended project, based upon information from recent similar projects. The pipeline replacement costs are based upon $15 per diameter inch per foot for the OMC and $12 per diameter inch per foot for the NMC. The City of Ontario's Old Model Colony is largely developed, and future pipelines will be constructed along alignments with many existing utilities. Therefore, the costs of constructing new or replacement facilities will be generally higher in this area than one that is undeveloped. New well costs include providing permanent back-up power. Construction costs can be expected to fluctuate as changes occur in the economy. These costs should therefore be reevaluated and updated annually based upon Engineering News Record (ENR) Index for the Los Angeles area (ENRLA), with the base ENRLA Index of 10,285 for April 2012.

It should be noted that some of the improvements recommended herein are conceptual in nature based on existing planning information available. Therefore, they should not be considered as absolute for final design. Further analysis and refinement will be necessary prior to commencing work on the final plans, specifications and estimates package for each project. Detailed preliminary design studies should be prepared to select the final design projects.

The cost estimates that follow were generated by estimating the quantities of required items for each improvement, and applying typical unit prices to obtain the total estimated construction costs. Contingencies are estimated at 10 percent of the construction cost. Engineering and administration costs are estimated at 15 percent of the construction plus contingency costs. The resultant sum is the total estimated project cost. The resultant sum is the total estimated project cost. Cost estimates for each recommended project are shown in Table 11-1.

Projects are identified in Table 11-1 as a part of the OMC or the NMC (column "OMC/NMC") and as needed due to existing conditions or ultimate conditions (column "Ex/Ult"). All fire flow deficiencies found in the OMC are assigned to the existing OMC cost. Fire flow deficiencies were all found under existing conditions, but projects were developed so that the fire flows could be met under ultimate conditions as well. A summary of the total costs are as follows:

Existing OMC cost: $ 157,788,220

Ultimate OMC cost: $ 35,077,180

Ultimate NMC cost: $ 153,097,660

Total CIP cost: $ 345,963,060 (not including annual OMC improvement project costs)

Annual OMC improvement project cost: $675,000

11-3 Project Priorities

The primary consideration in establishing project priorities for the capital improvement program list must always be given to the health, safety and welfare of the public and the customers. In general, the projects necessary to improve the existing system are scheduled earlier in the order of supply, pumping and storage. Fire protection rates as a high priority, but is usually dependent on the supply and storage, as well as the distribution system.

Supply improvements rate in the order of benefit to the overall system, and reliability during emergencies such as multiple sources.

Pumping improvements rate in the order of ability to augment fire flows, capacity to maintain adequate storage levels in the reservoirs, and redundancy of power and pumps to provide adequate service during emergencies.

Storage improvements rank in the order of fire protection, operational capability to meet average and peak flows, and emergencies.

With these guidelines, the projects recommended in this report and their estimated costs were examined and sorted. Each project is shown with its total estimated project cost. The City should review this schedule and adjust it annually to respond to changed conditions and to take advantage of concurrent construction such as street paving projects or adjacent infrastructure work.

Projects in New Model Colony or related to service to New Model Colony will be dependent upon the progression of development, which is relatively unknown at this time. Therefore, the New Model Colony projects are not prioritized in Table 11-1.

Table 11-1
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC	Ex/ Ult	Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Improvement Projects																
1	O-1	WAXXXX	OMC	Ex	Other		1348 Zone Reservoirs Structural Retrofits	3	Reservoir	5,000,000	$/project	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	5,000,000
2	O-2	WA0901	OMC	Ex	Other		Reservoir 1010-1A Piping Seismic Retrofits	1	Reservoir	102,000	$/project	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	102,000
3	S-1	WA9910	OMC	Ex	Supply		CIP Well #43 in the 1212 Zone Equipping of Well drilled in 2008	1	Well	1,600,000	$/Well	1,600,000	160,000	35,000	150,000	1,945,000
4	S-2		OMC	Ex	Supply		CIP Well #42 in the 1212 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
5	S-3		OMC	Ex	Supply		Treatment for OMC Wells			Lump Sum		8,890,000	889,000	977,900	488,950	11,245,850
6	S-4	Skipped														
7	S-5	Skipped														
8	S-6	Skipped														
9	S-7		OMC	Ex	Supply		Well #11 Abandon due to continuing sanding problem (1074 Zone)	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
10	R-1		OMC	Ex	Reliability		Backup Power for Well 39 (500 KW) - 1010 Zone	500	KW	500,000	$/Well	500,000	50,000	55,000	27,500	632,500
11	ST-1		OMC	Ex	Storage		Replace Roof on Reservoir 1212-3	73,100	sq ft	10	$/sq ft	731,000	73,100	80,410	40,205	924,715
12	ST-2		OMC	Ex	Storage		Booster Pump Station from 1010 Zone to 1074 Zone - Location to be determined	300	HP	5,000	$/HP	1,500,000	150,000	165,000	82,500	1,897,500
13	O-3	WA0301	OMC	Ex	Other		Airport Metering and Backflow Prevention - Planning	8	meters	120,000	$/study	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	120,000
14	O-4	WA0301	OMC	Ex	Other		Airport Metering and Backflow Prevention - Construction	8	meters	300,000	$/project	300,000	30,000	33,000	16,500	379,500
15	R-2		OMC	Ex	Reliability		Portable Generator Connection and Manual Transfer Switch	2	Well	250,000	$/Well	500,000	50,000	55,000	27,500	632,500
16	R-3		OMC	Ex	Reliability		Portable Generators-750 KW	2	EA	500,000	$/Genset	1,000,000	100,000	110,000	55,000	1,265,000
17	S-8		OMC	Ex	Supply		Abandon Existing OMC Well #9	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
18	S-9		OMC	Ex	Supply		Abandon Existing OMC Well #15	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
19	S-10		OMC	Ex	Supply		Abandon Existing OMC Well #16	1	Well	100,000	$/Well	100,000	10,000	11,000	5,500	126,500
20	S-11	Skipped														
21	S-12		OMC	Ex	Supply		Abandon John Galvin Facility	1	LS	400,000	LS	400,000	40,000	44,000	22,000	506,000
22	P-1		OMC	Ex	Pressure		20-inch pipeline in Campus Ave from Eighth St to Fourth St (1212 Zone)	5,400	ft	300	$/ft	1,620,000	162,000	178,200	89,100	2,049,300
23	P-2		OMC	Ex	Pressure		30-inch pipeline in Eighth St from Reservoir 1212-1A and 1212-1B to San Antonio Ave (1212 Zone)	1,500	ft	450	$/ft	675,000	67,500	74,250	37,125	853,875
24	P-3		OMC	Ex	Pressure		30-inch pipeline in San Antonio Ave from Eighth St to Fourth St (1212 Zone)	5,300	ft	450	$/ft	2,385,000	238,500	262,350	131,175	3,017,025
25	P-4		OMC	Ex	Pressure		18-inch pipeline in Fourth St from Elderberry Ave to San Antonio Ave (1212 Zone)	4,300	ft	270	$/ft	1,161,000	116,100	127,710	63,855	1,468,665
26	P-5		OMC	Ex	Pressure		18-inch pipeline in Fourth St from San Antonio Ave to Vine Ave (1212 Zone)	1,450	ft	270	$/ft	391,500	39,150	43,065	21,533	495,248
27	P-6		OMC	Ex	Pressure		18-inch pipeline in Vine Ave from Fouth St to J St (1212 Zone)	700	ft	270	$/ft	189,000	18,900	20,790	10,395	239,085
28	P-7		OMC	Ex	Pressure		18-inch pipeline in J St from Vine Ave to Euclid Ave (1212 Zone)	1,600	ft	270	$/ft	432,000	43,200	47,520	23,760	546,480
29	P-8		OMC	Ex	Pressure		24-inch pipeline in J St east side of Euclid Ave (1212 Zone)	110	ft	360	$/ft	39,600	3,960	4,356	2,178	50,094
30	P-9		OMC	Ult	Pressure		PRS 21 at Euclid Ave and Phillips St (from 1212 Zone to 1074 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
31	P-10		OMC	Ult	Pressure		PRS 22 at Vineyard Ave and Mission Blvd (from 1212 Zone to 1074 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
32	P-11		OMC	Ult	Pressure		12-inch pipeline in Grove Ave from Philips St to Francis St (1074 Zone)	4,400	ft	180	$/ft	792,000	79,200	87,120	43,560	1,001,880
33	P-12		OMC	Ult	Pressure		12-inch pipeline in Euclid Ave from PRS 2 at SR-60 to Walnut St (1010 Zone)	1,750	ft	180	$/ft	315,000	31,500	34,650	17,325	398,475
34	P-13		OMC	Ult	Pressure		16-inch pipeline in Grove Ave from PRS 3 at SR-60 to Walnut St (1010 Zone)	1,800	ft	240	$/ft	432,000	43,200	47,520	23,760	546,480
35	P-14		OMC	Ult	Pressure		PRS 23 at SR-60 and Campus Ave (from 1074 Zone to 1010 Zone)	4 and 8	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
36	P-15		OMC	Ult	Pressure		6-inch pipeline in Banyan St, west of Parco Ave (1010 Zone)	30	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
37	P-16		OMC	Ult	Pressure		10-inch pipeline in Walnut St, west of Parco Ave (1010 Zone)	10	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
38	P-17		OMC	Ult	Pressure		6-inch pipeline in Maidstone St, west of Parco Ave (1010 Zone)	30	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
39	P-18		OMC	Ult	Pressure		8-inch pipeline in St. Andrews St, west of Parco Ave (1010 Zone)	10	ft	30,000	$/project	30,000	3,000	3,300	1,650	37,950
40	ST-3		OMC	Ult	Storage		Reservoir 1212-4A	8.0	MG	1.20	$/gallon	9,600,000	960,000	1,056,000	528,000	12,144,000
41	ST-4		OMC	Ult	Storage		Reservoir 1212-4B	8.0	MG	1.20	$/gallon	9,600,000	960,000	1,056,000	528,000	12,144,000
42	ST-5		OMC	Ult	Storage		30-inch transmission line from Reservoir 1212-4A and 1212-4B	13,600	ft	450	$/ft	6,120,000	612,000	673,200	336,600	7,741,800
43	ST-6		OMC	Ex	Storage		Abandon Reservoir 1212-3 (condition/age)	10.0	MG	30	$/CY	1,485,000	148,500	163,350	81,675	1,878,525
44	R-11		OMC	Ex	Reliability		Future Emergency Connection (MVWD-1)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
45	R-12		OMC	Ex	Reliability		Future Emergency Connection (Chino-2)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
46	R-13		OMC	Ex	Reliability		Future Emergency Connection (FWC-1)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
47	R-14		OMC	Ex	Reliability		Future Emergency Connection (Upland-2)	1	Connection	250,000	$/connection	250,000	25,000	27,500	13,750	316,250
											Subtotal	**55,728,100**	**5,572,810**	**5,989,091**	**3,127,046**	**75,639,047**

Table 11-1 (Continued)
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Annual Improvement Projects																
48	ST-7	WA0206	OMC	Ex	Storage		Reservoir recoating/repainting/repair			150,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	150,000
49	O-5	WA0205	OMC	Ex	Other		Facility Security Improvements			200,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	200,000
50	O-6	WA0605	OMC	Ex	Other		New Meter Installations			75,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	75,000
51	O-7	WA0602	OMC	Ex	Other		Water Meter Replacements			250,000	$/year	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	250,000
											Subtotal					**675,000**
Old Model Colony Old and Small Pipe Replacement Projects																
52	O-8		OMC	Ex	Condition/Age	8" & Less	Improvements Due to Pipe Age (pipes constructed in or before 1960)- Replace with 8"	357,343	ft	120	$/ft	42,881,161	4,288,116	4,716,928	2,358,464	54,244,669
53	O-8		OMC	Ex	Condition/Age	10" & 12"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 12"	43,580	ft	180	$/ft	7,844,368	784,437	862,880	431,440	9,923,125
54	O-8		OMC	Ex	Condition/Age	14" & 16"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 16"	13,588	ft	240	$/ft	3,261,204	326,120	358,732	179,366	4,125,424
55	O-8		OMC	Ex	Condition/Age	16" to 18"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 18"	38,380	ft	270	$/ft	10,362,720	1,036,272	1,139,899	569,950	13,108,840
56	O-8		OMC	Ex	Condition/Age	18" to 20"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 20"	4,582	ft	300	$/ft	1,374,520	137,452	151,197	75,599	1,738,768
57	O-8		OMC	Ex	Condition/Age	20" to 24"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 24"	5,569	ft	360	$/ft	2,005,002	200,500	220,550	110,275	2,536,328
58	O-8		OMC	Ex	Condition/Age	24" to 36"	Improvements Due to Pipe Age (pipes constructed in or before 1960) - Replace with 36"	616	ft	540	$/ft	332,640	33,264	36,590	18,295	420,789
59	O-9		OMC	Ex	Size	4" & Less	Replace Small Diameter Pipes with 8-inch Pipe (pipes 4-inch and smaller)	49,631	ft	120	$/ft	5,955,720	595,572	655,129	327,565	7,533,986
											Subtotal	**74,017,336**	**7,401,734**	**8,141,907**	**4,070,953**	**93,631,930**
New Model Colony Improvement Projects																
60	ST-8		NMC	Ult	Storage		Reservoir 925-1A	9.0	MG	1.20	$/gallon	10,800,000	1,080,000	1,188,000	594,000	13,662,000
61	ST-9		NMC	Ult	Storage		Reservoir 925-1B	9.0	MG	1.20	$/gallon	10,800,000	1,080,000	1,188,000	594,000	13,662,000
62	ST-10		NMC	Ult	Storage		Reservoir 925-2B	6.0	MG	1.20	$/gallon	7,200,000	720,000	792,000	396,000	9,108,000
63	S-13		NMC	Ult	Supply		Altitude Valve from 1074 Zone to 925 Zone at Reservoir 925-1A and 925-1B	12	inch	250,000	$/valve	250,000	25,000	27,500	13,750	316,250
64	S-14		NMC	Ult	Supply		Land Acquisition for Well #48 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
65	S-15		NMC	Ult	Supply		NMC Well #48 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
66	S-16		NMC	Ult	Supply		18-inch well collecting line for Well 48 and 54 to Reservoir 925-2A	3,000	ft	216	$/ft	648,000	64,800	71,280	35,640	819,720
67	S-17		NMC	Ult	Supply		24-inch well collecting line for Well 48 and 54 to Reservoir 925-2A	900	ft	288	$/ft	259,200	25,920	28,512	14,256	327,888
68	S-18		NMC	Ult	Supply		30-inch well collecting line for Well 48 to Reservoir 925-2A	400	ft	360	$/ft	144,000	14,400	15,840	7,920	182,160
69	S-19		NMC	Ult	Supply		Land Acquisition for Well #51 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
70	S-20		NMC	Ult	Supply		NMC Well #51 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
71	S-21		NMC	Ult	Supply		18-inch well collecting line for Well 51 to Reservoir 925-2A	4,000	ft	216	$/ft	864,000	86,400	95,040	47,520	1,092,960
72	S-22		NMC	Ult	Supply		Land Acquisition for Well #54 in 925 Zone	1	Well	0	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	0
73	S-23		NMC	Ult	Supply		NMC Well #54 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
74	S-24		NMC	Ult	Supply		18-inch well collecting line for Well 54 to Reservoir 925-2A	500	ft	216	$/ft	108,000	10,800	11,880	5,940	136,620
75	S-25		NMC	Ult	Supply		Land Acquisition for Well #55 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
76	S-26		NMC	Ult	Supply		NMC Well #55 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
77	S-27	Skipped														
78	S-28		NMC	Ult	Supply		Land Acquisition for Well #56 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
79	S-29		NMC	Ult	Supply		NMC Well #56 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
80	S-30		NMC	Ult	Supply		30-inch line from Well 56 to intersection of Bonview Ave and Francis St	1,400	ft	480	$/ft	672,000	67,200	73,920	36,960	850,080
81	S-31	Skipped														
82	S-32		NMC	Ult	Supply		30-inch line in Francis St from Bonview Ave to Grove Ave	2,700	ft	360	$/ft	972,000	97,200	106,920	53,460	1,229,580
83	S-33		NMC	Ult	Supply		Land Acquisition for Well #57 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
84	S-34		NMC	Ult	Supply		NMC Well #57 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
85	S-35		NMC	Ult	Supply		18-inch well collecting line from Well 57 to intersection of Francis St and Grove Ave	1,500	ft	216	$/ft	324,000	32,400	35,640	17,820	409,860
86	S-36		NMC	Ult	Supply		Land Acquisition for Well #58 in 925 Zone	1	Well	300,000	$/site	n/a (LS)	n/a (LS)	n/a (LS)	n/a (LS)	300,000
87	S-37		NMC	Ult	Supply		NMC Well #58 in the 925 Zone	1	Well	2,800,000	$/Well	2,800,000	280,000	308,000	154,000	3,542,000
88	S-38		NMC	Ult	Supply		18-inch well collecting line from Well 58 to intersection of Francis St and Cucamonga Ave	2,000	ft	216	$/ft	432,000	43,200	47,520	23,760	546,480
89	S-39		NMC	Ult	Supply		PRS 16 at Campus Ave and Chino Ave (from 1010 Zone to 925 Zone)	8 and 12	inch	250,000	$/station	250,000	25,000	27,500	13,750	316,250
90	S-40		NMC	Ult	Supply		Treatment at Bon View and Jurupa Reservoir Sites	1	Site	10,000,000	$/well	10,000,000	1,000,000	1,100,000	550,000	12,650,000
91	T-1		NMC	Ult	Transmission		12-inch distribution lines (925 Zone)	173,150	ft	144	$/ft	24,933,600	2,493,360	2,742,696	1,371,348	31,541,004
92	T-2		NMC	Ult	Transmission		18-inch distribution lines (925 Zone), Chino Ave	5,300	ft	216	$/ft	1,144,800	114,480	125,928	62,964	1,448,172
93	T-3		NMC	Ult	Transmission		18-inch distribution lines (925 Zone), Chino Ave	6,600	ft	216	$/ft	1,425,600	142,560	156,816	78,408	1,803,384

Table 11-1 (Continued)
Capital Improvement Program

Row No.	WMP Project No.	City's CIP Project No.	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
New Model Colony Improvement Projects continued																
94	T-4		NMC	Ult	Transmission		24-inch distribution lines (925 Zone), Milliken Ave, Eucalyptus Ave, Archibald Ave, Edison Ave	29,200	ft	288	$/ft	8,409,600	840,960	925,056	462,528	10,638,144
95	T-5		NMC	Ult	Transmission		30-inch distribution lines (925 Zone), Grove Ave, Milliken Ave	11,900	ft	360	$/ft	4,284,000	428,400	471,240	235,620	5,419,260
96	T-6		NMC	Ult	Transmission		42-inch distribution lines (925 Zone), Grove Ave btw Reservoir 925-1A and Chino Ave	10,700	ft	504	$/ft	5,392,800	539,280	593,208	296,604	6,821,892
97	T-7		NMC	Ult	Transmission		12-inch distribution lines (1010 Zone)	20,900	ft	144	$/ft	3,009,600	300,960	331,056	165,528	3,807,144
98	T-8		NMC	Ult	Transmission		18-inch distribution lines (1010 Zone), Cleveland Ave north of Chino Ave.	950	ft	216	$/ft	205,200	20,520	22,572	11,286	259,578
99	T-9		NMC	Ult	Transmission		18-inch distribution lines (1010 Zone), Chino Ave,Riverside Dr, Campus Ave	36,800	ft	216	$/ft	7,948,800	794,880	874,368	437,184	10,055,232
												120,077,200	**12,007,720**	**13,208,492**	**6,604,246**	**153,097,658**
Old Model Colony Fire Flow Improvement Projects																
100	FF-1	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Deodar St, Fuchsia Ct, Oaks Ct, Iris Ct, Jasmine Ct, Fuchsia Ave, Helen Ct, Gardenia Ct	3,852	ft	120	$/ft	462,240	46,224	50,846	25,423	584,734
101	FF-2	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Elderberry Ave, Gardenia Ave, Alley between Sixth St and Fifth St, Alley between Helen Ave and Elderberry Ave, Alley between Gardenia Ave and Elderberry Ave	3,614	ft	120	$/ft	433,680	43,368	47,705	23,852	548,605
102	FF-3	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Fifth St, Helen Ave, College Wy. Two new connections are recommended; 1 - Euclid Ave and Harvard St connect the fire hydrant to 12-inch pipe in Euclid Ave, 2 - Harvard St and Alley east of Euclid Ave connect the fire hydrant to 8-inch pipe in Harvard St	10,770	ft	120	$/ft	1,292,400	129,240	142,164	71,082	1,634,886
103	FF-4	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Rosewood Ct, Elderberry Ave	964	ft	120	$/ft	115,680	11,568	12,725	6,362	146,335
104	FF-5	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - State St, Oaks Ave, Mission Blvd, Magnolia Ave	5,018	ft	120	$/ft	602,160	60,216	66,238	33,119	761,732
105	FF-6	1074	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Helen Ave, Benson Ave, Philadelphia St	4,090	ft	120	$/ft	490,800	49,080	53,988	26,994	620,862
106	FF-7	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Oaks Ave	2,621	ft	120	$/ft	314,520	31,452	34,597	17,299	397,868
107	FF-8	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Boulder Ave, Granite Ave	1,281	ft	120	$/ft	153,720	15,372	16,909	8,455	194,456
108	FF-9	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - San Antonio Ave, Cypress Ave	1,232	ft	120	$/ft	147,840	14,784	16,262	8,131	187,018
109	FF-10	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - La Deney Dr, Cypress Dr, Hawthorne St, San Antonio Ave	6,379	ft	120	$/ft	765,480	76,548	84,203	42,101	968,332
110	FF-11	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Cypress Dr	925	ft	120	$/ft	111,000	11,100	12,210	6,105	140,415
111	FF-12	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Rosewood St, Rosewood Ct	1,194	ft	120	$/ft	143,280	14,328	15,761	7,880	181,249
112	FF-13	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Fourth St, Rosewood Dr	1,821	ft	120	$/ft	218,520	21,852	24,037	12,019	276,428
113	FF-14	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Palmetto Ave	1,041	ft	120	$/ft	124,920	12,492	13,741	6,871	158,024
114	FF-15	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Pinyon Dr, Pinyon Ct, Vesta St, Alpine Ct, Cone Flower Dr	2,972	ft	120	$/ft	356,640	35,664	39,230	19,615	451,150
115	FF-16	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Brooks St, Mountain Ave	1,423	ft	120	$/ft	170,760	17,076	18,784	9,392	216,011
116	FF-17	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Ladora Ct	565	ft	120	$/ft	67,800	6,780	7,458	3,729	85,767
117	FF-18	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Redwood Ave, Cedar St	1,688	ft	120	$/ft	202,560	20,256	22,282	11,141	256,238
118	FF-19	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Francis St. New connection is recommended between proposed 8-inch and existing 8-inch pipe lines in Francis St east of Fern St.	1,927	ft	120	$/ft	231,240	23,124	25,436	12,718	292,519
119	FF-20	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Sunkist St	1,383	ft	120	$/ft	165,960	16,596	18,256	9,128	209,939
120	FF-21	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Laurel Ave, Transit St, Emporia St	1,678	ft	120	$/ft	201,360	20,136	22,150	11,075	254,720
121	FF-22	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - B St, Laurel Ave	1,382	ft	120	$/ft	165,840	16,584	18,242	9,121	209,788
122	FF-23	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Alley between Vine Ave and Fern Ave, and between Fern Ave and Palm Ave	714	ft	120	$/ft	85,680	8,568	9,425	4,712	108,385
123	FF-24	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - E St, Fern Ave	535	ft	120	$/ft	64,200	6,420	7,062	3,531	81,213
124	FF-25	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line - E St	784	ft	120	$/ft	94,080	9,408	10,349	5,174	119,011
125	FF-26	1212	OMC	Ex	Fire Flow	4	8-inch distribution line -F St	1,114	ft	120	$/ft	133,680	13,368	14,705	7,352	169,105
126	FF-27	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Alley between Granada St and Plaza Serena St	83	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
127	FF-28	1348	OMC	Ex	Fire Flow	2&4&6	8-inch distribution line - Alley between San Antonio Ave and Vine Ave, Armsley Sq, Bonita Ct	2,461	ft	120	$/ft	295,320	29,532	32,485	16,243	373,580
128	FF-29	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Kenmore Ct, Caroline Ct, Kenmore Ave	2,699	ft	120	$/ft	323,880	32,388	35,627	17,813	409,708
129	FF-30	1348	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Alvarado St, Deodar St, Sultana Ave, Columbia Ave. Pipe in Columbia Ave must connect to pipe in Deodora St at the intersection of Deodar St and Columbia Ave.	3,144	ft	120	$/ft	377,280	37,728	41,501	20,750	477,259
130	FF-31	1212	OMC	Ex	Fire Flow	2&4&6	8-inch distribution line - D St and Alleys between Euclid Ave and Lemon Ave	1,734	ft	120	$/ft	208,080	20,808	22,889	11,444	263,221
131	FF-32	1212	OMC	Ex	Fire Flow	-	8-inch distribution line - Plum Ave	180	ft	120	$/ft	21,600	2,160	2,376	1,188	27,324

Table 11-1 (Continued)
Capital Improvement Program

Row No.	WMP Project No.	Zone	OMC/ NMC		Facility Type	Ex Pipe Size (in)	Description	Size/ Number	Unit	Unit Cost ($)	Unit	Construction Cost ($)	Contingency ($)	Engineering & Admin. ($)	Construction Mgmt. ($)	Total Cost ($)
Old Model Colony Fire Flow Improvement Projects (continued)																
132	FF-33	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Emporia St, Transit St, Lemon Ave	1,301	ft	120	$/ft	156,120	15,612	17,173	8,587	197,492
133	FF-34	1212	OMC	Ex	Fire Flow	3&4	8-inch distribution line - State St	561	ft	120	$/ft	67,320	6,732	7,405	3,703	85,160
134	FF-35	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Budd St	721	ft	120	$/ft	86,520	8,652	9,517	4,759	109,448
135	FF-36	1074	OMC	Ex	Fire Flow	2&6	8-inch distribution line - Deanza Dr	1,447	ft	120	$/ft	173,640	17,364	19,100	9,550	219,655
136	FF-37	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Berkeley Ct. Connect existing 6-inch and 10-inch pipe lines at the intersection of Mountain Ave and J St.	737	ft	120	$/ft	88,440	8,844	9,728	4,864	111,877
137	FF-38	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Woodlawn St	1,342	ft	120	$/ft	161,040	16,104	17,714	8,857	203,716
138	FF-39	1074	OMC	Ex	Fire Flow	6	12-inchdistribution line - Bon View Ave	2,495	ft	360	$/ft	898,200	89,820	98,802	49,401	1,136,223
139	FF-40	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Greenwood Ave and Mission Blvd	640	ft	120	$/ft	76,800	7,680	8,448	4,224	97,152
140	FF-41	1212	OMC	Ex	Fire Flow	4&6	8-inch distribution line -California St, Cucamonga St	356	ft	120	$/ft	42,720	4,272	4,699	2,350	54,041
141	FF-42	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Washington St, Jefferson Ave	2,359	ft	120	$/ft	283,080	28,308	31,139	15,569	358,096
142	FF-43	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - State St, Cucamonga Ave, Grove Ave. Connect existing 12-inch pipe line to proposed 8-inch pipeline.	2,066	ft	120	$/ft	247,920	24,792	27,271	13,636	313,619
143	FF-44	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Lynn Haven St	721	ft	120	$/ft	86,520	8,652	9,517	4,759	109,448
144	FF-45	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Yale St	1,203	ft	120	$/ft	144,360	14,436	15,880	7,940	182,615
145	FF-46	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Pleasant Ave, La Deney Dr	1,132	ft	120	$/ft	135,840	13,584	14,942	7,471	171,838
146	FF-47	1348	OMC	Ex	Fire Flow	6	16-inch distribution line - Richland St	1,431	ft	240	$/ft	343,440	34,344	37,778	18,889	434,452
147	FF-48	1348	OMC	Ex	Fire Flow	6&8	12-inch distribution line - Sixth St, Deodar St, Eleventh Ave, Grove Ave	3,900	ft	180	$/ft	702,000	70,200	77,220	38,610	888,030
148	FF-49	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Virginia Ave, Fifth St, La Deney Ct, Parkside Ave	3,531	ft	120	$/ft	423,720	42,372	46,609	23,305	536,006
149	FF-50	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Fifth St, Grove Ave	1,798	ft	120	$/ft	215,760	21,576	23,734	11,867	272,936
150	FF-51	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - El Dorado Ave	542	ft	120	$/ft	65,040	6,504	7,154	3,577	82,276
151	FF-52	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Fifth St, Baker Ave, Princeton St	3,568	ft	120	$/ft	428,160	42,816	47,098	23,549	541,622
152	FF-53	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Mariposa Ave, Granada St	1,102	ft	120	$/ft	132,240	13,224	14,546	7,273	167,284
153	FF-54	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Greenwood Ave, El Morado Ct, Florence Ct	1,187	ft	120	$/ft	142,440	14,244	15,668	7,834	180,187
154	FF-55	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Fourth St	820	ft	120	$/ft	98,400	9,840	10,824	5,412	124,476
155	FF-56	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Yale St	554	ft	120	$/ft	66,480	6,648	7,313	3,656	84,097
156	FF-57	1348	OMC	Ex	Fire Flow	4&6	8-inch distribution line - Fifth St, Holmes Ct, La Paloma Ct, I-10 Fwy E.B.	2,630	ft	120	$/ft	315,600	31,560	34,716	17,358	399,234
157	FF-58	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement south of Sixth St to Council Ave	791	ft	120	$/ft	94,920	9,492	10,441	5,221	120,074
158	FF-59	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - D St	927	ft	120	$/ft	111,240	11,124	12,236	6,118	140,719
159	FF-60	1074	OMC	Ex	Fire Flow	4	8-inch distribution line - Kern St	1,237	ft	120	$/ft	148,440	14,844	16,328	8,164	187,777
160	FF-61	1074	OMC	Ex	Fire Flow	6	8-inch distribution line - Baker Ave	922	ft	120	$/ft	110,640	11,064	12,170	6,085	139,960
161	FF-62	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Easement between Vineyard Ave and Grove Ave and south of Airport Dr	2,945	ft	120	$/ft	353,400	35,340	38,874	19,437	447,051
162	FF-63	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement between Airport Dr and Holt Blvd and East of Vineyard Ave	498	ft	120	$/ft	59,760	5,976	6,574	3,287	75,596
163	FF-64	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Easement at south of Airport Dr and east of Moore Wy	763	ft	120	$/ft	91,560	9,156	10,072	5,036	115,823
164	FF-65	1348	OMC	Ex	Fire Flow	8&10	16-inch distribution line - Eight St, Grove Ave	9,171	ft	240	$/ft	2,201,040	220,104	242,114	121,057	2,784,316
165	FF-66	Skipped											0	0	0	0
166	FF-67	1348	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Euclid Ave, Armsley St	1,330	ft	120	$/ft	159,600	15,960	17,556	8,778	201,894
167	FF-68	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Easement east of San Antonio and west of Euclid Ave between Fifth St and Princeton St	668	ft	120	$/ft	80,160	8,016	8,818	4,409	101,402
168	FF-69	1348	OMC	Ex	Fire Flow	6	8-inch distribution line - Seventh St	10	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
169	FF-70	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Boulder Ave, Vesta St, Hollowell St	3,351	ft	120	$/ft	402,120	40,212	44,233	22,117	508,682
170	FF-71	1212	OMC	Ex	Fire Flow	6	8-inch distribution line - Empora St, Pleasant Ave	641	ft	120	$/ft	76,920	7,692	8,461	4,231	97,304
171	FF-72	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - California Ct, Mission Blvd, Campus Ave, Campus St	1,138	ft	120	$/ft	136,560	13,656	15,022	7,511	172,748
172	FF-73	1212	OMC	Ex	Fire Flow	2&4	8-inch distribution line - Raltson St, Maitland St, Campus Ave, Taylor Ave	2,558	ft	120	$/ft	306,960	30,696	33,766	16,883	388,304
173	FF-74	1212	OMC	Ex	Fire Flow	4	8-inch distribution line -Nocta St, Allyin Ave, Willow St	370	ft	120	$/ft	44,400	4,440	4,884	2,442	56,166
174	FF-75	1212	OMC	Ex	Fire Flow	4	8-inch distribution line - Ontario Blvd	103	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
175	FF-76	1348	OMC	Ex	Fire Flow	4	8-inch distribution line - Harvard St	24	ft	120	$/ft	30,000	3,000	3,300	1,650	37,950
176	FF-77	1348	OMC	Ex	Fire Flow	6	12-inch distribution line - Eighth St at Virginia Ave	50	ft	180	$/ft	30,000	3,000	3,300	1,650	37,950
							Subtotal	**136,909**			**Subtotal**	**18,651,720**	**1,865,172**	**2,051,689**	**1,025,845**	**23,594,426**
							Grand Total (excluding annual OMC improvement project costs)					**268,474,356**	**26,847,436**	**29,391,179**	**14,828,090**	**345,963,060**

WFA
Agua de Lejos
Water Treatment Plant

O-1
RES1348-1A
RES1348-1B
RES1348-1C
R-14

ST-3
RES1212-4A

ST-4
RES1212-4B

ST-5
30"

City of Upland

City of Rancho Cucamonga

City of Montclair

City of Fontana

City of Chino

Riverside County

Old Model Colony

New Model Colony

Ontario International Airport

Landfill

SAW Conn
RES1212-1A
RES1212-1B
WFA Conn
ST-1
ST-6
RES1212-3
BP-3
BP-4

BENSON AVE
MOUNTAIN AVE
SAN ANTONIO AVE
EUCLID AVE
CAMPUS AVE
GROVE AVE
BAKER AVE
VINEYARD AVE
ARCHIBALD AVE
TURNER AVE
HAVEN AVE
MILLIKEN AVE
I-15 FWY
ETIWANDA AVE
WINEVILLE AVE
VINTAGE AVE
CUCAMONGA CREEK
FERN ST
CLEVELAND AVE

I-10 FWY
SIXTH ST
FIFTH ST
FOURTH ST
I ST
G ST
HOLT BLVD
STATE ST
MISSION BLVD
PHILLIPS ST
FRANCIS ST
PHILADELPHIA ST
SR-60
WALNUT ST
RIVERSIDE DR
CHINO AVE
SCHAEFER AVE
EDISON AVE
EUCALYPTUS AVE
MERRILL AVE
EIGHTH ST
ONTARIO MILLS PKWY
AIRPORT DR
JURUPA ST

CDA I Conn
CDA II Conn

Legend

- Recommended Emergency Connection
- Recommended Altitude Valve/PRS
- Altitude Vavle/PRS
- Booster Pump Station
- Recommended Well
- Well
- Recommended Reservoir
- Reservoir
- 8" Fire Flow Pipe Improvement
- 12" Fire Flow Pipe Improvement
- 16" Fire Flow Pipe Improvement
- Small Diameter Pipe Improvement (O-9)
- Pipe Improvement due to Age (O-8)
- Recommended Improvement Pipe
- Recommended Pipe for 1010 Zone Expansion
- Recommended Pipe for 925 Zone
- Existing Pipe
- Other Agency Pipe
- City Boundary
- 925 Pressure Zone
- 1010 Pressure Zone
- 1074 Pressure Zone
- 1212 Pressure Zone
- 1348 Pressure Zone

N

0 1,500 3,000 6,000 Feet

1"=1500'

CITY OF ONTARIO
WATER MASTER PLAN

Capital Improvement Project Locations

PROJECT NO: 1000919.00

DATE: April 2012

Figure 11-1

See Detail A

HARVARD PL

EUCLID AV

FOURTH ST

COLUMBIA AV

ROSEWOOD CT

Existing 12-inch

Existing 4-inch

Existing 8-inch

Existing 4-inch

Proposed New FH Connection

Proposed New FH Connection

Existing 2-inch

Existing 4-inch

Detail A

N

0 37.5 75 150 Feet

Legend

- Meter
- Hydrant
- Hydrant Valve
- System Valve
- FF-3 Improvement Location
- 1212 Zone Pipe
- 1348 Zone Pipe

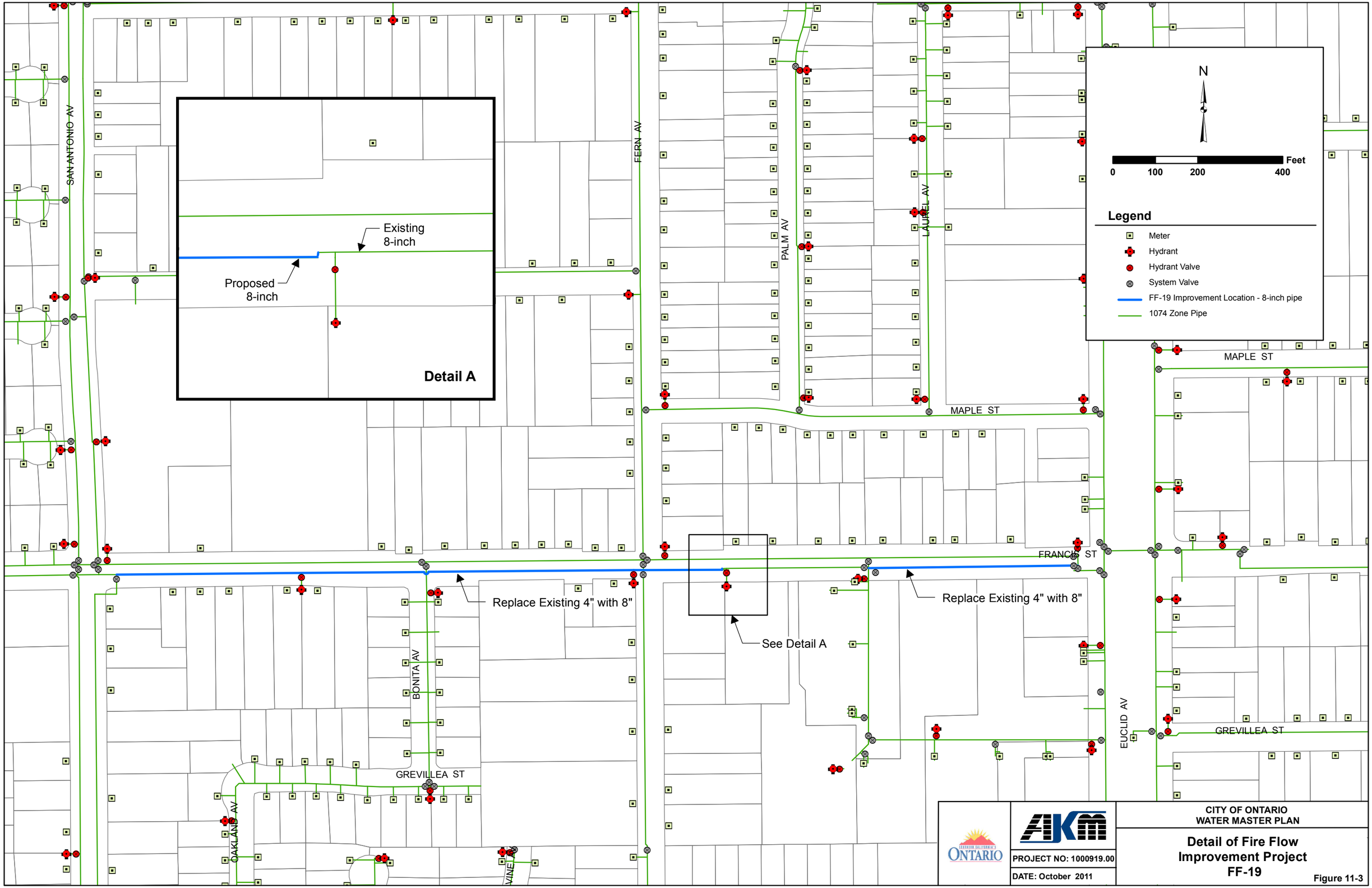
CITY OF ONTARIO
WATER MASTER PLAN

Detail of Fire Flow Improvement Project FF-3 Proposed Fire Hydrant Connections

PROJECT NO: 1000919.00

DATE: October 2011

Figure 11-2



ONTARIO

AKM

CITY OF ONTARIO
WATER MASTER PLAN

Detail of Fire Flow Improvement Project FF-19

PROJECT NO: 1000919.00

DATE: October 2011

Figure 11-3

I-10 E/B OFF RAMP

I-10 E/B ON RAMP

ALVARADO ST

COLUMBIA AV

CAROLINE CT

DEODAR ST

See Detail A

EUCLID AV

SIXTH ST

ARMSLEY SQ

LA DENEY DR

SULTANA AV

Proposed 8-inch

Proposed 8-inch

Detail A

N

0 62.5 125 250 Feet

Legend

- Meter
- Hydrant
- Hydrant Valve
- System Valve
- FF-30 Improvement Location - 8-inch Pipe
- 1348 Zone Pipe

ONTARIO

AKM

PROJECT NO: 1000919.00

DATE: October 2011

CITY OF ONTARIO
WATER MASTER PLAN

Detail of Fire Flow Improvement Project FF-30

Figure 11-4

BEGONIA AV

J ST

BERKELEY CT

MOUNTAIN AV

I ST

See Detail A

Existing 6-inch

Existing 10-inch

Proposed 8-inch

Existing 6-inch

Existing 10-inch

Detail A

N

0 40 80 160 Feet

Legend

- Meter
- Hydrant
- Hydrant Valve
- System Valve
- FF-37 Improvement Location - 8-inch Pipe
- 1212 Zone Pipe

ONTARIO

AKM

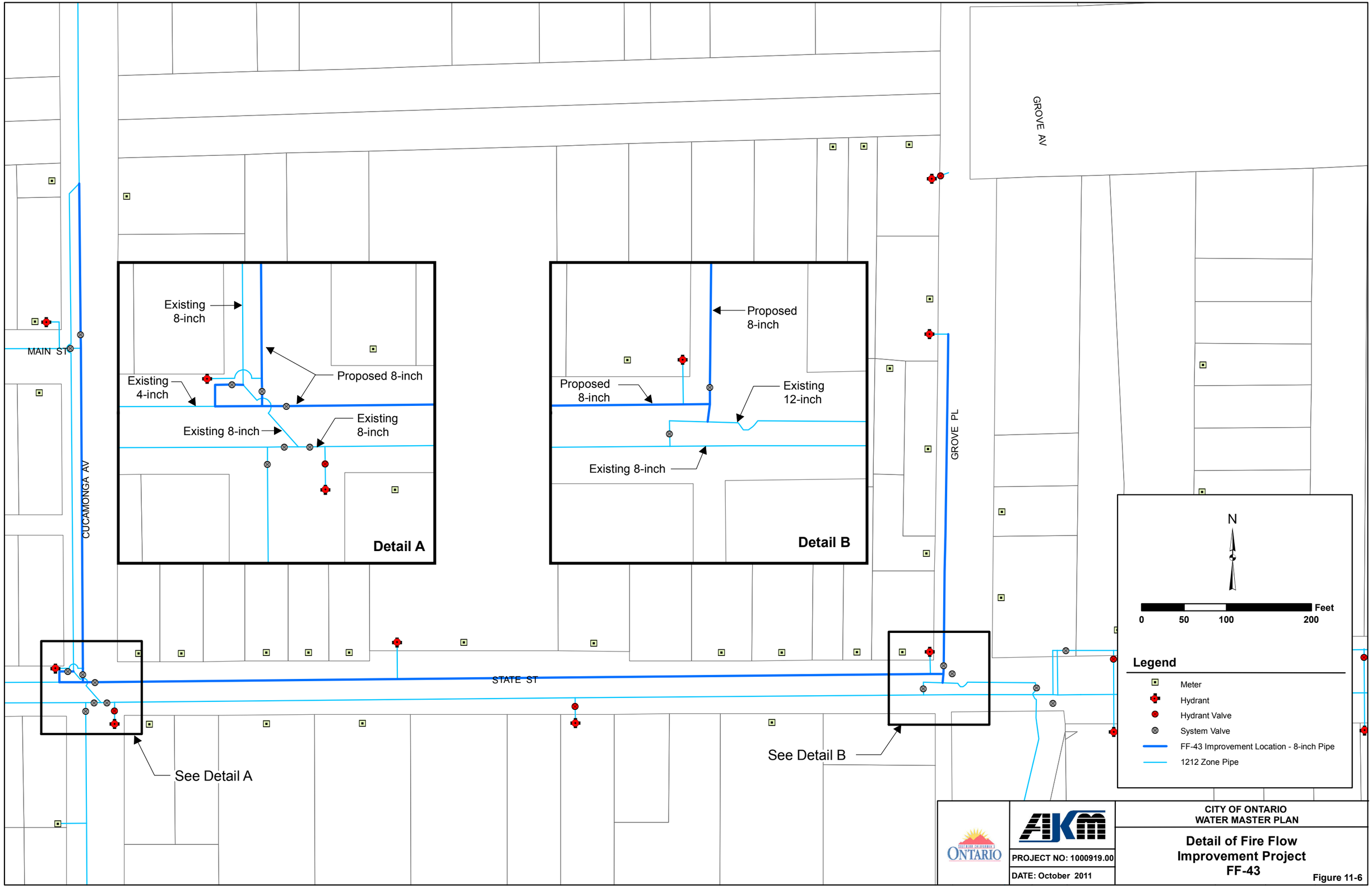
PROJECT NO: 1000919.00

DATE: October 2011

CITY OF ONTARIO WATER MASTER PLAN

Detail of Fire Flow Improvement Project FF-37

Figure 11-5



CITY OF ONTARIO
WATER MASTER PLAN

Detail of Fire Flow Improvement Project FF-43

PROJECT NO: 1000919.00

DATE: October 2011

Figure 11-6

L.3 - Recycled Water Master Plan

City of Ontario

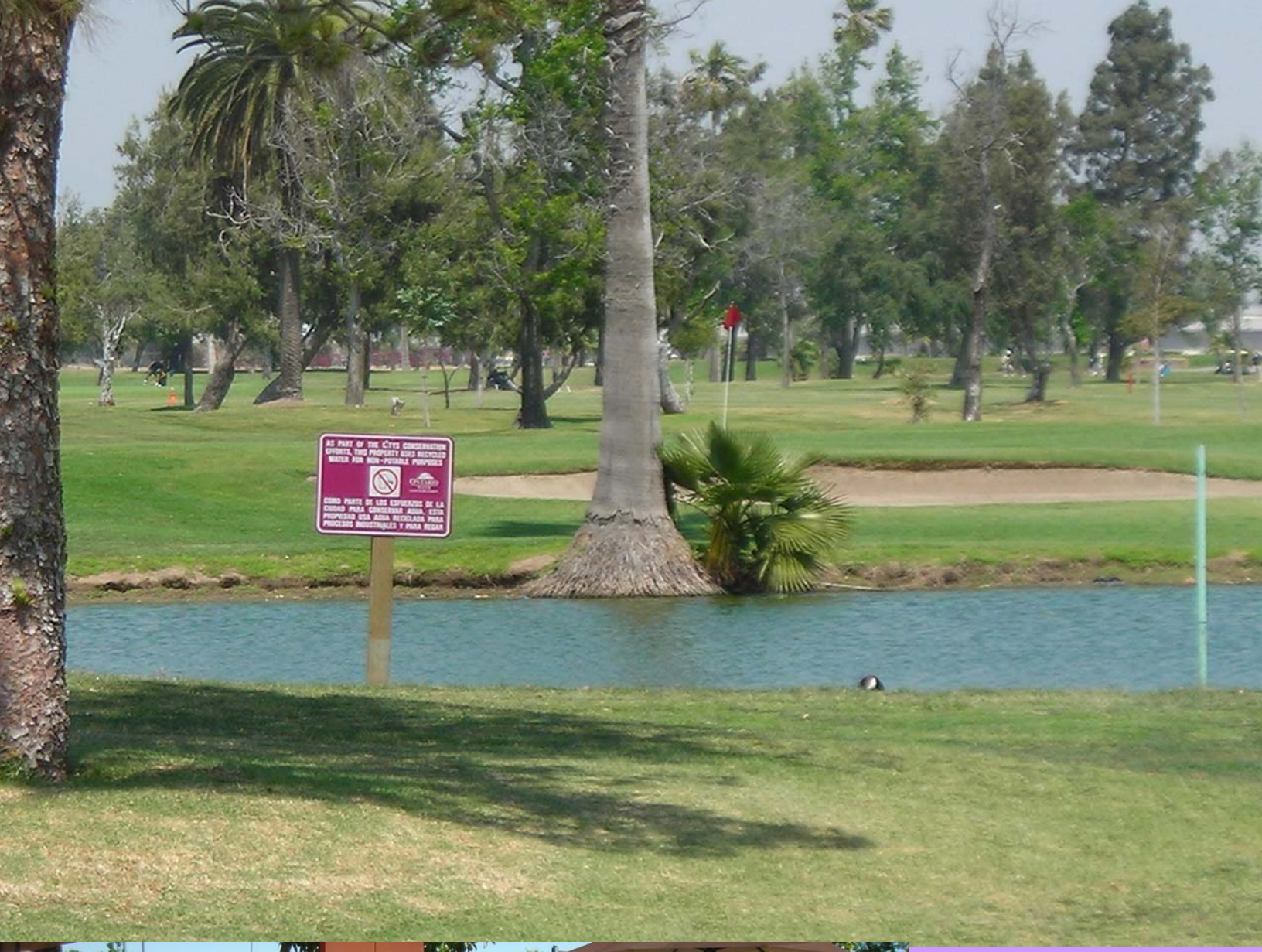
RECYCLED WATER MASTER PLAN

ONTARIO MUNICIPAL UTILITIES COMPANY

CITY OF ONTARIO

Final Report
April 2012

CITY OF ONTARIO - MUNICIPAL UTILITY COMPANY
RECYCLED WATER MASTER PLAN UPDATE
FINAL REPORT - APRIL 2012



CITY OF ONTARIO

ONTARIO MUNICIPAL UTILITIES COMPANY

CITY OF ONTARIO

RECYCLED WATER MASTER PLAN

Prepared By:

Ontario Municipal Utilities Company
1425 S. Bon View Avenue
Ontario, CA 91761

Final Report
April 2012

CITY OF ONTARIO
Recycled Water Master Plan

Project Team Staff

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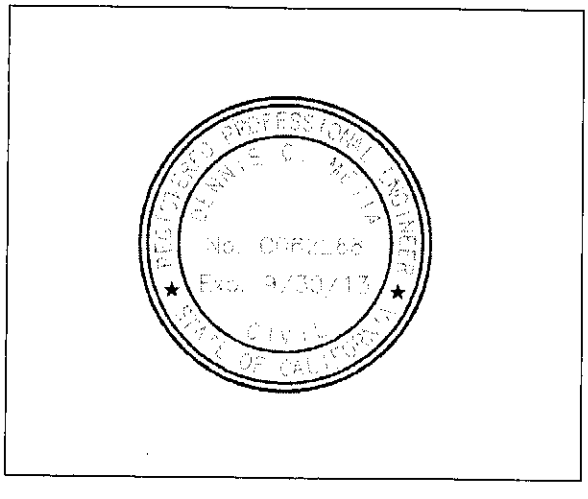
Utilities Engineering Div Manager:	Dennis Mejia, P.E
Project Manager:	Jeffrey F. Krizek, Associate Engineer
Contributing Staff:	Sheldon Yu, P.E., Senior Associate Engineer Cynthia Heredia-Torres, Assistant Engineer Ryan Bengsch, Assistant Engineer Ivan Sanchez, Engineering Assistant/GIS
Hydraulic Modeling:	Zeki Kariyan, P.E., AKM Consulting Engineers Diann Pay, P.E., AKM Consulting Engineers



Prepared by:

5/10/2012

Jeffrey F. Krizek — Date
Associate Engineer

Prepared under the supervision of:

5/10/12

Dennis Mejia, P.E. — Date
Utilities Engineering Division Manager

Acknowledgements

Other staff contributing to the preparation of this document: Scott Murphy and Melanie Mullis, City of Ontario Planning Department; Sylvie Lee and Liza Munoz, Inland Empire Utilities Agency (IEUA).

Recycled Water Master Plan Update October 2011
Table of Contents

Section 1
Introduction

1-1 Purpose and Scope

The City of Ontario provides domestic water service to a population of approximately 173,000 residents and is projected to serve over 358,270 residents and serve employers providing over 330,023 jobs. The City recognizes the need to provide it's customers with the most economically feasible source of water supply. With the decreasing supply and escalating costs of imported water, Recycled Water provides an alternate and more economical source of water supply for irrigation and some industrial processes. The City currently has 173 Recycled Water Connections delivering 2,907 Acre Feet of Recycled Water per Year (AFY) to non-Agricultural Users and an additional 4,124 AFY to agricultural users.

Building off of Section 10 of the City of Ontario's 2006 Water and Recycled Water Master Plan, the Purposes and Scope of this report are:

- To catalogue existing users as of December 2009;
- Identify all new potential future users at build-out;
- Determine economic feasibility of: connecting potential future users and developing the City's Recycled Water Infrastructure;
- Size future delivery pipelines for build-out;
- And to create a long range Capital Improvement Plan.

1-2 Previous Studies

Previous studies completed and utilized in the development of this Water Master Plan include the following:

- The Ontario Plan (General Plan), February 2010
- The Ontario Plan Environmental Impact Report, April 2009
- City of Ontario Water and Recycled Water Master Plan Update, April 2006
- City of Ontario Urban Water Management Plan 2010
- The Inland Empire Utility Agency Recycled Water Implementation Plan, Final Report November 2005

1-3 Data Soucre

Unless otherwise specified in this document, all data used in this report comes from the following sources:

- Existing Recycled Water Customer Data is as of 12/31/2009.
- Demands for Potential Users that are existing customers were taken from actual Irrigation and Process Water meter data for those customers from 9/1/08 to 8/31/09.
- Demand Factors for Potential Future uses that are currently vacant land were developed using:
    - The demands for Potential Users that are existing customers as stated above;
    - Actual meter data for current City Recycled Water Users for meter data from 9/1/2008 to 6/30/2011;
    - Recycled and Potable Water use data from the City of Chino for the Preserve, 1/1/2010 to 12/31/2010.
    - City GIS data for parcel areas as of the time of each inquiry between January 2009 to October 2011.
- Information regarding IEUA's regional system was based upon their November 2005 Plan, and information provided by IEUA Staff to the City Staff through meetings on 10/14/2010 and 1/18/2011, and an email correspondence on containing IEUA's current hydraulic model on 11/15/2010.

1-4 Data Modeling

The data model is based upon a data model provided to the City by IEUA on 11/15/2010, with the modifications as described in Section 6.

1-5 Acknowledgements

The Recycled Water Master Plan Project Team Staff would like to thank the following people for their contributions to this document: Scott Murphy and Melanie Mullis from the City of Ontario's Planning Department; Sylvie Lee and Liza Munoz from the Inland Empire Utility Agency (IEUA); and Zeki Kayiran, Diann Pay, and Serpil Kara from AKM Consulting Engineers.

1-6 Recycled Water Master Plan Project Team Staff

The following City Staff Members were involved in the preparation of this report:

Utilities General Manager: Mohamed El-Amamy

Assistant Utilities General Manager: Scott Burton, P.E.

Engineer-In-Charge:	Dennis Mejia, P.E., Utilities Engineer Division Manager
Project Manager:	Jeffrey F. Krizek, Associate Engineer
Contributing Staff:	Sheldon Yu, P.E., Senior Associate Engineer Ivan Sanchez, Engineering Assistant/GIS Cynthia Heredia-Torres, Assistant Engineer Ryan Bengsch, Assistant Engineer

1-7 Abbreviations

The abbreviations utilized in this report are contained in Table 1-1.

Table 1-1

Abbreviations	Abbreviation Explanation
ac, AC	Acre
AF	Acre-Foot or Acre Feet
AF/AC	Acre-Feet per Acre per Year
AFY	Acre Feet per Year
amsl	Above Mean Sea Level
CDPH	State of California Department of Public Health
cfs	Cubic Feet per Second
CIP	Capital Improvement Program
City	City of Ontario
DPH	State of California Department of Public Health
Dia	Diameter
DWMP	Domestic Water Master Plan
DW	Domestic Water
FCV	Flow Control Valve
fps	Feet per Second
ft	Feet
FY	Fiscal Year
GIS	Geographic Information System
gpd	Gallons per Day
gpm	Gallons per Minute
HGE	Hydraulic Grade Elevation
in	Inch
IEUA	Inland Empire Utilities Agency
LF	Lineal Feet
mg	Million Gallons
mgd	Million Gallons per Day
NMC	New Model Colony
OMC	Old Model Colony
PRS	Pressure Regulating Station
PRV	Pressure Reducing Valve
psi	Pounds per Square Inch
PVC	Polyvinyl Chloride
SF	Square Feet
UWMP	Urban Water Management Plan Note: for Current and Previous Land Use Categories See Table 3-1 and Appendix B

Section 2
Study Area

2-1 Purpose

This section describes the study area of the City of Ontario Recycled Water Master Plan Update and discusses the existing and future land uses within the study area.

2-2 Location

The study area, as shown in Figure 2-1, is coincident with the City boundary, with exception to two areas of the City serviced by Cucamonga Valley Water District which are located in the northeast corner of Interstate 15 and Interstate 10 and the area north of 4th Street and East of Vineyard.

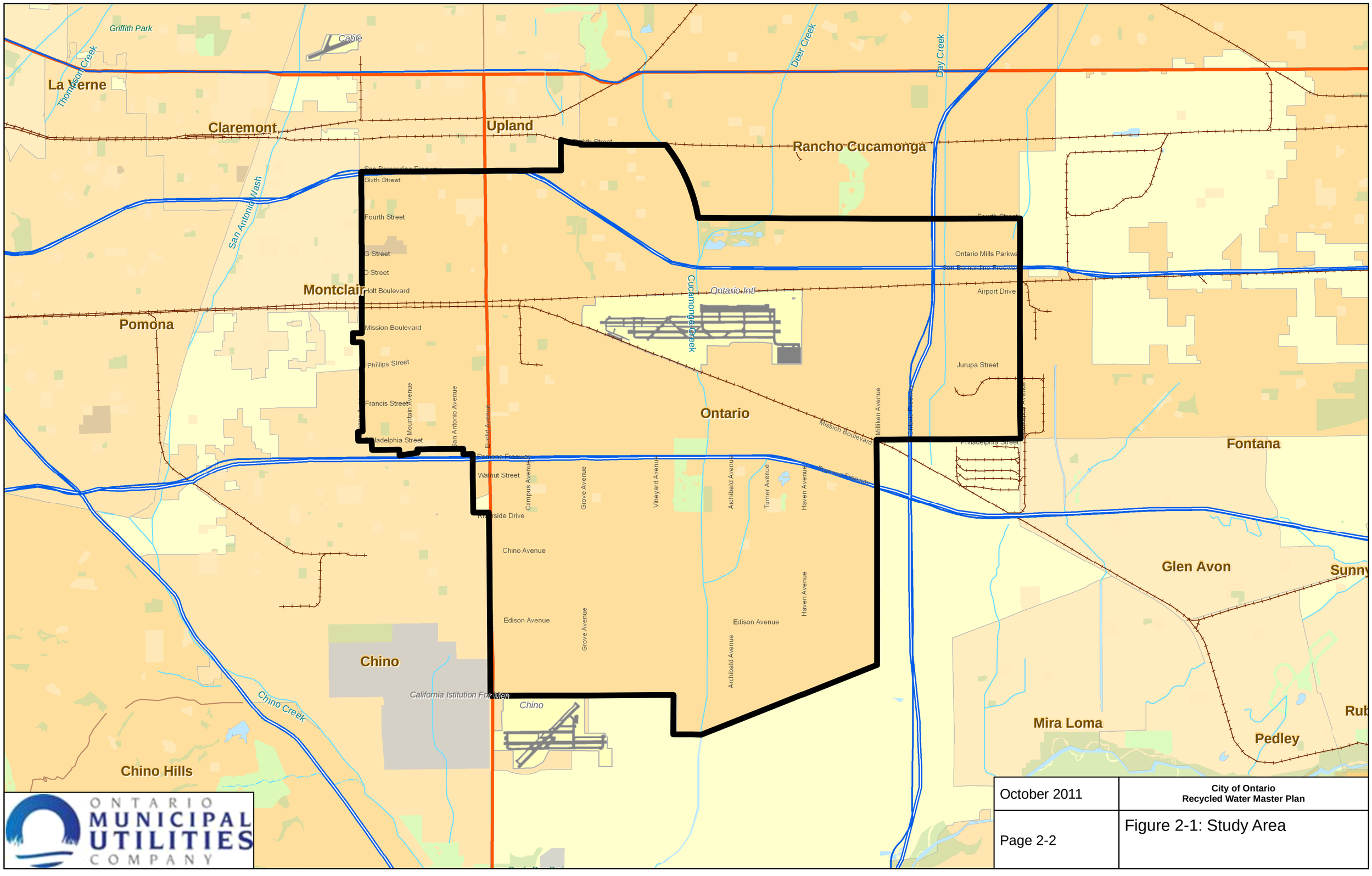
The City is divided into two main areas, the Old Model Colony (OMC) in the north and the New Model Colony (NMC) in the south with Riverside Avenue being the general divider between the two, with exception to a portion of the OMC the lays south of Riverside Avenue between Archibald Ave and the Edison Power Lines to Schaffer Avenue.

OMC consists of existing residential, commercial, and industrial developments. It comprises approximately 37.3 square miles. NMC is an agricultural area that was annexed in 1999. It currently consists of approximately 12.8 square miles of agricultural land. The City's General Plan 2010 details plans to develop the agricultural lands in NMC into a mix of residential, commercial, industrial, and public uses. The ultimate residential population of NMC is expected to reach 151,932.

The topography of the region generally slopes in a southwesterly direction from 1170 to 630 feet above mean sea level (amsl).

2-3 Existing Land Use

The existing land use types of the City are shown using general categories on Figure 2-2. The OMC is primarily built out, while the NMC is primarily comprised of agricultural land and rural residential land within by agricultural land parcels. The City's GIS and parcel land data was used to determine existing land use information.



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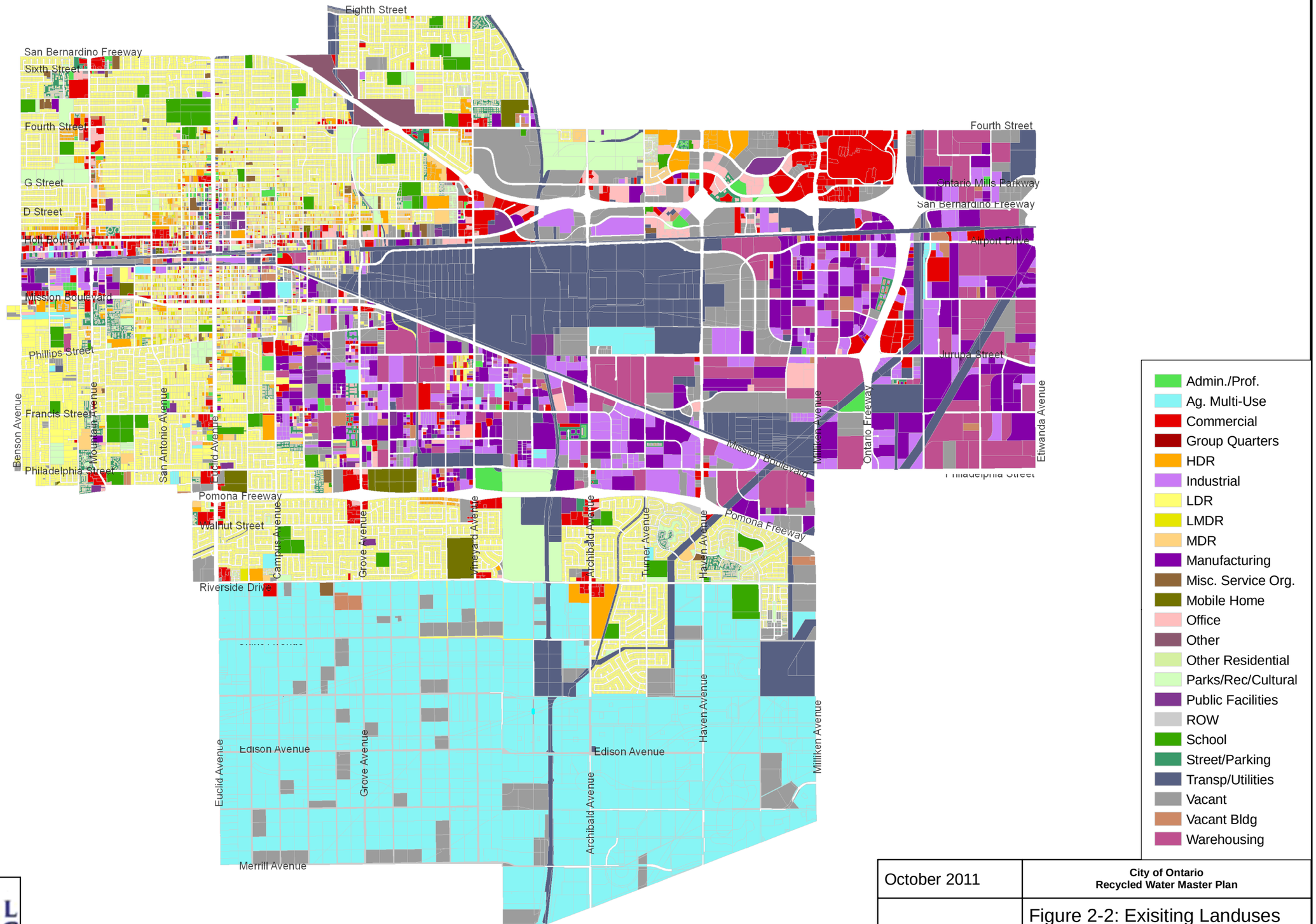
October 2011	**City of Ontario** **Recycled Water Master Plan**
Page 2-2	Figure 2-1: Study Area



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October 2011	**City of Ontario** **Recycled Water Master Plan**
Page 2-3	Figure 2-2: Exisiting Landuses

2-4 Ultimate Land Use

The ultimate land uses are based upon the City's latest general plan document entitled The Ontario Plan (2010). Table 2-2 provides a summary of the ultimate land uses and Figure 2-3 shows the locations of these land uses. From the previous General Plan to the current Ontario Plan, the residential area increases to 10,915 acres (34.2 percent of total) and the employment area, including business parks and industrial uses, is expected to entail about 8,103 acres (25.4 percent of total).

Residential Land Uses
The Ontario Plan defines five residential land use categories: Rural, Low Density, Low-Medium Density, Medium Density, and High Density. The plan assumes densities for each of the residential land use categories and are shown in Table 2-1.

Retail / Service
Four retail / service uses are defined: Neighborhood Commercial, General Commercial, Office Commercial, and Hospitality. The assumed intensities for each commercial use are shown in Table 2-1.

Employment
Two employment uses are defined: Business Park and Industrial. The assumed intensities for each commercial use are shown in Table 2-1.

Open Space
Open Space land use designations include Non-Recreational Open Space, Recreational Open Space and Water Open Space (i.e. lakes, ponds, etc).

Public
Public land use designations include Public Facility and Public School.

Other
Other land use designations include the Ontario International Airport, Landfill, Railroad and Roadways.

Table 3-1: The Ontario Plan Approved Land Use Buildout Estimates (Citywide)[1]

Land Use Category	Acres [2]	Density (du/ac) [3]	Intensity (FAR) [3]	Units	Population [4]	Square Feet (Non-Office)	Square Feet (Office)	Total Square Feet	Jobs [5] (Non-Office)	Jobs [5] (Office)	Total Jobs [5]
Residential											
Rural Residential - RR	453	2.0		906	3,621						
Low Density Residential - LDR (OMC)	4,308	4.0		17,232	68,876						
Low Density Residential - LDR (NMC)	3,158	4.5		14,211	56,801						
Low-Medium Density Residential - LMDR (OMC)	295	8.5		2,508	10,026						
Low-Medium Density Residential - LMDR (NMC)	505	8.5		4,295	17,167						
Medium Density Residential - MDR (OMC)	896	18.0		16,124	61,551						
Medium Density Residential - MDR (NMC)	1,059	22.0		23,294	77,964						
High Density Residential - HDR	241	35.0		8,421	28,185						
Subtotal	*10,915*			*86,991*	*324,192*						
Mixed Use (MU)											
Downtown	109	35.0		2,279	4,557	756,202	756,202	1,512,403	543	2,163	2,706
Euclid & Francis	10	30.0		156	312	181,210	0	181,210	419	0	419
Holt	55	30.0		412	824	478,289	1,195,722	1,674,011	343	3,420	3,763
Meredith	246	40.0		2,957	5,914	2,146,637	5,366,592	7,513,229	1,541	15,348	16,890
Hospitality	76	60.0		457	914	1,493,672	1,493,672	2,987,345	1,072	4,272	5,344
Ontario Festival (MxU in 14)	37	20.0		368	736	112,211	240,451	352,662	81	688	768
Guasti	83	30.0		500	1,001	1,089,871	1,271,516	2,361,388	783	3,637	4,419
Ontario Center (E. of Haven)	345	40.0		4,139	8,278	1,502,384	7,511,922	9,014,306	1,079	21,484	22,563
Mills	240	40.0		479	958	3,912,233	1,564,893	5,477,126	2,809	4,476	7,285
NMC south	316	35.0		3,315	6,630	962,632	5,775,795	6,738,427	691	16,519	17,210
NMC east	264	25.0		1,978	3,956	1,378,413	1,206,111	2,584,524	990	3,449	4,439
SR60 & Hamner	41	0.0		0	0	349,112	313,305	662,417	251	896	1,147
Subtotal	*1,822*			*17,039*	*34,078*	*14,362,865*	*26,696,182*	*41,059,046*	*10,601*	*76,351*	*86,952*
Retail/Service											
Neighborhood Commercial - NC	277		0.30			2,896,914	724,229	3,621,143	6,692	2,071	8,763
General Commercial - GC	552		0.30			6,488,654	720,962	7,209,616	4,659	2,062	6,721
Office/Commercial - OC	526		0.75			5,151,406	12,019,946	17,171,352	3,699	34,377	38,076
Hospitality - HOS	145		1.00			5,049,475	1,262,369	6,311,844	3,626	3,610	7,236
Subtotal	*1,499*					*19,586,449*	*14,727,505*	*34,313,954*	*18,675*	*42,121*	*60,796*
Employment											
Business Park - BP	1,357		0.40			11,821,313	11,821,313	23,642,626	7,684	33,809	41,493
Industrial - IND	6,747		0.55			145,469,382	16,163,265	161,632,647	94,555	46,227	140,782
Subtotal	*8,103*					*157,290,695*	*27,984,578*	*185,275,273*	*102,239*	*80,036*	*182,275*
Other											
Open Space-Non-Recreation - OS-NR	1,243										
Open Space-Parkland - OS-R	991										
Open SpaceWater - OS-W	59										
Public Facility - PF	99										
Public School - PS	627										
Airport - ARPT	1,422										
Landfill - Rail	247										
Railroad - LF	137										
Right-Of-Way - ROW	4,794										
Subtotal	*9,619*										
Total	***31,958***			***104,030***	***358,270***	***191,240,009***	***69,408,264***	***260,648,273***	***131,515***	***198,508***	***330,023***

Notes

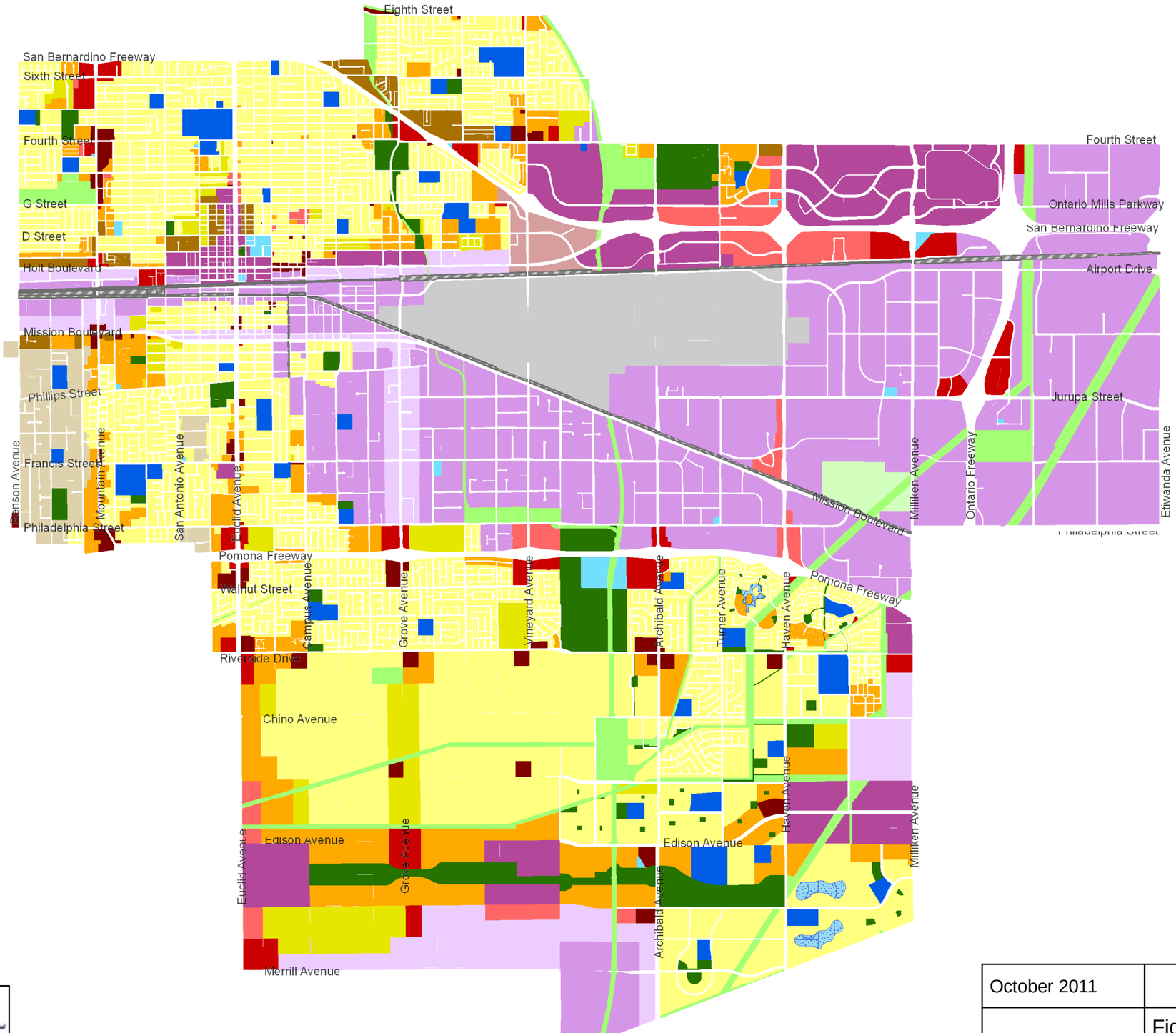
1 Historically, citywide buildout levels do not achieve the maximum allowable density/intensity on every parcel and are, on average, lower than allowed by the General Plan. Accordingly, the buildout estimates in this General Plan do not assume buildout at the maximum density or intensity and instead are adjusted downward to account for variations in buildout intensity. Buildout assumptions are as agreed upon on 2-4-08.

2 Acres are given as adjusted gross acreages, which do not include the right-of-way for roadways, flood control facilities, or railroads.

3 Density/Intensity includes both residential density, expressed as units per acre, and non-residential intensity, expressed as floor area ratio (FAR), which is the amount of building square feet in relation to the size of the lot.

4 Estimates of population by residential designation are based on a persons-per-household factor that varies by housing type. 3.347 pph for MF, 3.278 pph for sfa, and 3.997 pph for sfd.

5 The factors used to generate the number of employees are 2.310 e/1000 sf of community commercial; .718 e/1000 sf of regional commercial; .650 e/1000 sf of industrial; and 2.86 e/1000 sf of office.



Ultimate Landuse

- Airport
- Business Park
- General Commercial
- High Density Residential
- Hospitality
- Industrial
- Low Density Residential
- Land Fill
- Low-Medium Density Residential
- Medium Density Residential
- Mixed Use
- Neighborhood Commercial
- Office Commercial
- Open Space - Non-Recreational
- Open Space - Recreational
- Open Space - Water
- Public Facility
- Public School
- Rural Residential
- Rail

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October 2011	**City of Ontario** **Recycled Water Master Plan**
Page 2-6	Figure 2-3: Ultimate Land Use

Section 3
Recycled Water Supply and the Regional System

3-1 Regional Water Supply

Recycled water is provided by the Inland Empire Utility Agency (IEUA), which treats wastewater at four regional wastewater reclamation plants; Carbon Canyon Wastewater Reclamation Facility (CCWRF), Regional Plant No. 1 (RP-1), RP-4, and RP-5.

Per IEUA's 2010 Urban Water Management Plan there will be 61,903 AFY available for Recharge and Direct Use in 2035; allocations to Ontario are estimated to be 18,385AFY based on estimated percentage of total EDUs. The City's CIP will be based upon the City's 2011 Urban Water Management Plan Update 2011 Recycled Water Demand of 18,385 AFY, despite the potential for more demand, as identified in Section 5.

3-2 Regional Backbone System

The existing regional system shown on Figure 3-1 consists of approximately 35 miles of recycled water pipelines serving four different pressure zones: Zone 800, Zone 930, Zone 1050, and Zone 1270. The names of these pressure zones refer to the design hydraulic grade line (HGL) of the zone in feet above mean sea level. The existing system serves recycled water to customers in the cities of Chino, Chino Hills, Ontario, and Rancho Cucamonga from CCWRF, RP-1, and RP-4. Significant expansion of the existing system is planned to serve more recycled water customers and future developments in IEUA's service area. The proposed expansions are outlined in the Recycled Water Implementation Plan (MWH, 2005b). The proposed IEUA recycled water system consists of:

- 7 pressure zones with HGLs of 800, 930, 1158, 1270, 1430, 1630, and 1830.
- 35 regional pipeline projects with a total length of approximately 92 miles, ranging from 12 to 60 inches in diameter.
- 109 MG of reservoir storage including 17.5 MG of equalization storage at the regional plants.
- 13 booster stations with a combined capacity of 207,000 gpm (nearly 15,000 HP).

Section 4
Recycled Water Use

4-1 Recycled Water Regulations

The use of recycled water is regulated through the California Code of Regulations (CCR). Pertinent excerpts from Titles 17 and 22 of the CCR statutes are compiled in the California Health Laws related to Recycled Water, also referred to as "The Purple Book", which was updated in June 2001.

The California recycled water regulations promote the use of recycled water to offset potable water supply needs. As discussed in Section 3, the water demand of the City is expected to increase which would increase the need for additional potable water supply sources. Recycled water is provided by the IEUA which treats its wastewater to tertiary treatment standards including disinfection at four regional wastewater reclamation plants. According to the Title 22, tertiary-treated recycled water can be used for the following:

- Irrigation at golf courses, cemeteries, residential landscaping, parks, and playgrounds
- Watering ornamental nursery stock, and non-edible and edible vegetation
- Recreational lakes and ponds, and water bodies for wildlife habitat
- Cooling towers, air conditioners, and evaporative condensers
- Flushing toilets, decorative fountains, commercial laundries, commercial car washes
- Industrial boiler and other process feed
- Washing down roads and sidewalks
- Fire fighting

The California Water Code (Section 13550) states that potable domestic water use for non-potable demands is “a waste of water if recycled water is of adequate quality and is available for these (non-potable) uses and can be furnished at a reasonable cost to the user.” In addition, recycled water can also be used if it “is not detrimental to public health and will not adversely affect downstream water rights, degrade water quality, or is not injurious to plant life, fish, and wildlife.” Water quality and health effects pose major concerns to the public in regards to the use of this source. However, regulations and guidelines for recycled water have been established by the California Department of Public Health and are published in the CCR. These regulations and guidelines provide water utilities with requirements for treatment, water quality and reliability of the recycled water before public use.

4-2 Historic Recycled Water Use

Recycled Water has been available to the City since 1976 when the Whispering Lakes Golf Course was first connected to Recycled Water. However, it took nearly twenty-five years for the second connection to be made with a few connections made in the few years after that. It was not until recently that the City began actively pursuing existing potable customers to convert to Recycled Water. Figure 4-1 shows the Recycled Water connections made per year and Figure 4-2 shows the consumption of the connections.

Originally, customers primarily connected to Recycled Water landscape and agricultural uses, but recently a few connections have been made for industrial processes.

Figure 4-1
Connections Added per Year

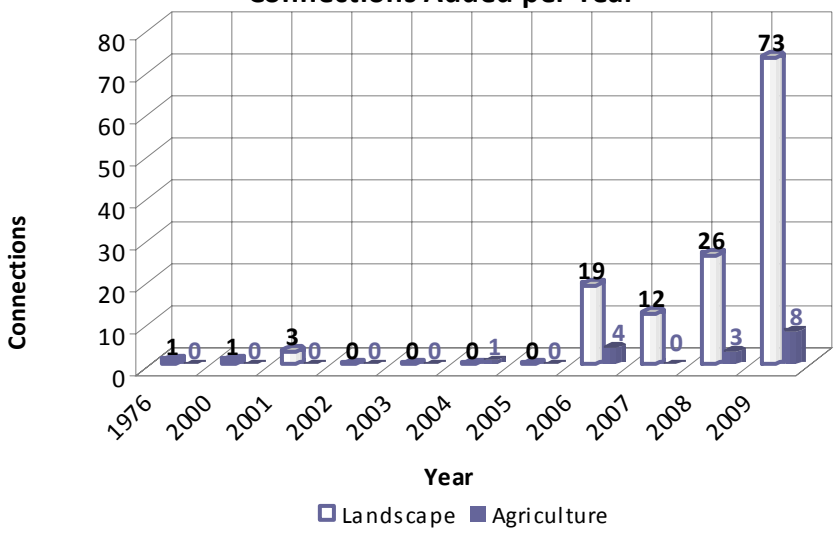


Figure 4-2
Total Consumption

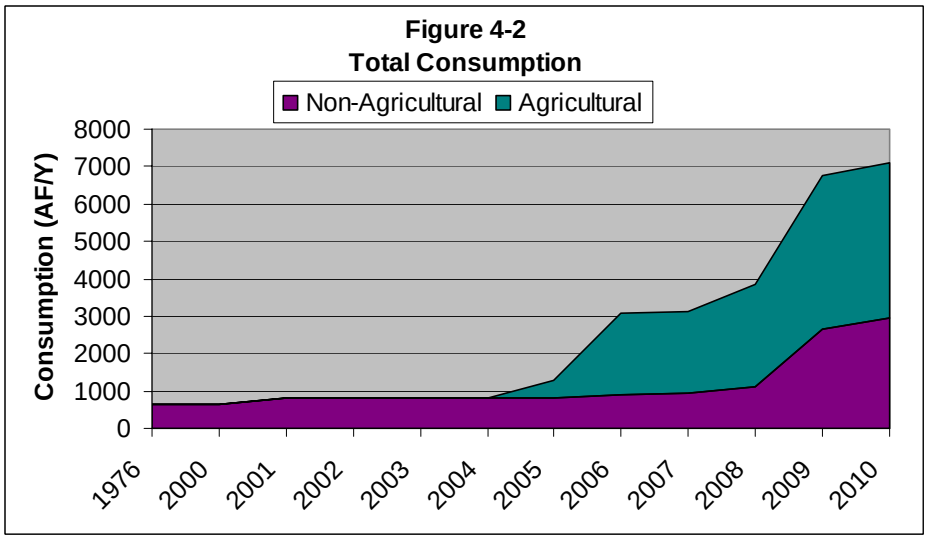
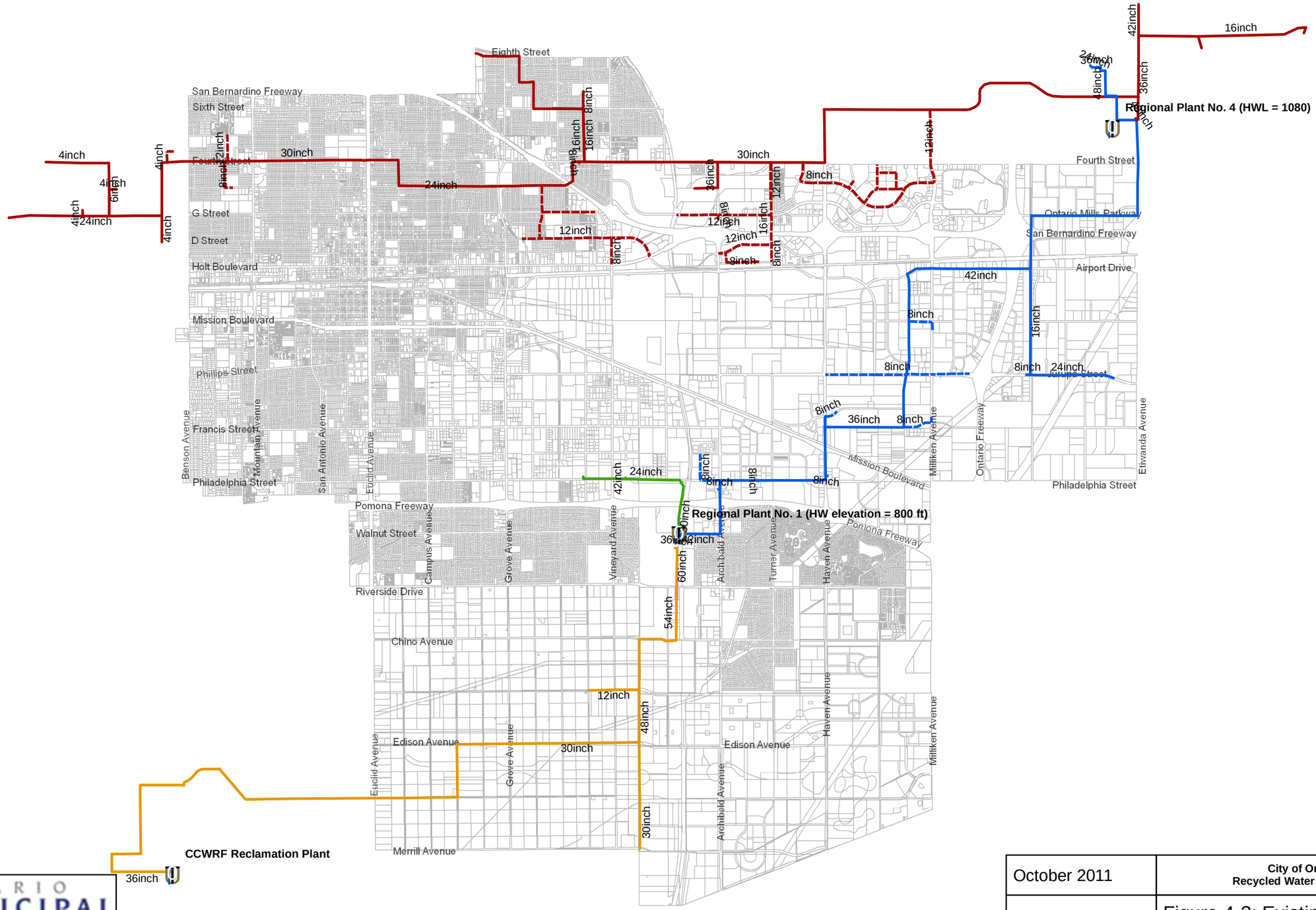


Table 4-1 - Recycled Water Consumption						
	Per Year			**Cumulative**		
YEAR	Non-AG	Ag	**Total**	Non-AG	Ag	**Total**
1976	622.00	0.00	**622.00**	622.00	0.00	**622.00**
2000	0.41	0.00	**0.41**	622.41	0.00	**622.41**
2001	209.78	0.00	**209.78**	832.19	0.00	**832.19**
2002	0.00	0.00	**0.00**	832.19	0.00	**832.19**
2003	0.00	0.00	**0.00**	832.19	0.00	**832.19**
2004	0.00	0.00	**0.00**	832.19	0.00	**832.19**
2005	0.00	460.00	**460.00**	832.19	460.00	**1292.19**
2006	46.01	1736.57	**1782.58**	878.20	2196.57	**3074.77**
2007	56.42	0.00	**56.42**	934.62	2196.57	**3131.19**
2008	156.50	577.00	**733.50**	1091.12	2773.57	**3864.69**
2009	1546.07	1350.00	**2896.07**	2637.19	4123.57	**6760.76**
2010	332.36	0.00	**332.36**	2969.55	4123.57	**7093.12**

4-3 Existing City System

At the time of the update of the hydraulic model (January 2010) the City's Existing Recycled Water System served 2,637 AFY of Recycled Water for irrigation and process uses (not including agricultural users) and consisted of 69,821 LF of pipe and 62 major segments. Table 4-1 above includes some projected estimates for expected future connections in 2010. See Figure 4-3 for the Existing Recycled Water System.



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October 2011	**City of Ontario Recycled Water Master Plan**
Page 4-4	Figure 4-3: Existing Recycled Water System

4-4 Existing Users

Appendix A contains a complete list of all current Recycled Water Users.

4-5 Interim Agricultural Users

As shown Highlighted in green in Appendix A, there are sixteen (16) Agricultural Users consuming 4,124 AF/Y of Recycled Water. While this use seems to be significant, these Agricultural Users are considered temporary uses; as the NMC develops, the agricultural land will develop into residential, commercial, industrial, and other non-agricultural uses and these future users are included as part of the vacant land conversions. Also, the current temporary Agricultural users are primarily along IEUA Regional Pipelines and IEUA is working with the City and other local agencies to manage their diurnal uses. Therefore, no future projections for Agricultural uses were studied or modeled.

4-6 Recycled Water Demand Factors

In calculating overall total potential Recycled Water demand, existing meter data was used for the customers currently on recycled water and existing potable water meter data was used for those proposed to convert. For vacant land, averages of existing meter data was used to determine a Demand Factor for each land use type. Through the General Plan Update process, several existing land use designations were changed or combined into different land use designation in the new Ontario Plan. See Appendix C for a listing and description of previous Land Uses and Abbriviations. A Demand Factor was calculated for each new land use type to use for determining demand for vacant lands.

Residential Uses

Annual irrigation demands for low/medium and medium density future NMC residential land-uses were determined based upon actual meter readings for existing similar residential product types throughout the City, primarily in the OMC. The following nine existing developments were considered using meter readings acquired between 2008 and 2010:

a. 101 N. Plum, adjacent to City Hall (2.26 AF/yr/acre);
b. 1110 E. Philadelphia Street, adjacent to the Lowe's Improvement Center (0.88 AF/yr/acre);
c. 950 N. Duesenberg (east-side), (1.25 AF/yr/acre);
d. Existing Edenglen development (1.10 AF/yr/acre);
e. 1052 E 6th St, Units 1-28 (1.45 AF/yr/acre);
f. 926 W. Philadelphia St (1.22 AF/yr/acre);
g. 1005 N. Center Av (0.76 AF/yr/acre);
h. 511 N. Palmetto Av (2.47 AF/yr/acre); and
i. 2020 S. Euclid (1.41 AF/yr/acre)

Based on the above nine developments, samples a., g., and h. (as indicated in italics) were not used as the annual irrigation demand were well outside the normal averages. In addition, future NMC landscaping would include more drought tolerant (California-friendly) plant species along with strict conservation measures. Therefore, 1 AF/yr/acre was determined to be sufficient measure for future low density residential products in the NMC.

Additionally, Potable and Recycled Water Irrigation uses were studied for The Edenglan Specific Plan and The Chino Preserve and demand factors for Low-medium, Medium, and High Density Residential were refined and developed.

Commercial Uses

Weighted averages were calculated for commercial land uses as a whole and as individual components, based upon annual irrigation meter readings from 2008:

a. 1.90 AF/yr/acre (all commercial, not including NROS)
b. 2.54 AF/yr/acre (GC)
c. 4.62 AF/yr/acre (GR)
d. 2.37 AF/yr/acre (NC)
e. 2.20 AF/yr/acre (NROS)
f. 1.70 AF/yr/acre (PC)
g. 5.92 AF/yr/acre (TC)

Please note that the above commercial land-uses have been changed since the adoption of the new Ontario General Plan. Therefore, several previous land-use types do not directly correlate with the new land-use types; however, we were able to categorize those several new land-use types as "combinations" of the old land-use. The following lists the new categories and new demand factors that were used in calculating the ultimate recycled water demand:

New Classification	Old Classification	New Composite Demand Factor (AF/yr/acre)
GC	GR, GC	3.32
OC	GC, PC	1.75
NC	NC	2.37
HOS	All Commercial	1.90 (NROS not included)
MU	All Commercial	1.90 (NROS not included)

Industrial Uses

Weighted averages were calculated for industrial land-uses as a whole and as individual components, based upon annual irrigation meter readings from 2008:

a. 3.13 AF/yr/acre (all industrial)
b. 3.70 AF/yr/acre (GI)
c. 2.29 AF/yr/acre (IP)
d. 3.26 AF/yr/acre (PI)
e. 3.55 AF/yr/acre (VI)

Please note that the above industrial land-uses have been changed since the adoption of the new Ontario General Plan. Therefore, several previous land use types do not directly correlate with the new land use types; however, we were able to categorize those several new land use types as "combinations" of the old land use. The following lists the new categories and new demand factors that were used in calculating the ultimate recycled water demand:

New Classification	Old Classification	New Composite Demand Factor (AF/yr/acre)
ARPT	All Industrial	3.13
BP	IP	2.29
IND	All Industrial	3.13

Open Space Uses

Non- Recreational Open Spaces (OS-NR) are mainly open spaces along Edison power line easements that maybe used for trials, but only will be landscaped with native vegetation and not irrigated; therefore, a demand factor of 0 is assumed.

For Recreational Open Spaces (OS-R), an average of Parks currently connected to Recycled Water was used and a demand factor of 1.5 AF/Y was determined. This number was used for landscape Right-Of-Way (ROW) as well.

Public School and Public Facilities Uses

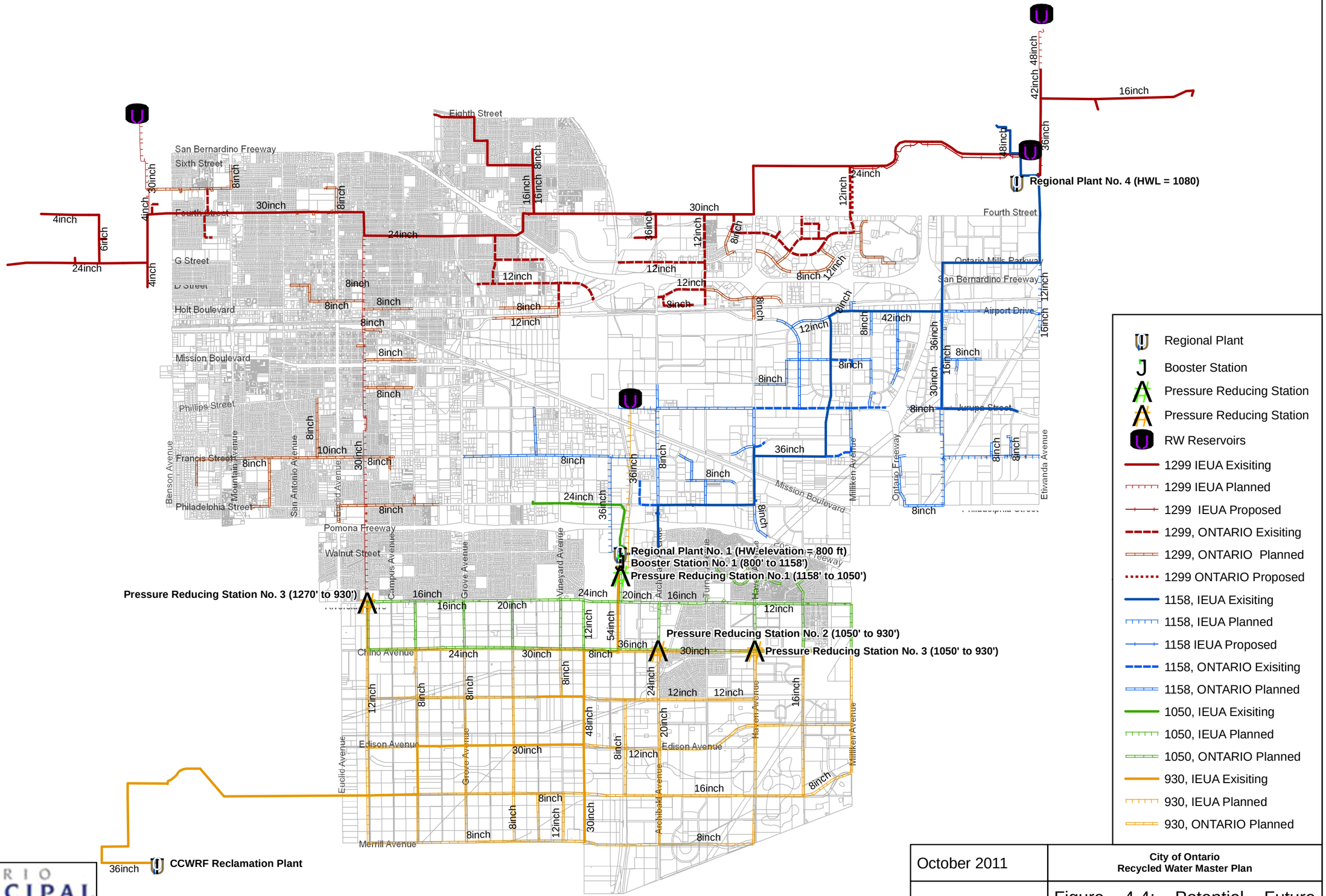
Public Schools and Public Facilities, such as Fire Stations, have a similar landscaping intensity and were determine to have the same demand factor.

To determine the Public School Demand factor, a weighted average of public schools currently connected to Recycled Water was calculated and a demand factor of 1.73 AF/Y found.

4-7 Future Recycled Water System

In the NMC, which is relatively undeveloped and does not have a lot of paved roads, it was determined that all new development would be required to connect to and use Recycled Water for all approved uses. Therefore, a grid backbone system of recycled water pipelines coincident with major arterial roadways was devised to serve the NMC.

For determining Recycled Water pipeline alignments in the OMC, original potential customers and alignments were preserved from Section 10 of the 2006 Water and Recycled Water Master Plan. In addition to the original 2006 customers and alignments, customers with irrigation meters were geographically located and alignments were created to serve clusters of those customers. Customers with separate irrigation meters are easier to connect to recycled water and require less time and money to retrofit for recycled water use. After the new alignments were created, addition potential customers were identified with combination meters along proposed aliments and are studied in Section 4-8. See Figure 4-4 for the Potential Future Recycled Water System.



ONTARIO MUNICIPAL UTILITIES COMPANY

October 2011	**City of Ontario Recycled Water Master Plan**
Page 4-9	Figure 4-4: Potential Future Recycled Water System

4-8 Potential Recycled Water Users

Potential users were identified and separated into several categories depending on it's status of vacant land conversion or if it was previously studied or not.

Vacant Demand - The recycled water demand for all the land in the NMC and newly target land in the OMC.

All the land in the NMC was identified and summarized by land use and the new Recycled Water Demand Factors were applied. Vacant land along newly proposed laterals and regional lines was identified and the new Recycled Water Demand Factors were applied. This Demand excludes vacant land that was previously captured in the 2006 Master Plan. See Table 4-2 for a summary of vacant land.

Table 4-2 - Vacant Land Demand

		OMC		NMC		
Use	**Factor**	**Area**	Demand	**Area**		Demand
PROP_GP	[AF/AC]	[AC]	[AF]	[SF]	[AC]	[AF]
Residential						
RR	0.00		0.000	0.000	0.00	0.000
LDR	1.00		0.000	137563393	3,158.02	3,158.021
LMDR	1.12		0.000	22010261.9	505.29	563.765
MDR	1.68		0.000	46121288.9	1,058.80	1,781.701
HDR	1.68		0.000	0.000	0.00	0.000
Mixed Use						
MU	1.90	325.96	619.324	25239232.9	579.41	1,100.885
Commercial						
NC	2.37		0.000	4102621.93	94.18	223.214
GC	3.32		0.000	6375062.41	146.35	485.886
OC	1.75	10.83	18.954	5439713.13	124.88	218.538
HOS	1.90	3.73	7.078	0.000	0.00	0.000
Industrial						
BP	2.29	19.42	44.479	33425438.1	767.34	1,757.214
IND	3.13	257.38	805.593	11704475.2	268.70	841.024
Other						
OS-NR	0.00		0.000	19566725	449.19	0.000
OS-R	1.50		0.000	20100694.8	461.45	692.173
OS-W	1.50		0.000	2220432.76	50.97	76.461
PF	1.73		0.000	108166.476	2.48	4.296
PS	1.73		0.000	8616164.37	197.80	342.194
ARPT	2.29	195.68	448.113	0.000	0.00	0.000
Rail	0.00		0.000	0.000	0.00	0.000
ROW	1.50		0.000	0.000	161.00	241.500
Vacant Acres		**813.00**			**8,025.87**	
Total Vacant Demand			**1,943.54**			**11,486.87**

Existing Users – Current Recycled Water Demand from existing users excluding agricultural use.

The Recycled Water database was queried for total non-agricultural use as of December 30, 2009. Demand was derived from actual recycled water billing. For those users that did not have 12 months worth of recycled water use, use was taken from previous year's potable water billing data.

2006 Model Conversions – Potential Recycled Water conversions identified in the 2006 Water and Recycled Masterplan.

Demand was taken from the Table "Uses included in Feasibility Analysis" in Appendix H of 2006 Water and Recycled Masterplan. Users that were already converted to recycled water were excluded from this and included in the Existing Users Demand.

Regional Pipline Conversions - Potential Recycled Water conversions along regional pipelines identified in the 2006 Water and Recycled Masterplan.

Demand was taken from the Table "Other Users (located along Regional Pipelines)" in Appendix H of 2006 Water and Recycled Masterplan. Users that were already converted to recycled water were excluded for this demand and included in the Existing Users Demand.

Proposed Update Conversions – New potential Recycled Water users not previously identified in the 2006 Water and Recycled Masterplan.

New potential areas of Industrial, Commercial, and Multi-Family for recycled water use were identified in the OMC and new proposed Recycled Water laterals were added to the 2006 Water and Recycled Masterplan during the Development Impact Fee (DIF) update process. Using GIS, the new laterals that were identified were buffered and overlayed with the existing meter data that was geocoded; the resulting layer was all meters that were serviceable from the new laterals. Of the meters that were within the service distance of the new laterals, only dedicated irrigation meters and combo meters for sites without irrigation meters were used. 100% of irrigation meter use and 10% of combo meter use was used to calculate the potential demand for this category.

4-9 Potential Future Recycled Water Demand

This Master Plan has been prepared to study all potential uses of Recycled Water in the City and present a potential overall demand. Actual construction of new Recycled Water pipelines and connection to customers will be based upon Recycle Water allocations from IEUA.

Table 4-3 shows the total potential Recycled Water Demand through out the City's Service Area.

Table 4-3 - Total Potential Recycled Water Demand

	OMC	NMC		Total
Total Vacant Demand	**1,943.54**	**11,486.87**		**13,430.41**
Existing Users	**2,637.19**			**2,637.19**
2006 Model Conversions	**2,831.38**			**2,831.38**
Region Pipeline Conversions	**1,168.60**			**1,168.60**
Proposed Update Conversions	**6,577.89**			**6,577.89**
Total AF	**15,158.602**	**11,486.872**		**26,645.47**

Section 5
Hydraulic Model

5-1 Hydraulic Model Geometry

The geometry for the City's model was provided by IEUA, entitled IEUA Recycled Water Program Strategies 11-15-10.mxd (InfoWater) and the "2012_AVG" scenario was utilized. Geometry was created for the City's Potential projects and was added to the IEUA base model.

5-2 Demands

Demands for existing other agencies came from IEUA's model and from IEUA's 2010 Urban Water Management Plan, see Table 3-13. The data for year 2035 was assumed to be the ultimate demands and therefore used in the model.

City Demands were developed using actual customer data and from the demand factors in Section 5. Demands were allocated to the nearest node.

5-3 Demand Categorization

The future other agency demands were separated into irrigation demands and agricultural demands. Table 6-9 of IEUA's 2005 Recycled Water Implementation Plan was used to determine the long term agricultural customer demand (Chino: 4,625 AFY, Chino Hills: 206 AFY, Fontana: 45 AFY). The remaining use was assumed to be irrigation.

The existing City demands for the OMC were assumed to be irrigation and industrial processes, based on existing use. For NMC Demands, the model was used to allocate the demands by acreage. The unit demand factors from Section 5 were utilized.

5-4 Peaking Factors and Patterns

Peaking factors shown in Table 6-2 of IEUA's 2005 Recycled Water Implementation Plan were originally used. The summer peaking factor is 2.6 for irrigation and agricultural users. The summer peak hour demand factor is 3.0 for irrigation users (8 hour use schedule) and 2.0 for agricultural users (12 hour use schedule). The resulting peak hour demand factor during the summer is 7.8 for irrigation users and 5.2 for agricultural users. Three scenarios were ultimately looked at:

> Scenario 1: 7.8 peaking factor (2.6 x 3) for irrigation users and 5.2 peaking factor (2.6 x 2) for agricultural users

Scenario 2: 5.2 peaking factor (2.6 x 2) for irrigation users and 5.2 peaking factor (2.6 x 2) for agricultural users.

Scenario 3: 4.0 peaking for irrigation and 4.0 peaking for agricultural users This assumes a summer peaking factor of 2.0 and a peak hour demand factor of 2.0 (12 hour irrigation schedule).

The Peaking factor of 4.0 is recommended which is based upon a 24 month study of average monthly use of existing customers.

5-5 Skeletonization and Boundary Controls

The IEUA base model was skeletonized to only include pipes in the Ontario area and boundary controls based upon the IEUA model were used. The pipes to the north, east, and west were deleted. Demands were added at select nodes to represent demands for other agencies. The RP-5 service area was not included because it is essentially independent from Ontario's service area. Pipe between 1299 zone and 1158 zone, adjacent RP-4 was closed; original model had the two zones interconnected.

Treatment plant pump stations were modeled as fixed head reservoirs to provide a constant downstream pressure.

Rp-1 Outfall Parallel is assumed to be constructed at buildout.

The model was then run and pipes and improvements were recommended based on a series of trials of the model.

Section 6
Capital Improvement Plan

6-1 General

Based upon the City's Urban Water Management Plan 2011 Update, it was determined that total Recycled Water Demand would not exceed 18,385 AFY. Through the City's development policies, development is required to maximize the use of Recycled Water within the New Model Colony (NMC), and therefore will be the most efficient and cost effective use of Recycled Water in the City and will be allocated water supply as a first priority. Using the Demand Factors developed in Section 5, the NMC has a demand of 11,487 AFY, which leave 6,898 AFY of Recycled Water for the Old Model Colony (OMC). Currently existing users in the OMC use 2,637 AFY, which leaves 4,261 AFY of Recycled Water available for new customers in the OMC.

6-2 Capital Improvement Program Prioritization

All the potential Recycled Water projects in the OMC were studied for feasibility prioritized based upon the least amount of cost to deliver the most amount AFY (See Table 6-1). Projects along the future IEUA Sultana line were given the lowest priorities due to the uncertain nature of the viability of the Sultana Line. Once the projects were ranked, the first set of projects not exceeding 4,261 AFY were recommended for the Capital Improvement Plan.

6-3 Cost Estimates

The unit cost factors are based upon the cost factors developed for the recent Potable Water Master Plan Update 2011. It was determined that construction of new water pipeline would cost $16 per diameter inch per linear feet of pipe plus 35% for Design, Construction Management, and Contingencies.

6-4 Capital Improvement Plan

The recommended Capital Improvement Plan consists of all improvements necessary to serve the entire NMC the maximum efficient amount of Recycled Water possible and allocates remaining Recycled Water demand to the OMC based on the most cost effective and efficient delivery of Recycled Water to new OMC customers. Figures 6-1, 6-2, 6-3 and 6-4 display the Recommend CIP and Tables 6-2 & 6-3 detail all projects. The following is an overall summary of the recommend CIP:

	Pipe LF	Cost
OMC	28,500	$10,602,058.15
NMC	265,843	$72,152,657.71
Total	294,343	$82,754,715.86

Table 6-1: Pipe Segemant Feasibility Study

Recommend CIP

Project	Group	Pipe Diameter	Legnth (LF)	ADD (gpm)	Price $/LF	Cost	Total Cost	AFY	$/AFY
1	0010	8	28.17	79.470	$128.00	$3,606.31	$4,868.52	128.1774	$37.98
2	0013	8	15.14	12.420	$128.00	$1,937.89	$2,616.15	20.03226	$130.60
3	0009	8	266.65	43.210	$128.00	$34,131.02	$46,076.88	69.69355	$661.14
4	0002	8	2226.81	259.910	$128.00	$285,032.24	$384,793.52	419.2097	$917.90
5	0004	8	225.67	24.010	$128.00	$28,885.75	$38,995.76	38.72581	$1,006.97
6	0001	8	5407.64	309.950	$128.00	$692,178.52	$934,441.00		
6	0001	12	1881.62	801.720	$192.00	$361,270.91	$487,715.73	1293.097	$1,099.81
7	0028	8	2640.61	169.920	$128.00	$337,998.45	$456,297.90	274.0645	$1,664.93
8	0015	8	1730.73	109.830	$128.00	$221,533.59	$299,070.35	177.1452	$1,688.28
9	0033	8	1694.63	266.250	$128.00	$216,912.07	$292,831.29	429.4355	
9	0033	12	2485.80	328.190	$192.00	$477,273.12	$644,318.71	529.3387	$1,770.42
10	0016	8	2857.65	157.140	$128.00	$365,779.74	$493,802.65	253.4516	$1,948.31
11	0003	8	425.19	21.520	$128.00	$54,423.79	$73,472.12	34.70968	$2,116.76
12	0014	8	1357.82	61.360	$128.00	$173,800.62	$234,630.83	98.96774	$2,370.78
13	0011	8	822.32	35.540	$128.00	$105,256.63	$142,096.46	57.32258	$2,478.89
14	0027	8	8691.17	218.170	$128.00	$1,112,469.37	$1,501,833.66	351.8871	$4,267.94

Other Projects Reviewed

Project	Group	Pipe Dian	Legnth (L	ADD (gpr	Price $/LF	Cost	Total Cost	AFY	$/AFY
15	0020	8	4433.45	197.550	$128.00	$567,481.95	$766,100.64	318.629	$2,404.37
16	0035	8	479.05	245.190	$128.00	$61,318.53	$82,780.01	395.4677	$2,610.05
16	0035	12	3662.84	243.660	$192.00	$703,265.78	$949,408.81		
17	0023	8	708.02	28.150	$128.00	$90,626.75	$122,346.11	45.40323	$2,694.66
18	0018	8	325.62	12.420	$128.00	$41,679.56	$56,267.40	20.03226	$2,808.84
19	0024	8	3122.63	225.050	$128.00	$399,696.57	$539,590.37		
19	0024	12	10088.40	663.500	$192.00	$1,936,972.81	$2,614,913.29	1070.161	$2,947.69
20	0032	8	1844.70	59.180	$128.00	$236,121.12	$318,763.51	95.45161	$3,339.53
21	0007	8	2057.65	57.800	$128.00	$263,379.75	$355,562.67	93.22581	$3,813.99
22	0030	8	1922.87	103.150	$128.00	$246,127.10	$332,271.59		
22	0030	12	1200.44	103.150	$192.00	$230,484.13	$311,153.58	166.371	$3,867.41
23	0026	8	1378.92	37.910	$128.00	$176,502.14	$238,277.89	61.14516	$3,896.92
24	0021	8	1325.27	36.210	$128.00	$169,634.64	$229,006.77	58.40323	$3,921.13
25	0022	8	2368.19	63.630	$128.00	$303,127.74	$409,222.45	102.629	$3,987.39
26	0019	8	1067.19	25.660	$128.00	$136,600.36	$184,410.49	41.3871	$4,455.75
27	0017	8	5515.22	131.880	$128.00	$705,947.64	$953,029.31	212.7097	$6,074.42
27	0017	16	981.07	55.130	$256.00	$251,153.95	$339,057.84		
28	0029	8	4703.95	76.760	$128.00	$602,105.18	$812,841.99	123.8065	$6,565.43
29	0008	8	5435.87	79.750	$128.00	$695,790.76	$939,317.52	128.629	$7,302.53
30	0034	8	3272.15	36.820	$128.00	$418,834.70	$565,426.85	59.3871	$9,521.04
31	0037	8	1647.25	8.650	$128.00	$210,847.36	$284,643.94	13.95161	$20,402.22
32	0025	8	5963.06	30.870	$128.00	$763,271.27	$1,030,416.22	49.79032	$20,695.11
33	0036	8	2619.98	11.240	$128.00	$335,357.44	$452,732.54	18.12903	$24,972.79
34	0031	8	3336.44	12.420	$128.00	$427,064.48	$576,537.05	20.03226	$28,780.43

Other Projects Reviewed (Requiring IEUA to build the Sultana Line)

Project	Group	Pipe Dian	Legnth (L	ADD (gpr	Price $/LF	Cost	Total Cost	AFY	$/AFY
35	1014	8	25.84	24.010	$128.00	$3,307.09	$4,464.57	38.72581	$115.29
36	1015	8	46.75	14.950	$128.00	$5,983.81	$8,078.14	24.1129	$335.01
37	1008	8	82.18	20.700	$128.00	$10,519.63	$14,201.50	33.3871	$425.36
38	1009	8	60.97	8.280	$128.00	$7,803.72	$10,535.02	13.35484	$788.85
39	1013	8	1328.02	47.150	$128.00	$169,985.99	$229,481.09	76.04839	$3,017.57
40	1010	8	2309.61	79.470	$128.00	$295,629.85	$399,100.29	128.1774	$3,113.66
41	1007	8	2638.40	84.120	$128.00	$337,714.72	$455,914.87	135.6774	$3,360.29
42	1016	8	10667.77	301.970	$128.00	$1,365,474.45	$1,843,390.50	487.0484	$3,784.82
43	1012	8	4575.91	99.630	$128.00	$585,716.66	$790,717.49	160.6935	$4,920.65
44	1004	8	1090.39	21.520	$128.00	$139,569.48	$188,418.80	34.70968	$5,428.42
45	1005	8	492.80	9.110	$128.00	$63,077.79	$85,155.02	14.69355	$5,795.40
46	1001	8	760.61	11.590	$128.00	$97,357.75	$131,432.97	18.69355	$7,030.93
47	1011	8	12424.49	80.000	$128.00	$1,590,335.25	$2,146,952.59		
47	1011	10	5268.51	159.580	$160.00	$842,962.20	$1,137,998.97	257.3871	$12,762.69
48	1003	8	2691.81	21.180	$128.00	$344,551.87	$465,145.02	34.16129	$13,616.14
49	1002	8	4949.12	23.370	$128.00	$633,486.79	$855,207.16	37.69355	$22,688.42
50	1006	8	2842.45	1.400	$128.00	$363,833.36	$491,175.04	2.258065	$217,520.37

Eighth Street
San Bernardino Freeway
Sixth Street
Fourth Street
G Street
D Street
Holt Boulevard
Mission Boulevard
Phillips Street
Francis Street
Philadelphia Street
Benson Avenue
Mountain Avenue
San Antonio Avenue
Euclid Avenue
Pomona Freeway
Walnut Street
Riverside Drive
Chino Avenue
Campus Avenue
Grove Avenue
Vineyard Avenue
Archibald Avenue
Turner Avenue
Haven Avenue
Milliken Avenue
Ontario Freeway
Etiwanda Avenue
Jurupa Street
Airport Drive
Fourth Street
San Bernardino Freeway
Pomona Freeway
Mission Boulevard
Philadelphia Street

RW-31
RW-33
RW-46
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RW-6
RW-4
RW-5
RW-5

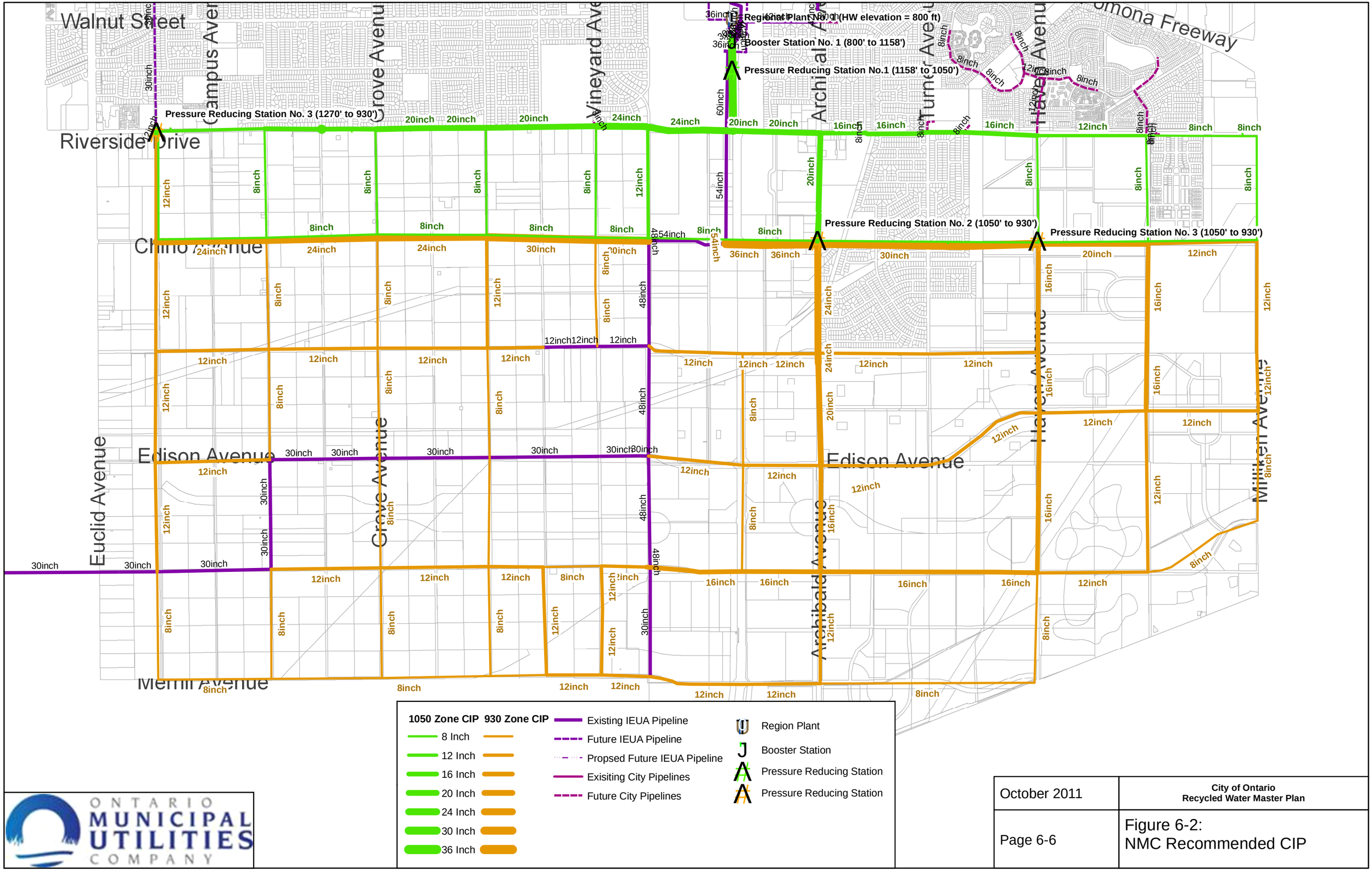
OMC Recomenned CIP
Other Potential OMC Projects
Other Potential OMC Projects (2)
Existing IEUA Pipeline
Future IEUA Pipeline
Propsed Future IEUA Pipeline
Exisiting City Pipelines

ONTARIO MUNICIPAL UTILITIES COMPANY

October 2011	**City of Ontario Recycled Water Master Plan**
Page 6-4	Figure 6-1: Old Model Colony CIP

Table 7-2 OMC CIP

Project Number	ID	Street Location	Size (inches)	Length LF	Unit Cost $/LF	Estimated Cost $	Construction Needs Supported by Other Resources		Construction Needs Generated by New Model Colony		Construction Needs Generated by Old Model Colony	
							Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost
RW-01	NEWP-9720	Connection on Francis	8	28	$173	$4,869	0.00%	$0	0.00%	$0	100.00%	$4,869
		Subtotal		**28**		**$4,869**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$4,869**
RW-02	NEWP-9724	Connection on Francis	8	15	$173	$2,616	0.00%	$0	0.00%	$0	100.00%	$2,616
		Subtotal		**15**		**$2,616**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$2,616**
RW-03	NEWP-9422	Performa north of Philidelphia	8	267	$173	$46,077	0.00%	$0	0.00%	$0	100.00%	$46,077
		Subtotal		**267**		**$46,077**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$46,077**
RW-04	NEWP-9860	Mill Creek Ave/Lytle Creek LP north of Riverside Drive	8	2,227	$173	$384,794	0.00%	$0	0.00%	$0	100.00%	$384,794
		Subtotal		**2,227**		**$384,794**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$384,794**
RW-05	NEWP-9854	Connection on Riverside	8	226	$173	$38,996	0.00%	$0	0.00%	$0	100.00%	$38,996
		Subtotal		**226**		**$38,996**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$38,996**
RW-06	NEWP-9830	Haven and Creekside	8	5,408	$173	$934,441	0.00%	$0	0.00%	$0	100.00%	$934,441
	NEWP-9898	Haven and Creekside	12	1,882	$259	$487,716	0.00%	$0	0.00%	$0	100.00%	$487,716
		Subtotal		**7,289**		**$1,422,157**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$1,422,157**
RW-07	NEWP-9669	Archibald between Francis & Philedelphia	8	2,641	$173	$456,298	0.00%	$0	0.00%	$0	100.00%	$456,298
		Subtotal		**2,641**		**$456,298**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$456,298**
RW-08	NEWP-9662	Jurupa St between I-15 and Wineville	8	1,731	$173	$299,070	0.00%	$0	0.00%	$0	100.00%	$299,070
		Subtotal		**1,731**		**$299,070**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$299,070**
RW-09		Guasti between Turner and Haven and Haven between Guasti and Airport	8	1,695	$173	$292,831	0.00%	$0	0.00%	$0	100.00%	$292,831
		Guasti between Turner and Haven and Haven between Guasti and Airport	12	2,486	$259	$644,319	0.00%	$0	0.00%	$0	100.00%	$644,319
		Subtotal		**4,180**		**$937,150**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$937,150**
RW-10		Saanta Ana E/O Wineville and Sarah Place	8	2,858	$173	$493,803	0.00%	$0	0.00%	$0	100.00%	$493,803
		Subtotal		**2,858**		**$493,803**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$493,803**
RW-11		Turner N/O of Riverside	8	425	$173	$73,472	0.00%	$0	0.00%	$0	100.00%	$73,472
		Subtotal		**425**		**$73,472**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$73,472**
RW-12		Champagne N/O Francis	8	1,358	$173	$234,631	0.00%	$0	0.00%	$0	100.00%	$234,631
		Subtotal		**1,358**		**$234,631**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$234,631**
RW-13		Wannamaker S/O Airport Drive	8	4,433	$173	$766,101	0.00%	$0	0.00%	$0	100.00%	$766,101
		Subtotal		**4,433**		**$766,101**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$766,101**
RW-14	102	Vintage N/O Francis	8	822	$173	$142,096	0.00%	$0	0.00%	$0	100.00%	$142,096
		Subtotal		**822**		**$142,096**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$142,096**
		Total		**28,500**		**$5,302,129**	**0.00%**	**$0**	**0.00%**	**$0**	**100.00%**	**$5,302,129**



ONTARIO MUNICIPAL UTILITIES COMPANY

October 2011	**City of Ontario Recycled Water Master Plan**
Page 6-6	Figure 6-2: NMC Recommended CIP

Regional Plant No. 1 (HW elevation = 800 ft)

Booster Station No. 1 (800' to 1158')

Pressure Reducing Station No.1 (1158' to 1050')

Pomona Freeway

Walnut Street

Chino Avenue

Edison Avenue

Merrill Avenue

Campus Avenue

Grove Avenue

Vineyard Avenue

Archibald Avenue

Turner Avenue

Haven Avenue

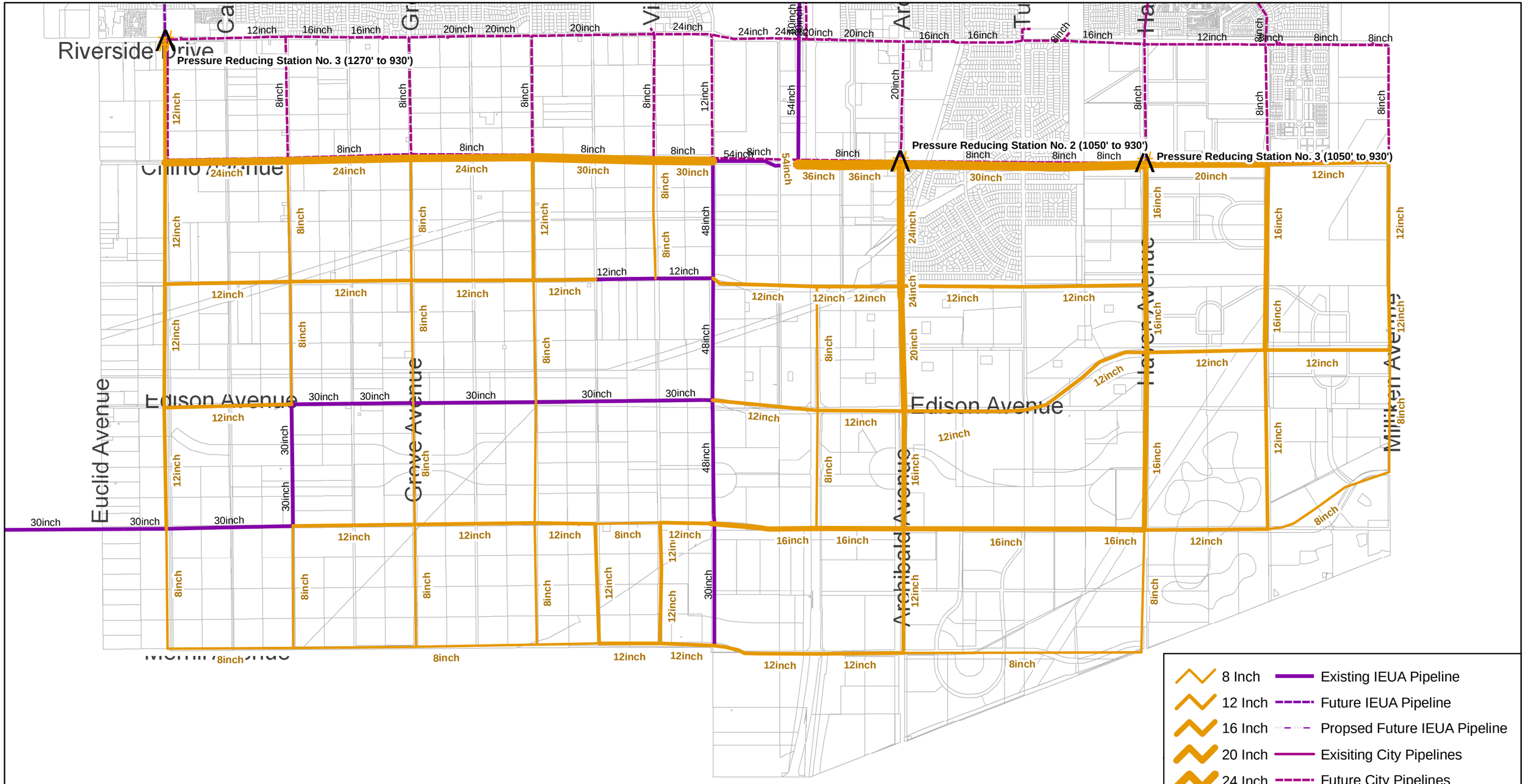
Milliken Avenue

Euclid Avenue

DIAMETER	
8 Inch	Existing IEUA Pipeline
12 Inch	Future IEUA Pipeline
16 Inch	Propsed Future IEUA Pipeline
20 Inch	Exisiting City Pipelines
24 Inch	Future City Pipelines
30 Inch	Region Plant
36 Inch	Booster Station
	Pressure Reducing Station

ONTARIO MUNICIPAL UTILITIES COMPANY

October 2011	**City of Ontario Recycled Water Master Plan**
Page6-7	Figure 6-3: NMC 1050' Zone CIP



ONTARIO MUNICIPAL UTILITIES COMPANY

October 2011	**City of Ontario Recycled Water Master Plan**
Page 6-8	Figure 6-4: 930' Zone CIP

Table 7-3 NMC CIP

Project Number	ID	Street Location	Size (inches)	Length LF	Unit Cost $/LF	Estimated Cost $	Construction Needs Supported by Other Resources		Construction Needs Generated by New Model Colony		Construction Needs Generated by Old Model Colony	
							Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost
1050 Zone OMC & NMC Shared Facilities		RP1 Booster Station				$650,000	0.00%	$0	56.00%	$364,000	44.00%	$286,000
		PRS-1				$330,000	0.00%	$0	56.00%	$184,800	44.00%	$145,200
	NEWP-9814	RP1 Outfall	30	2,164	$648	$1,402,479	0.00%	$0	56.00%	$785,388	44.00%	$617,091
	NEWP601	Riverside Ave between Turner & Haven	16	2,653	$346	$916,853	0.00%	$0	56.00%	$513,438	44.00%	$403,415
	NEWP-9252	Riverside Ave between Mill Creek & Milliken	8	2,716	$173	$469,262	0.00%	$0	56.00%	$262,787	44.00%	$206,475
	NEWP-9596	Riverside Ave between Archibald & Turner	16	2,618	$346	$904,943	0.00%	$0	56.00%	$506,768	44.00%	$398,175
	NEWP-9790	Riverside Ave between RP1 outfall & Archibald	24	2,139	$518	$1,108,984	0.00%	$0	56.00%	$621,031	44.00%	$487,953
	PHLP-3615	Riverside Ave between Haven & Mill Creek	12	2,611	$259	$676,769	0.00%	$0	56.00%	$378,991	44.00%	$297,778
	9012	Riverside Ave between Walker Ave & Vineyard Ave	20	2656	$432	$1,147,503	0.00%	$0	56.00%	$642,602	44.00%	$504,901
	9056	Riverside Ave between Vineyard Ave & Diversa Drive	24	1240	$518	$642,697	0.00%	$0	56.00%	$359,910	44.00%	$282,787
	NEWP-9240	Riverside Avenue between Bon View Ave & Grove Ave	16	2660	$346	$919,124	0.00%	$0	56.00%	$514,709	44.00%	$404,415
	NEWP-9244	Riverside Avenue between Grove Ave & Walker Ave	20	2654	$432	$1,146,567	0.00%	$0	56.00%	$642,078	44.00%	$504,490
	NEWP-9750	Riverside Ave between Diversa Drive & RP1 Outfall	24	2061	$518	$1,068,195	0.00%	$0	56.00%	$598,189	44.00%	$470,006
	NEWP-9816	Riverside Avenue between Sutlana & Bon View Ave	12	2554	$259	$661,919	0.00%	$0	56.00%	$370,674	44.00%	$291,244
		Subtotal		**28,725**		**$12,045,295**	**0.00%**	**$0**	**56.00%**	**$6,745,365**	**44.00%**	**$5,299,930**
1050 Zone NMC Facilities		Sultana between Riverside Ave & Chino Ave	8	2,602	$173	$449,559	0.00%	$0	100.00%	$449,559	0.00%	$0
		Bon View Ave between Riverside Ave & Chino Ave	8	2,623	$173	$453,317	0.00%	$0	100.00%	$453,317	0.00%	$0
		Grove Ave between Riverside Ave & Chino Ave	8	2,529	$173	$437,047	0.00%	$0	100.00%	$437,047	0.00%	$0
		Walker between Riverside Ave & Chino Ave	8	2,575	$173	$445,037	0.00%	$0	100.00%	$445,037	0.00%	$0
		Vineyard between Riverside Ave & Chino Ave	8	2,680	$173	$463,116	0.00%	$0	100.00%	$463,116	0.00%	$0
		Diversa between Riverside Ave & Chino Ave	12	2,668	$259	$691,455	0.00%	$0	100.00%	$691,455	0.00%	$0
		Archibald between Riverside Ave & Chino Ave	20	2,591	$432	$1,119,139	0.00%	$0	100.00%	$1,119,139	0.00%	$0
		Haven between Riverside Ave & Chino Ave	8	2,569	$173	$443,958	0.00%	$0	100.00%	$443,958	0.00%	$0
		Mill Creek between Riverside Ave & Chino Ave	8	2,536	$173	$438,151	0.00%	$0	100.00%	$438,151	0.00%	$0
		Milliken between Riverside Ave & Chino Ave	8	2,489	$173	$430,085	0.00%	$0	100.00%	$430,085	0.00%	$0
		Chino Ave betweenSultana & Milliken	8	26,452	$173	$4,570,889	0.00%	$0	100.00%	$4,570,889	0.00%	$0
		Subtotal		**52,314**		**$9,941,754**	**0.00%**	**$0**	**100.00%**	**$9,941,754**	**0.00%**	**$0**

Project Number	ID	Street Location	Size (inches)	Length LF	Unit Cost $/LF	Estimated Cost $	Construction Needs Supported by Other Resources		Construction Needs Generated by New Model Colony		Construction Needs Generated by Old Model Colony	
							Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost
930 Zone NMC Facilities		PRS-2			$0	$330,000	0.00%	$0	100.00%	$330,000	0.00%	$0
		PRS-3			$0	$330,000	0.00%	$0	100.00%	$330,000	0.00%	$0
		PRS-4			$0	$330,000	0.00%	$0	100.00%	$330,000	0.00%	$0
		Chino Ave between Sultana & Walker	24	7,946	$518	$4,119,090	0.00%	$0	100.00%	$4,119,090	0.00%	$0
		Chino Ave between Walker & Carpenter	30	3,894	$648	$2,523,473	0.00%	$0	100.00%	$2,523,473	0.00%	$0
		Chino Ave between Carpenter & Cucamonga Channel	54	145	$1,166	$169,592	0.00%	$0	100.00%	$169,592	0.00%	$0
		Chino Ave between Cucamonga Channel & Archibald	36	2,210	$778	$1,718,268	0.00%	$0	100.00%	$1,718,268	0.00%	$0
		Chino Ave between Archibald & Haven	30	5,309	$648	$3,440,467	0.00%	$0	100.00%	$3,440,467	0.00%	$0
		Chino Ave between Haven & Mill Creek	20	2,636	$432	$1,138,912	0.00%	$0	100.00%	$1,138,912	0.00%	$0
		Chino Ave between Mill Creek & Milliken	12	2,616	$259	$678,169	0.00%	$0	100.00%	$678,169	0.00%	$0
		Schaefer Ave between Sultana & Baker	12	9,316	$259	$2,414,641	0.00%	$0	100.00%	$2,414,641	0.00%	$0
		Schaefer Ave between Diversa & Archibald	12	4,121	$259	$1,068,200	0.00%	$0	100.00%	$1,068,200	0.00%	$0
		Schaefer Ave between Archibald & Edison	16	4,623	$346	$1,597,874	0.00%	$0	100.00%	$1,597,874	0.00%	$0
		Edison Ave between Sultana & Bon View	12	2,752	$259	$713,366	0.00%	$0	100.00%	$713,366	0.00%	$0
		Edison Ave between Carpenter & Schaefer	12	8,222	$259	$2,131,102	0.00%	$0	100.00%	$2,131,102	0.00%	$0
		Edison Ave between Schaefer & Haven	16	1,565	$346	$541,011	0.00%	$0	100.00%	$541,011	0.00%	$0
		Edison Ave between Haven & Milliken	12	5,261	$259	$1,363,563	0.00%	$0	100.00%	$1,363,563	0.00%	$0
		Eucalyptus Ave between Bon View & Baker	12	5,261	$259	$1,363,563	0.00%	$0	100.00%	$1,363,563	0.00%	$0
		Eucalyptus Ave between Vineyard & Carpenter	12	1,087	$259	$281,869	0.00%	$0	100.00%	$281,869	0.00%	$0
		Eucalyptus Ave between Carpenter & Haven	16	9,396	$346	$3,247,238	0.00%	$0	100.00%	$3,247,238	0.00%	$0
		Eucalyptus Ave between Haven & Mill Creek	12	2,666	$259	$690,979	0.00%	$0	100.00%	$690,979	0.00%	$0
		Eucalyptus Ave between Mill Creek & Milliken	8	2,947	$173	$509,178	0.00%	$0	100.00%	$509,178	0.00%	$0
		Merrill Ave between Sultana & Grove Ave	8	5,372	$173	$928,243	0.00%	$0	100.00%	$928,243	0.00%	$0
		Merrill Ave between Walker & Archibald	12	6,612	$259	$1,713,893	0.00%	$0	100.00%	$1,713,893	0.00%	$0
		Merrill Ave between Archibald & Haven	8	5,147	$173	$889,465	0.00%	$0	100.00%	$889,465	0.00%	$0
		Sultana Ave between Chino & Eucalyptus Ave	12	7,923	$259	$2,053,534	0.00%	$0	100.00%	$2,053,534	0.00%	$0
		Sultana Ave between Eucalyptus Ave & Merrill	8	2,596	$173	$448,593	0.00%	$0	100.00%	$448,593	0.00%	$0
		Bon View Ave between Chino & Edison	8	5,267	$173	$910,201	0.00%	$0	100.00%	$910,201	0.00%	$0
		Bon View Ave between Eucalyptus & Merrill	8	2,638	$173	$455,830	0.00%	$0	100.00%	$455,830	0.00%	$0
		Grove Ave between Chino Ave & Merrill	8	10,571	$173	$1,826,703	0.00%	$0	100.00%	$1,826,703	0.00%	$0
		Walker Ave between Chino Ave & Schaefer	12	2,662	$259	$690,034	0.00%	$0	100.00%	$690,034	0.00%	$0
		Walker Ave between Schaefer & Eucalyptus	8	5,249	$173	$907,057	0.00%	$0	100.00%	$907,057	0.00%	$0
		Baker Ave between Eucalyptus & Merrill	12	2,594	$259	$672,396	0.00%	$0	100.00%	$672,396	0.00%	$0
		Continued										

Project Number	ID	Street Location	Size (inches)	Length LF	Unit Cost $/LF	Estimated Cost $	Construction Needs Supported by Other Resources		Construction Needs Generated by New Model Colony		Construction Needs Generated by Old Model Colony	
							Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost	Percent Need	Apportioned Dollar Cost
930 Zone NMC Facilities Contin'd		Vineyard Ave between Chino & Schaefer	8	2,558	$173	$442,048	0.00%	$0	100.00%	$442,048	0.00%	$0
		Vineyard Ave between Eucalyptus & Merrill	12	2,617	$259	$678,322	0.00%	$0	100.00%	$678,322	0.00%	$0
		Cucamonga Channel between Schaefer & Eucalyptus	8	5,170	$173	$893,332	0.00%	$0	100.00%	$893,332	0.00%	$0
		Archibald between Chino & Schaefer	24	2,867	$518	$1,486,093	0.00%	$0	100.00%	$1,486,093	0.00%	$0
		Archibald between Schaefer & Edison	20	2,463	$432	$1,063,866	0.00%	$0	100.00%	$1,063,866	0.00%	$0
		Archibald between Edison & Eucalyptus	16	2,549	$346	$881,105	0.00%	$0	100.00%	$881,105	0.00%	$0
		Archibald between Eucalyptus & Merrill	12	2,687	$259	$696,590	0.00%	$0	100.00%	$696,590	0.00%	$0
		Haven between Chino Ave & Eucalyptus	16	7,905	$346	$2,731,839	0.00%	$0	100.00%	$2,731,839	0.00%	$0
		Haven between Eucalyptus & Merrill	8	2,644	$173	$456,959	0.00%	$0	100.00%	$456,959	0.00%	$0
		Mill Creek Ave between Chino Ave & Edison Ave	16	4,014	$346	$1,387,356	0.00%	$0	100.00%	$1,387,356	0.00%	$0
		Mill Creek Ave between Edison Ave & Eucalyptus	12	4,014	$259	$1,040,517	0.00%	$0	100.00%	$1,040,517	0.00%	$0
		Milliken between Chino Ave & Edison Ave	12	4,071	$259	$1,055,146	0.00%	$0	100.00%	$1,055,146	0.00%	$0
		Milliken between Edison Ave & Eucalyptus	8	2,638	$173	$455,863	0.00%	$0	100.00%	$455,863	0.00%	$0
		Subtotal		**184,804**		**$55,465,538**	**0.00%**	**$0**	**100.00%**	**$55,465,538**	**0.00%**	**$0**
		Total		**265,843**		**$77,452,587**		**$0**		**$72,152,658**		**$5,299,930**