

TWENTIETH ANNUAL  
STATUS REPORT  
ON  
RECYCLED WATER



FISCAL YEAR  
2008 - 09

SANITATION DISTRICTS OF LOS ANGELES COUNTY



*Twentieth*  
***ANNUAL STATUS REPORT***

***ON***

***RECYCLED WATER USE***

***Fiscal Year 2008-09***

***Sanitation Districts of Los Angeles County***  
***1955 Workman Mill Road***  
***Whittier, CA 90601***

## PREFACE

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In addition to its mission of collecting, treating and disposing of municipal wastewater, the Sanitation Districts of Los Angeles County (Sanitation Districts) have adopted the goal of maximizing the beneficial reuse of the highly treated effluents produced by its water reclamation plants. The Sanitation Districts work with a number of local, regional, and state agencies and other entities in an effort to more fully develop recycled water as a “local” water supply to supplement the area’s limited groundwater and imported water supplies.

In response to many requests for information regarding the various aspects of the Sanitation Districts’ water reuse program, a fiscal year report has been prepared for internal and external distribution. This report is the twentieth of its kind and includes historic recycled water use activities, plant-by-plant descriptions, and diagrams of the various recycled water distribution systems, lists of the users and quantities used, tables of recycled water quality, and plans for expanding the use of recycled water, among other subjects.

This report is divided into five chapters. Chapter 1 is an overview of the Sanitation Districts’ water reuse program. Chapters 2, 3, and 4 detail the water reuse activities at each of the Sanitation Districts’ ten water reclamation plants, which are grouped in three geographic areas: Los Angeles Basin, Santa Clarita Valley, and Antelope Valley, respectively. Chapter 5 details the various proposed water recycling projects in the Sanitation Districts’ service area that are currently under development or in the planning phase.

In order to improve the flow and readability of this report, the narrative descriptions of the more complicated distribution system facilities (Long Beach Water Department, City of Cerritos, City of Lakewood, Central Basin Municipal Water District’s Century and Rio Hondo systems, Walnut Valley Water District, Puente Hills/Rose Hills system, Upper San Gabriel Valley Municipal Water District’s Phase II-A Extension, and the Sanitation Districts’ Eastern Agricultural Site in Lancaster) have been moved to their own individual appendices at the end of this report. The same has been done for the chronology of Sanitation Districts’ reuse activities, which had previously been a table in Chapter 1, and all of the individual effluent quality tables.

Recently added is a page of “Facts-at-a-Glance” that appears before Chapter 1. This page contains a brief list of data regarding the Sanitation Districts’ water recycling program for the subject fiscal year.

Since this report builds on those that have preceded it, any modifications or corrections (e.g., descriptions of distribution system facilities) will be reflected in the most recent report, and should be given precedence over earlier versions.

If you would like additional hard copies of this report or an electronic copy, or would like to comment on its contents, please contact Earle Hartling, Water Recycling Coordinator at (562) 908-4288, extension 2806, or by email at [ehartling@lacsdsd.org](mailto:ehartling@lacsdsd.org). Further information regarding the Sanitation Districts and its activities can be found at the Sanitation Districts’ website at [http://www.lacsdsd.org/info/water\\_reuse/](http://www.lacsdsd.org/info/water_reuse/).

*Cover Photo: California Polytechnic University, Pomona (Cal Poly Pomona) has been receiving recycled water from the Sanitation Districts’ Pomona Water Reclamation Plant since December, 1973. The recycled water is not only used for irrigation of landscaping and athletic fields, but also on every crop grown on the Kellogg Campus, most of which eventually makes its way into the food supply. The domesticated livestock raised on site are also supplied with recycled water.*

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## ***FY 08-09 FACTS-AT-A-GLANCE***

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### **SANITATION DISTRICTS**

Total Effluent Produced: 456.92 MGD (512,001 AFY), 4.5% decrease

Total Recycled Water Produced: 170.75 MGD (191,336 AFY), 67.8% of capacity, 37.4% of the total produced, 0.9% decrease

Total Recycled Water Used: 70.12 MGD (78,571 AFY), 40.8% of recycled water produced, 7.5% decrease, 570 sites (28 new sites added, 3 existing sites eliminated, net increase of 25)

<i>Groundwater replenishment (4) -</i>	32.83 MGD (36,844 AFY)	46.8% of total reuse	11.8% decrease
<i>Landscape irrigation (537) -</i>	14.75 MGD (16,572 AFY)	21.0% of total reuse	5.5% decrease
<i>Agriculture (10) -</i>	13.20 MGD (14,829 AFY)	18.8% of total reuse	0.7% decrease
<i>Industrial (18) -</i>	2.79 MGD (3,134 AFY)	4.0% of total reuse	15.0% decrease
<i>Environmental (1) -</i>	5.56 MGD (7,370 AFY)	9.4% of total reuse	6.6% increase

Total Reuse Since Inception: 2,314,978 AF (753.9 billion gallons)

Transmission lines: 1,135,360 linear feet (215 miles)

Acreage Served: 14,735 acres

Cities Served: 30

Recycled Water Purveyors: 29

Recycled Water Contracts: 24

Chemical Savings: \$146,394

Greenhouse Gas Reduction: 176,800 tons of carbon dioxide

Capacity of Future Planned Reuse Projects: 69,450 AFY (61.98 MGD)

### **JOINT OUTFALL SYSTEM**

Total Effluent Produced: 417.45 MGD (467,776 AFY), 4.7% decrease

Total Recycled Water Produced: 131.19 MGD (147,005 AFY), 31.4% of the total produced, 0.5% decrease

Total Recycled Water Used: 51.14 MGD (57,307 AFY), 39.0% of recycled water produced, 15.6% decrease

### **SANTA CLARITA**

Total Recycled Water Produced: 20.71 MGD (23,208 AFY), 1.7% decrease

Total Recycled Water Used: 0.287 MGD (332 AFY), 1.4% of recycled water produced, 26.1% decrease

### **ANTELOPE VALLEY**

Total Wastewater Treated: 24.02 MGD

Total Recycled Water Produced: 18.76 MGD (21,016 AFY), 3.0% decrease

Total Recycled Water Used: 18.690 MGD (20,943 AFY), 99.7% of recycled water produced, 0.9% increase



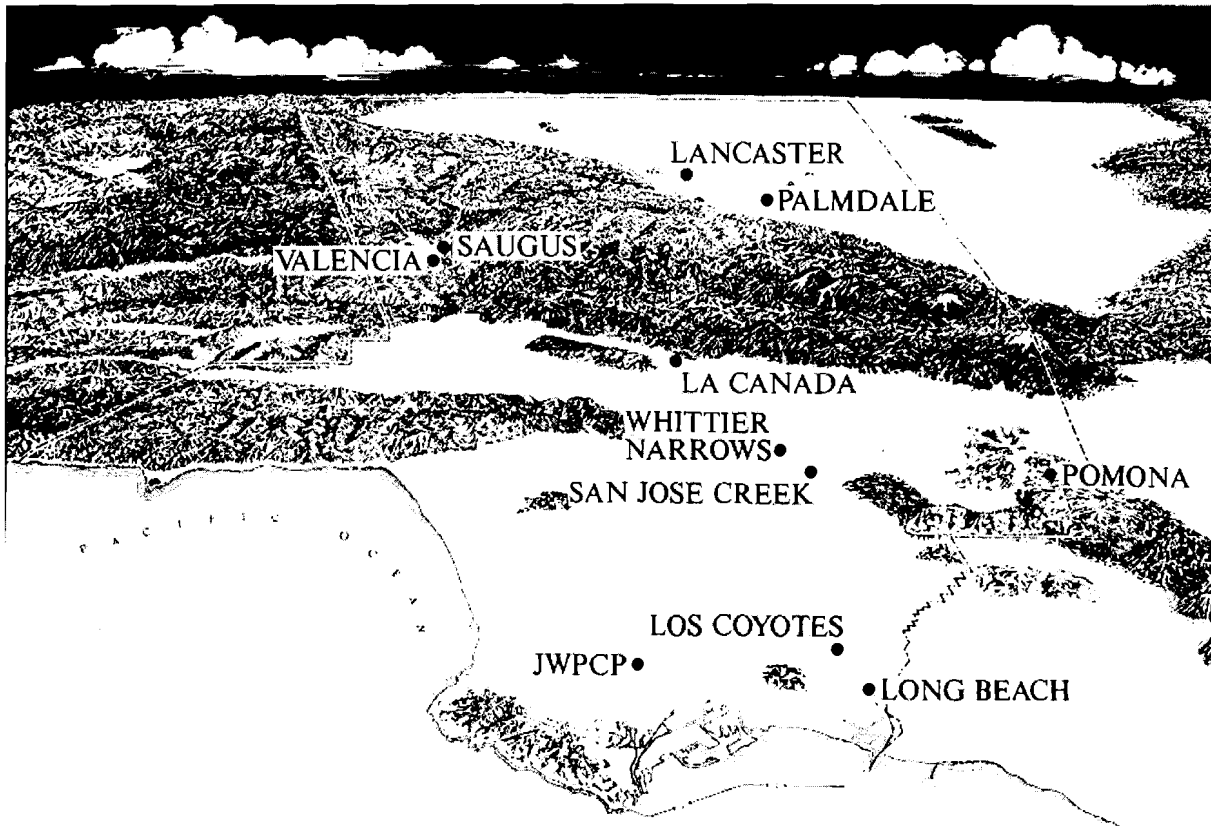


# 1. OVERVIEW

## 1.1 WATER RECLAMATION ACTIVITIES

The Sanitation Districts of Los Angeles County (Sanitation Districts) operate 11 wastewater treatment facilities (Figure 1), 10 of which are classified as water reclamation plants (WRPs). These facilities serve approximately five million people in 78 cities and unincorporated areas within Los Angeles County. Effluent quality from the WRPs ranges from undisinfected secondary to coagulated, filtered, disinfected tertiary. During Fiscal Year 2008-09 (FY 08-09), Sanitation Districts' facilities produced an average of 456.92 million gallons per day (MGD), or 512,001 acre-feet per year (AFY) of effluent, which is a decrease of 4.5% from the preceding fiscal year, and a 14.7% decrease from the historic peak of FY 89-90. Following this peak, total average effluent flow had decreased by 11% in FY 91-92 as a result of widespread water conservation in response to a drought-induced, statewide water crisis, as well as an economic recession. After the drought ended in 1992, overall effluent flows increased, due in part to population growth, a healthier economy, and the easing of conservation measures in response to the improved statewide water supply situation. Total effluent flow peaked again in 1998 due to the extremely heavy, El Niño generated rainfall. Since 1999, total flow production has resumed decreasing despite population growth in the Sanitation Districts' service area. This most recent decrease in effluent production is a result of increasing water conservation efforts (low flow toilets, waterless urinals, water efficient washing machines, etc.) due to a three-year statewide drought and a faltering national economy. Effluent production at Sanitation Districts' facilities is currently at 1980 levels.

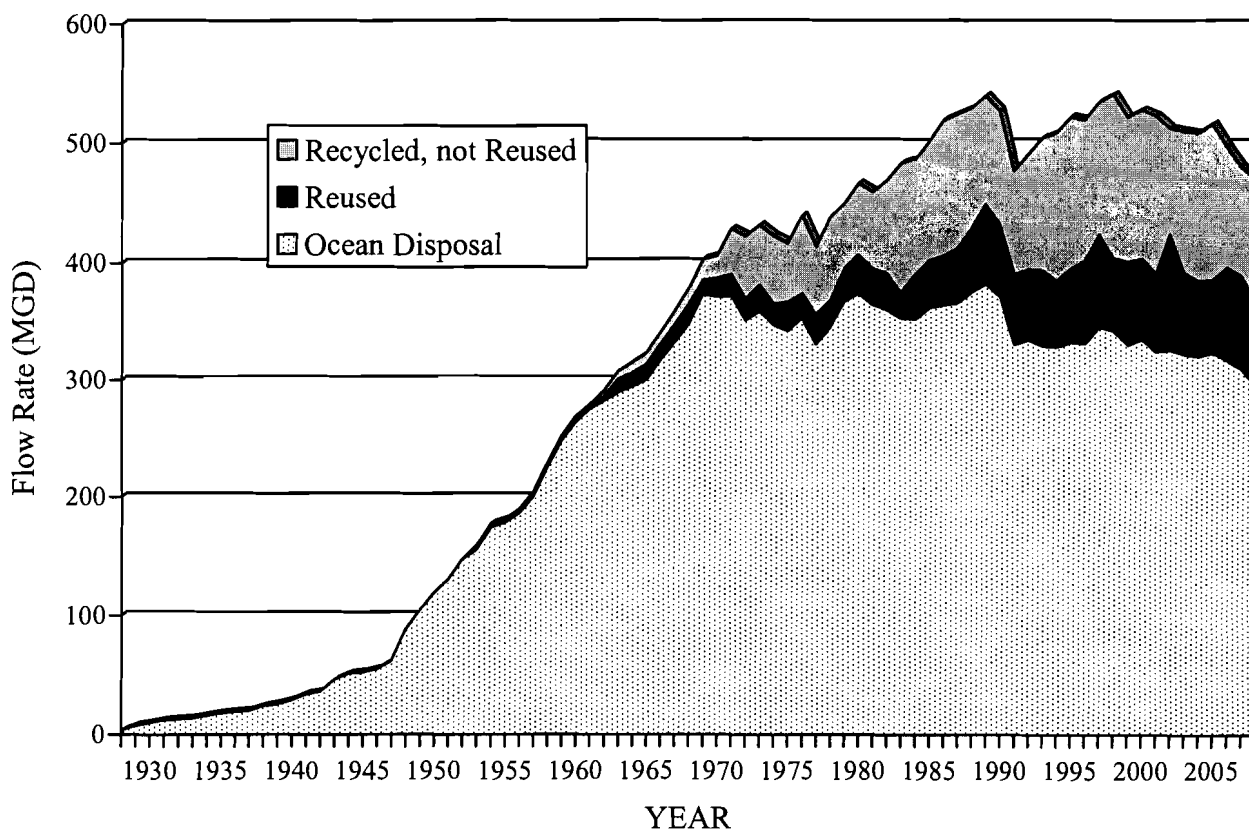
FIGURE 1  
LOCATION OF SANITATION DISTRICTS' WASTEWATER TREATMENT FACILITIES



Capacity at the ten Sanitation Districts' water reclamation facilities is now 252.8 MGD (283,285 AFY). However, of the total effluent produced, only 170.75 MGD (191,336 AFY) consisted of recycled water suitable for reuse (67.8% of capacity). This amount is 37.4% of the total amount of effluent produced, a decrease of 0.9% from the preceding fiscal year. The remaining 286.17 MGD (320,664 AFY) was effluent discharged to the ocean from the Sanitation Districts' Joint Water Pollution Control Plant (JWPCP) in the City of Carson, a 6.6% decrease from the preceding fiscal year.

The Sanitation Districts have made efforts over the past four-and-a-half decades to divert high quality wastewater flows away from direct ocean disposal to the upstream WRPs, which provide recycled water supplies for eventual reuse, as illustrated in Figure 2 (data through the end of calendar year 2008). Discharge to the ocean (lower band on graph) has steadily decreased since the WRPs in the Los Angeles Basin (i.e., the Joint Outfall System, or JOS) were built in the early 1970's, while additional needed treatment capacity has been added to the WRPs (the upper two bands on the graph). Significant drops in effluent production occurred in 1977 and 1991 in response to serious droughts. A similar drop in effluent production has been occurring since 2006 when the current water crisis in the State became apparent and conservation actions began to be implemented. The majority of these decreases came from the JWPCP, while the upstream WRPs were able to maintain a relatively high level of production, which contributed to recycled water's reputation as being "drought-proof." The center band represents the recycled water produced by the WRPs that is being put to beneficial use, while the upper band represents the remaining recycled water that is currently being discharged to rivers, but has the potential to be beneficially reused.

**FIGURE 2**  
**SANITATION DISTRICTS' FLOW DIVERSION TO RECYCLING**  
**1928-2008**



Of the total amount of recycled water produced, 70.13 MGD (78,580 AFY) was actively reused for a variety of applications including urban landscape irrigation, agricultural irrigation, industrial process water, recreational impoundments, wildlife habitat maintenance, and groundwater replenishment. The amount of recycled water produced and reused at each of the WRPs and the percent change from the preceding fiscal year is summarized in Table 1. The amount reused was 40.8% of the recycled water produced, a 7.5% decrease from the preceding fiscal year.

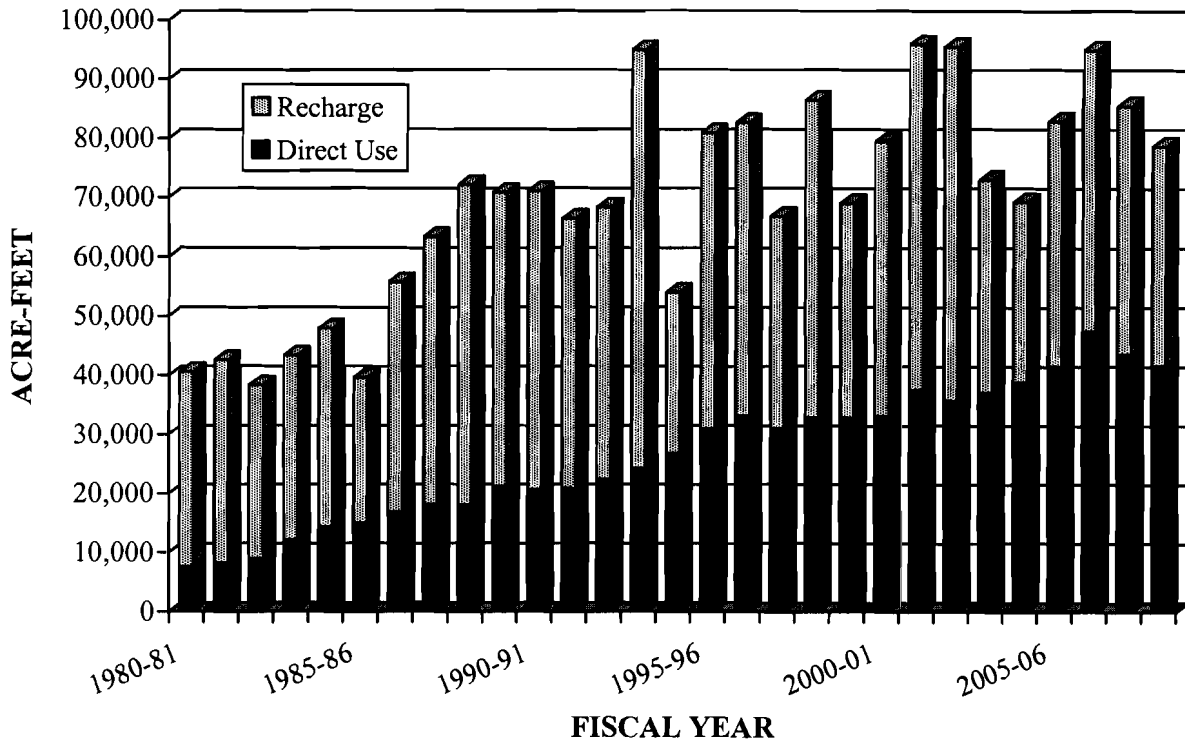
During FY 08-09, 25 new landscape irrigation and three non-irrigation reuse sites began receiving Sanitation Districts' recycled water; however, three existing sites discontinued operations, resulting in a net increase of 25 reuse sites for the fiscal year. Several factors contributed to the decreased amount of recycled water used over the preceding fiscal year. First, this fiscal year saw the Los Angeles Basin experience a fairly normal rainfall season and milder temperatures during the summer that reduced the need for recycled water for irrigation. And second, deliveries of recycled water for groundwater recharge were below permitted amounts due to infrastructure issues with the San Jose Creek Outfall that limited deliveries to the San Gabriel Coastal Spreading Grounds. This is discussed in greater detail in Section 2.5.1 below.

**TABLE 1**  
**RECYCLED WATER PRODUCED AND REUSED AT WATER RECLAMATION PLANTS**  
**FISCAL YEAR 2008-09**

<b>Water Reclamation Plant</b>	<b>Nominal Treatment Capacity (AFY)</b>	<b>Quantity Recycled (AFY)</b>	<b>Percent Change from FY 07-08 (+/-)</b>	<b>Quantity Reused (AFY)</b>	<b>Percent Change from FY 07-08 (+/-)</b>	<b>Percent of Recycled Water Used</b>
La Cañada	225	106	-8.6	106	-8.6	100
Long Beach	28,015	20,211	+11.2	6,467	+1.9	32.0
Los Coyotes	42,020	30,405	+5.0	6,313	-6.7	20.8
Pomona	16,810	10,006	+1.7	8,424	+3.3	84.2
San Jose Creek	112,055	79,615	-3.6	29,392	-15.6	36.9
Whittier Narrows	16,810	6,769	-15.9	6,613	-10.3	97.7
Valencia	24,205	17,333	-4.2	322	-28.3	1.9
Saugus	7,285	5,876	+1.5	0	0	0
Lancaster	19,050	12,964	-1.6	12,964	-1.6	100
Palmdale	16,810	9,201	+1.1	7,979	+5.2	86.7
<b>TOTAL</b>	<b>283,285</b>	<b>192,486</b>	<b>-0.6</b>	<b>78,580</b>	<b>-7.5</b>	<b>40.8</b>

The amount of recycled water used for replenishment of the underground water supply can vary greatly from year to year, depending on the amount and timing of rainfall runoff, maintenance activities in the spreading grounds, and other factors, as illustrated by the upper bar in Figure 3. The long-term trend of recycled water usage is best represented by the increase in direct, nonpotable reuse for landscape and agricultural irrigation, industrial process supply, and environmental enhancement. The lower bar on Figure 3 shows the steady growth of annual average daily demand for direct, nonpotable reuse through FY 08-09.

**FIGURE 3**  
**DIRECT NONPOTABLE REUSE VS. GROUNDWATER RECHARGE**  
**1980-81 TO 2008-09**



**1.2 WATER RECYCLING PROJECTS**

In 1970, prior to the droughts of 1976-77 and 1987-92, there were six reuse customers using 21 MGD on 940 acres (consisting of both irrigable acres and recharge basins). By the end of the subject fiscal year, there were a total of 570 reuse sites on approximately 14,735 acres, utilizing approximately 1,135,360 linear feet (about 215 miles) of transmission pipelines in 30 cities. This usage includes one city employing a water truck to haul recycled water to various greenbelt areas and occasional private water trucks hauling recycled water to construction sites. Table 2 summarizes the approximate length of distribution system pipelines (where applicable), the amount of recycled water used by each of the water recycling projects (detailed in later sections), the percent change from the preceding fiscal year, and the number of new reuse sites added to that recycling project over the past fiscal year. Figure 4 shows the increase in the number of reuse sites receiving recycled water from the Sanitation Districts from 1970 to mid 2009.

*Cities with Recycled  
Water Use Sites*

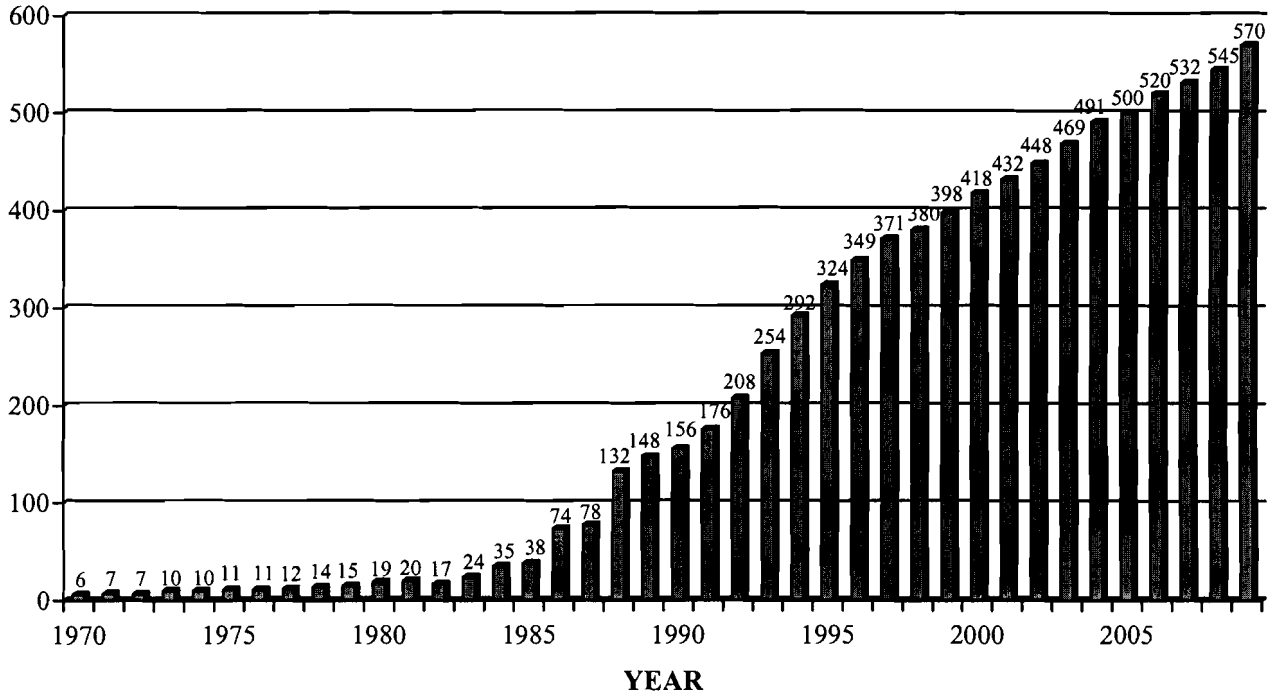
Bellflower	Norwalk
Bell Gardens	Palmdale
Cerritos	Paramount
Compton	Pico Rivera
Cudahy	Pomona
Diamond Bar	Rowland Heights
Downey	Santa Clarita
El Monte	Santa Fe Springs
Huntington Park	Signal Hill
Industry	South El Monte
La Cañada	South Gate
Lakewood	Vernon
Lancaster	Walnut
Long Beach	West Covina
Lynwood	Whittier



**TABLE 2**  
**RECYCLED WATER USED BY WATER RECYCLING PROJECT**  
**FISCAL YEAR 2008-09**

<b>Project Name</b>	<b>Pipeline Length (linear feet)</b>	<b>Recycled Water Used (AFY)</b>	<b>Percent Change from FY 07-08 (+/-)</b>	<b>No. of New Reuse Sites</b>
La Cañada-Flintridge Country Club		106	-8.6	
Long Beach Water Department	171,900	4,645	-9.0	1
Alamitos Seawater Barrier		1,822	+46.7	
City of Bellflower	1,900	63	+31.2	
City of Cerritos	142,600	2,032	-6.0	3
City of Lakewood	28,300	401	-12.4	
Central Basin MWD (Century)	189,800	3,818	-6.9	5
Pomona Water Department	37,000	2,176	+0.1	
Spadra Landfill		483	-16.4	
Walnut Valley Water District	166,320	1,246	-4.2	15
Rowland Water District	29,280	18	+12.5	
Water Replenishment District		34,970	-13.7	
City of Industry	44,350	933	-2.8	
California Country Club		501	+0.2	
J&E's Nursery		12	-7.7	
Central Basin MWD (Rio Hondo)	95,000	259	-3.7	
Puente Hills/Rose Hills	8,900	2,290	-5.5	
USGVMWD Rio Hondo Extension	11,020	659	-0.3	
F.L. Norman's Nursery		37	-31.5	
Whittier Narrows Recreation Area	18,900	845	-18.6	
Castaic Lake Water Agency	16,490	322	-283	
Piute Pond		7,350	+6.2	
Nebeker Ranch	15,900	4,270	-13.7	
Apollo Community Regional Park	23,800	192	-21.6	
City of Lancaster	29,800	3	--	4
Eastern Agricultural Site	90,900	1,148	+7.8	
Los Angeles World Airports Lease	13,200	7,979	+5.2	
<b>TOTALS</b>	<b>1,135,360</b>	<b>78,580</b>	<b>-7.5</b>	<b>28</b>

**FIGURE 4  
INCREASE IN NUMBER OF REUSE SITES  
1970-2009**



During FY 08-09, 27.19 MGD (30,469 AFY) was used for groundwater replenishment from the San Jose Creek and Whittier Narrows WRPs. Approximately 1,446,836 acre-feet (AF) of recycled water from these two plants have been used to recharge the Central Basin aquifer since August 1962, when the Whittier Narrows WRP was commissioned, through the end of FY 08-09. Another 4.02 MGD (4,501 AFY) of effluent discharged from the Pomona WRP to the San Jose Creek Channel was credited toward indirect groundwater recharge, after estimating how much of this discharge was lost to the ocean during the winter storm season. In the past, this flow stream was not included in the total amount of recycled water used, since most of it entered groundwater via incidental recharge upstream of the spreading grounds. However, since this flow stream is credited against the allowable amount to be recharged, it has been included in the total amount of water actively reused, beginning in FY 94-95.

More recycled water is typically used for groundwater recharge (via surface spreading) than for all other applications combined because of its cost-effectiveness. The San Jose Creek, Whittier Narrows, and Pomona WRPs discharge to rivers or creeks (i.e., flood control channels) that can convey the water by gravity to existing off-stream recharge basins. These basins and the unlined portions of the rivers and creeks permit large volumes of recycled water to percolate by gravity into the aquifer. Recycled water used in this way incurs no additional capital improvement and related operation and maintenance (O&M) costs or any energy consumption for pumping.

There was another source of replenishment water during FY 08-09, as the Alamitos Seawater Intrusion Barrier received 1.626 MGD (1,822 AFY) of recycled water originating from the Long Beach WRP and treated to an advanced level (see details in Section 2.2.2). Even though the purpose of this facility is to prevent seawater from moving inland and contaminating the groundwater aquifer, most of the injected water (roughly 80%) moves inland and becomes part of the region's drinking water supply. The amount injected during the past fiscal year was significantly more than the preceding year due to the completion of construction activities at the WRP that had taken half of the plant's secondary aeration systems out of service during the previous summer.

However, the full capacity of the Leo Vander Lans advanced treatment plant that supplies the Alamitos Barrier still could not be realized due to peak irrigation demands by the City of Long Beach that used up most of the available effluent from the Long Beach WRP during the summer months.

During FY 08-09, the total of 32.83 MGD (36,792 AFY) that went to groundwater replenishment was an 11.9% decrease from the preceding fiscal year. Of the total amount of water reused during FY 08-09, 46.8% went for groundwater replenishment, which is the sixth time in history (and sixth year in a row) that this reuse application has dropped below half of total reuse, albeit only by a few percent. This was partially the result of a colony of non-native *Tilapia* fish living in effluent from the San Jose Creek WRP discharged to the lined portion of the San Gabriel River. Concerns over the potential for a fish kill prevented that effluent source from being diverted directly into the San Gabriel Coastal Spreading Grounds, necessitating that it continue to be discharged to the lined portion of the San Gabriel River instead. However, modifications were made at the spreading ground diversion gate that allowed it to be partially closed. In March 2009, a partial closure of the gate was initiated, with the degree of closure being increased incrementally over the following months to a point where the majority of flow in the Outfall was being recharged. A sufficient amount of effluent is being discharged to the lined portion of the San Gabriel River to sustain the fish until a permanent solution for this invasive species can be found.

The remainder of the recycled water usage was divided between four broad categories of direct usage:

- ◆ A total of 537 of the individual reuse sites used recycled water for some form of landscape irrigation, and approximately 14.749 MGD (16,572 AFY), or 21.0% of the total water reused, went toward this application. These sites include 101 parks, 97 schools, 151 commercial and office buildings (e.g., offices, warehouses, retail, car dealerships, hotels, restaurants, etc.), 94 roadway greenbelts, 24 public facilities (e.g., police station, post office, libraries, landfills, etc.), 20 golf courses, 17 nurseries, 17 residential developments, nine churches, and seven cemeteries.
- ◆ Agricultural usage at 10 reuse sites accounted for approximately 13.198 MGD (14,829 AFY), or 18.8% of the total reused.
- ◆ Eighteen industrial applications of recycled water (which include carpet dyeing, oil field injection, power plant cooling towers, and construction applications such as dust control and concrete mixing) totaled 2.789 MGD (3,134 AFY), or 4.0% of the total reused.
- ◆ Approximately, 5.559 MGD (7,350 AFY), or 9.4% of the total reused, went to environmental enhancement of a wildlife habitat (Piute Ponds) in the Mojave Desert.

<b>TOP TEN – LARGEST DIRECT REUSE SITES OF 2008-09*</b>			
<b>1. Antelope Valley Farms</b>	<b>7,856 AFY</b>	<b>6. Eastern Agricultural Site</b>	<b>1,148 AFY</b>
Palmdale WRP (agricultural irrigation of alfalfa)		Lancaster WRP (agricultural irrigation of alfalfa)	
<b>2. Nebeker Ranch</b>	<b>4,270 AFY</b>	<b>7. Puente Hills Landfill</b>	<b>1,003 AFY</b>
Lancaster WRP (agricultural irrigation of alfalfa)		San Jose Creek WRP (irrigation & dust control)	
<b>3. Alamitos Intrusion Barrier</b>	<b>1,822 AFY</b>	<b>8. Industry Hills Recreation Area</b>	<b>933 AFY</b>
Long Beach WRP (seawater barrier injection)		San Jose Creek WRP (landscape irrigation)	
<b>4. Cal Poly University, Pomona</b>	<b>1,278 AFY</b>	<b>9. THUMS</b>	<b>914 AFY</b>
Pomona WRP (agricultural food crop irrigation)		Long Beach WRP (oil zone repressurization)	
<b>5. Rose Hills Memorial Park</b>	<b>1,186 AFY</b>	<b>10. Bonelli County Regional Park</b>	<b>876 AFY</b>
San Jose Creek WRP (landscape irrigation)		Pomona WRP (landscape irrigation)	

\* excluding discharge-based reuse applications of groundwater recharge by spreading and Piute Ponds

Table 3 lists the number of sites in each category of use, along with total acreage and average daily usage. Figure 5 shows the distribution of reuse flows among these various applications.

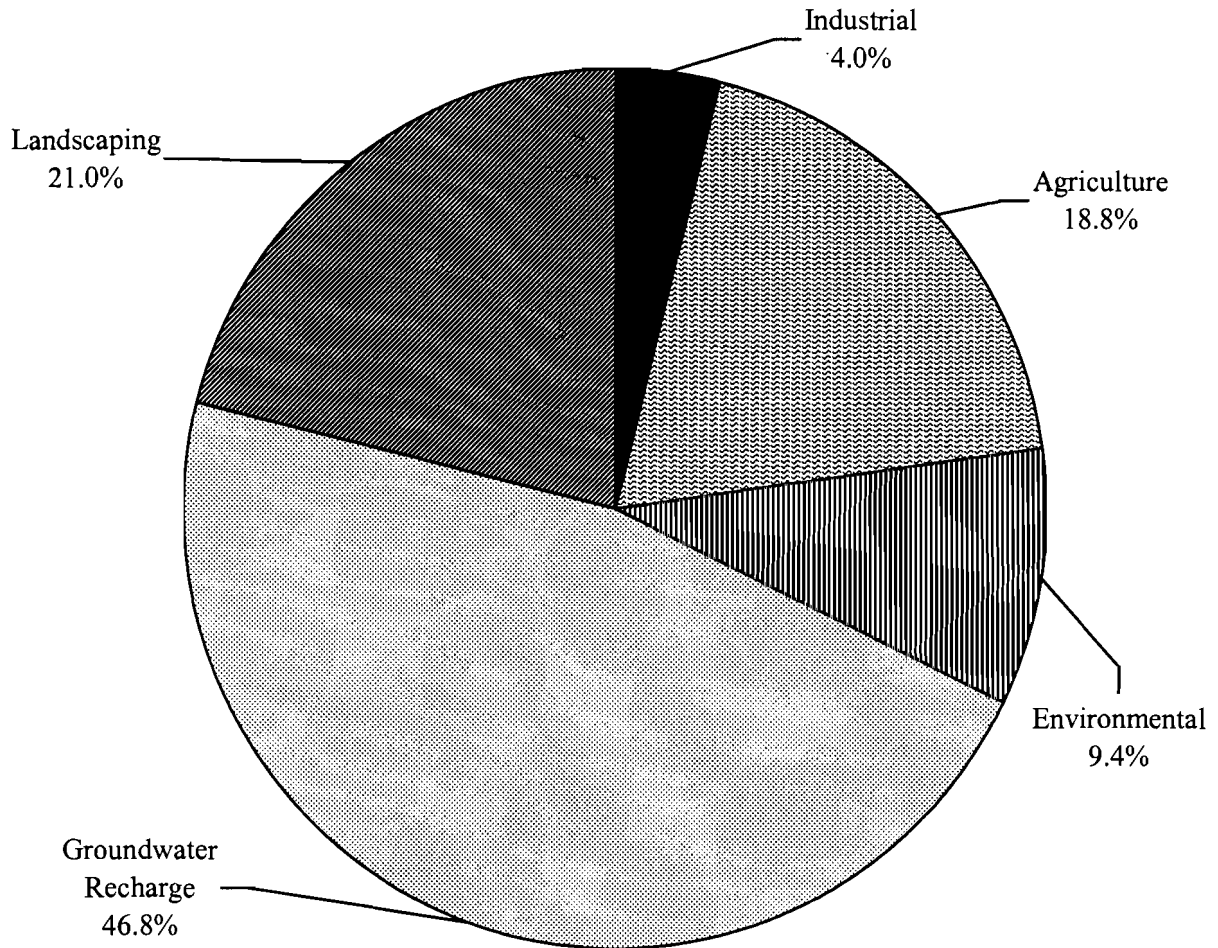
**TABLE 3**  
**CATEGORIES OF RECYCLED WATER USAGE**  
**FISCAL YEAR 2008-09**

<b>Reuse Application</b>	<b>No. of Sites</b>	<b>Area Applied (acres)</b>	<b>Usage (MGD)</b>
Parks	101	3,013.2	4.157
Golf Courses	20	2,263.8	3.957
Schools	97	1,126.8	1.883
Roadway Greenbelts	94	615.3	0.851
Public Facilities <sup>1</sup>	24	492.7	1.120
Commercial Buildings <sup>2</sup>	151	407.8	0.949
Nurseries	17	121.8	0.193
Cemeteries	7	1,284.4	1.311
Residential Developments	17	114.3	0.277
Churches	9	11.7	0.051
Industrial <sup>3</sup>	18	158.5	2.789
Agriculture <sup>4</sup>	10	4,079.0	13.198
Environmental Enhancement	1	400	6.559
<b>SUBTOTAL</b>	<b>566</b>	<b>14,089.3</b>	<b>37.295</b>
Groundwater Recharge	4	646	32.834
<b>TOTAL</b>	<b>570</b>	<b>14,735.3</b>	<b>70.129</b>

NOTES:

1. "Public Facilities" includes police stations, libraries, post offices, city halls, government offices, landfills, etc.
2. "Commercial Buildings" includes offices, warehouses, retail, car dealerships, hotels, restaurants, etc.
3. Industrial processes receiving recycled water include paper manufacturing, carpet dyeing, concrete mixing, cooling, oil field injection, construction applications such as soil compaction and dust control, and process equipment testing at the Alamos Barrier Advanced Treatment Plant.
4. California Polytechnic University, Pomona, while technically a school, uses most of its recycled water for agricultural purposes and is thus included in this category.

**FIGURE 5**  
**DISTRIBUTION OF RECYCLED WATER USAGE**  
**FISCAL YEAR 2008-09**



### 1.3 ECONOMIC AND ENVIRONMENTAL IMPACTS

At the end of FY 08-09, the Sanitation Districts had 23 contracts (one currently inactive, four pending initial deliveries) for the sale and/or delivery of recycled water produced at its facilities. Actual O&M and energy costs incurred by the Sanitation Districts while operating the pump stations on behalf of the purchasers of recycled water are also fully recovered through these contracts. Since the recycled water delivered to the various distribution systems was not dosed with either sulfur dioxide or sodium bisulfate for dechlorination or with defoamant, an estimated \$146,394 in chemical savings was realized at the five Sanitation Districts' tertiary WRPs located in the JOS and at the Valencia WRP in the Sanitation Districts' Santa Clarita Valley Joint Sewerage System (SCVJSS). The preceding year's reported chemical savings of \$257,630 was a miscalculation; the actual chemical savings in FY 07-08 was \$227,632. The decrease in chemical savings over the preceding year was due to the 7.5% decrease in recycled water usage, as well as the overall decrease in flows from the WRPs, which led to increased unit costs for chemical dosing.

Table 4 compares selected potable water rates and recycled water rates (in effect as of the end of FY 08-09), illustrating the savings realized by the end users. Table 5 lists all of the current recycled water purveyors.



**TABLE 4  
POTABLE VS. RECYCLED WATER RATES  
FISCAL YEAR 2008-09**

<b>Purveyor</b>	<b>Potable Water (\$/AF)</b>	<b>Recycled Water (\$/AF)</b>	<b>Discount (%)</b>
Long Beach Water Department	916.07	458.25 – 641.20	30 – 50
City of Cerritos	614.20	326.70	47
City of Lakewood	832	444.31	47
Central Basin MWD	635.00-751.00	267.00 – 444.00	30 – 64
Pomona Water Department	702.73	491.91	30
Walnut Valley Water District	762.30	649.04	15
Rowland Water District	740.52 – 1,075.93	635.98	14 – 41
San Gabriel Valley Water Co.	789.96	220.00 – 671.48	15 – 72
Valencia Water Company	499.63	419.92	16

To put things into perspective, the 78,580 AF of water reused in FY 08-09 is equivalent to the water supply for a population of 392,900, nearly the size of Tulsa, OK, the 44<sup>th</sup> largest city in the U.S.<sup>1</sup> The use of locally produced recycled water reduces the need to pump State Project water over the Tehachapi Mountains at a net energy cost of roughly 3,000 kilowatt-hours (kWh) per acre-foot.<sup>2</sup> Thus, approximately 236 million kWh of electricity were conserved in FY 08-09, which is equivalent to the annual output of a 26.9-megawatt power plant consuming approximately 127,750 barrels of oil. At \$0.15/kWh (based on Southern California Edison residential billing rate), this equates to an annual savings of approximately \$35.4 million in electricity. At \$69.82/barrel,<sup>3</sup> this equates to an annual savings of over \$8.9 million in oil.

The conservation of fossil fuels and energy also resulted in significant reductions in potential air pollutants. During FY 08-09, 135.6 tons of nitrogen oxide, 23.6 tons of carbon monoxide, 14.1 tons of sulfur oxides, 4.7 tons of particulates, and 1.2 tons of reactive organic gases were kept out of the atmosphere.<sup>4</sup> Perhaps more important, the use of local recycled water avoided the production of over 176,800 tons of carbon dioxide, a greenhouse gas that contributes to global warming.<sup>5</sup>

Table 6 summarizes the water, energy, chemicals, and air pollutant savings realized by the use of local recycled water sources.

1 2000 Census.

2 "Refining Estimates of Water-Related Energy Use in California," California Energy Commission, December 2006.

3 June 30, 2009 spot price for "West Texas Intermediate crude oil".

4 "Power Plant Fuel Use and Emissions," South Coast Air Quality Management District, May 1986.

5 "Compilation of Air Pollutant Emission Factors, Vol. 1: Stationary Point and Area Sources," USEPA, January 1995.

**TABLE 5**  
**RECYCLED WATER PURVEYORS**

City of Long Beach  
1800 East Wardlow Road  
Long Beach, CA 90807-4994  
(562) 570-2300

City of Cerritos  
Bloomfield at 183<sup>rd</sup> Street  
Cerritos, CA 90701  
(562) 860-0311

City of Lakewood  
5050 North Clark Avenue  
Lakewood, CA 90714  
(562) 866-9771

City of Bellflower  
16600 Civic Center Drive  
Bellflower, CA 90706  
(562) 804-1424

City of Industry  
P.O. Box 3366  
Industry, CA 91744  
(626) 333-2211

City of Pomona  
505 South Garey Avenue  
Pomona, CA 91766  
(909) 620-2253

City of Cudahy  
5220 Santa Ana Street  
Cudahy, CA 90201  
(323) 773-5143

Walnut Valley Water District  
271 South Brea Canyon Road  
Walnut, CA 91789  
(909) 595-1268

City of Pico Rivera  
6615 Passons Boulevard  
Pico Rivera, CA 90660-1016  
(562) 801-4462

City of Vernon  
4305 Santa Fe Avenue  
Vernon, CA 90058  
(323) 583-8811

City of Paramount  
16400 Colorado Avenue  
Paramount, CA 90723  
(562) 220-2020

City of Santa Fe Springs  
11710 Telegraph Road  
Santa Fe Springs, CA 90670  
(562) 868-0511

City of Downey  
9252 Stewart & Gray Road  
Downey, CA 90242  
(562) 904-7202

City of Whittier  
13250 East Penn Street  
Whittier, CA 90602  
(562) 945-8215

City of South Gate  
4244 Santa Ana Street  
South Gate, CA 90280  
(323) 563-5795

City of Lynwood  
11330 Bullis Road  
Lynwood, CA 90262  
(562) 603-0220

City of Norwalk  
12700 Norwalk Boulevard  
Norwalk, CA 90650  
(562) 929-2677

Rowland Water District  
3021 S. Fullerton Road  
Rowland Heights, CA 91748  
(562) 697-1726

Castaic Lake Water Agency  
27234 Bouquet Canyon Road  
Santa Clarita, CA 91350  
(661) 297-1600

City of Lancaster  
615 West Avenue H  
Lancaster, CA 93534  
661-945-6863

Central Basin Municipal Water District  
6252 Telegraph Road  
Commerce, CA 90040-2512  
(323) 201-5555

Park Water Company  
9750 Washburn Road  
Downey, CA 90241  
(562) 923-0711

Bellflower Municipal Water Systems  
16913 Lakewood Blvd.  
Bellflower, CA 90706  
(562) 531-1500

Bellflower-Somerset Mutual Water Co.  
10016 Flower Street  
Bellflower, CA 90706  
(562) 866-9980

Golden State Water Company  
11469 Rosecrans Avenue  
Norwalk, CA 90650  
(562) 907-9200

San Gabriel Valley Water Company  
11142 Garvey Avenue  
El Monte, CA 91733  
(626) 448-6183

City of Huntington Park  
6900 Bissell Street  
Huntington Park, CA 90255  
(323) 584-6323

Upper San Gabriel Valley MWD  
11310 East Valley Boulevard  
El Monte, CA 91731  
(626) 423-2297

Valencia Water Company  
24631 Avenue Rockefeller  
Valencia, CA 91355  
(661) 294-0828

Los Angeles Co. Waterworks No. 40  
900 S. Fremont Avenue  
Alhambra, CA 91803  
(626) 458-5100

**TABLE 6**  
**WATER, ENERGY, CHEMICAL, AND AIR POLLUTANT SAVINGS**  
**FROM RECYCLED WATER USAGE**  
**FISCAL YEAR 2008-09**

Category	Units	Savings
Water Supply	acre-feet	78,580
Water Supply	No. of People	392,900
Energy	kilowatt-hours	235,740,000
Energy	megawatts	26.9
Energy	barrels of oil	127,749
Electricity	dollars	35,361,000
Petroleum	dollars	8,919,435
WRP chemicals	dollars	146,394
Nitrogen oxide	tons	135.6
Carbon monoxide	tons	23.6
Sulfur oxides	tons	14.1
Particulates	tons	4.7
Reactive organic gases	tons	1.2
Carbon dioxide	tons	176,805

#### **1.4 SUMMARY**

Of the 456.92 MGD of treated effluent produced by the Sanitation Districts, 170.75 MGD (37.4%) was treated to a suitable level for reuse, with 70.13 MGD (15.3%) actually being reused at 570 individual sites in 30 cities for numerous diverse applications (with nearly half of the reuse being for groundwater replenishment). The top 10 largest direct reuse sites (less than 2% of all sites, excluding recharge and environmental) used over 27% of the recycled water delivered during the fiscal year. Twenty-eight new reuse sites were added during FY 08-09 (while three existing sites were eliminated), although the amount of recycled water used decreased by 7.5% from the preceding fiscal year. Effluent production decreased due to increased conservation and a faltering economy, while reuse decreased due to increased rainfall and infrastructure limitations for groundwater recharge. The use of 78,580 AF of locally produced recycled water essentially resulted in the conservation of the water supply needs of almost 393,000 people, and in significant reductions in treatment plant chemical usage, water rates for end users, energy consumption, and air pollution.

Since the official beginning of the Sanitation Districts' water recycling program in August 1962 with the start-up of the Whittier Narrows WRP, approximately 2,315,000 AF (753.9 billion gallons) of recycled water produced by Sanitation Districts' facilities has been beneficially used. This use of recycled water has avoided the release of approximately 5.21 million tons of carbon dioxide and 5,278 tons of air pollutants into the atmosphere.

All of the currently active reuse sites, along with their acreage, start-up dates, applications, and quantities of recycled water used for FY 08-09 are presented chronologically in Table 7. A chronology of significant events in the Sanitation Districts' reuse programs is presented at the end of this report in Appendix A. Final effluent quality for each of the Sanitation Districts' tertiary WRPs is presented in Appendix B.

**TABLE 7**  
**SUMMARY OF RECYCLED WATER USAGE**  
**(PAGE 1 OF 11)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Water Replenishment District (WNWRP)	Aug 62	--	R	5.113	5,730
La Cañada-Flintridge Country Club (La Cañada)	Oct 62	105	L,P	0.095	106
Apollo Lakes Community Regional Park (Lancaster)	Jun 69	56	L,P	0.171	192
Water Replenishment District (SJCWRP)	Jun 71	--	R	22.078	24,739
Cal Poly, Pomona-Kellogg (Pomona)	Dec 73	500	AG,L,O,P,AF	1.141	1,278
Lanterman Hospital (Pomona)	Dec 73	100	AG	0	0
South Campus Drive Parkway (Pomona)	Dec 73	8	L	0.016	18
Route 57 and 10 Freeways (Pomona)	May 75	18	L	0.001	1
Bonelli Regional County Park (Pomona)	Apr 77	789	L	0.781	876
California Country Club (Industry)	Jun 78	120	L,P	0.447	501
Ironwood 9 Golf Course (Cerritos)	Nov 78	25	L,P	0.094	106
Caruthers Park (Bellflower)	Nov 78	5	L	0.056	63
El Dorado Park West (Long Beach)	Aug 80	135	L	0.143	160
El Dorado Golf Course (Long Beach)	Aug 80	150	L	0.266	298
Suzanne Park (Walnut)	Oct 80	12	L	0.014	16
Route 71 and 10 Freeways (Pomona)	Apr 81	12	L	0.003	3
Piute Ponds (Lancaster)	May 81	400	E	6.559	7,350
Recreation Park (Long Beach)	Oct 82	26	L	0.053	59
Recreation Golf Course (Long Beach)	Oct 82	149	L	0.228	255
Norman's Nursery (El Monte)	Mar 83	20.2	O	0.033	37
Whaley Park (Long Beach)	Jun 83	9	L	0.021	23
Industry Hills Recreation Area (Industry)	Aug 83	600	L,P	0.832	933
El Dorado Park East (Long Beach)	Jan 84	300	L	0.465	521
Nature Center (Long Beach)	Jan 84	60	L	0.053	59
605 Freeway at Wardlow (Long Beach)	Feb 84	50	L	0.027	31
Heartwell Park (Long Beach)	Feb 84	120	L	0.176	197
Skylinks Golf Course (Long Beach)	Apr 84	155	L,P	0.293	329
Douglas Park (Long Beach)	Apr 84	3	L	0.006	6
405 Freeway at Atherton (Long Beach)	May 84	5	L	0.00002	0.02
DeMille Junior High School (Long Beach)	Jun 84	5	AF,L	0.032	36
Heartwell Golf Park (Long Beach)	Jun 84	30	L	0.064	72
Spadra Landfill landscape (Pomona)	Jul 84	53	L	0.325	364
Spadra Landfill dust control (Pomona)	Jul 84	--	I	0.014	16
Veterans Memorial Stadium (Long Beach)	Jan 85	6	AF	0.020	22
Harrington Farms Pistachio Orchard (Palmdale)	Apr 85	23	AG	0.087	98
Recreation Park Bowling Green (Long Beach)	Aug 85	3	L	0.006	6
Calif. State University, Long Beach (Long Beach)	Dec 85	52	AF,L	0.131	147
Long Beach City College (Long Beach)	Feb 86	15	AF,L	0.015	17
Recreation 9-Hole Golf Course (Long Beach)	Mar 86	37	L	0.060	68
Blair Field (Long Beach)	Apr 86	5	AF	0.011	12
Woodlands Park (Long Beach)	Apr 86	7	L	0.012	13
Colorado Lagoon Park (Long Beach)	Apr 86	4	L	0.004	5
Marina Vista Park (Long Beach)	Apr 86	30	L	0.033	36
Suzanne Middle School (Walnut)	May 86	4	AF,L	0.014	16
Walnut High School (Walnut)	May 86	15	AF,L	0.029	33
Vejar School (Walnut)	May 86	3	AF,L	0.009	11
Morris School (Walnut)	May 86	9	AF,L	0.009	10
Snow Creek Park (Walnut)	May 86	7	L	0.010	11
Snow Creek Landscape Maintenance Dist. (Walnut)	May 86	13.5	L	0.053	60
Lemon Creek Park (Walnut)	May 86	5	L	0.005	5
Friendship Park (West Covina)	May 86	6	L	0.007	8
Hollingsworth School (West Covina)	May 86	3	AF,L	0.008	9
Lanesboro Park (West Covina)	May 86	2	L	0.005	5
Rincon Middle School (West Covina)	May 86	3	AF,L	0.016	18

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 7**  
**SUMMARY OF RECYCLED WATER USAGE**  
**(PAGE 2 OF 11)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Sunshine Park (L.A. County)	May 86	4	L	0	0
Rowland Elementary School (Rowland Heights)	May 86	3	AF,L	0	0
Farjardo School (Rowland Heights)	May 86	4	AF,L	0	0
Farjardo Park (Rowland Heights)	May 86	4	L	0	0
Route 57 and 60 Freeways (Rowland Heights)	May 86	19.7	L	0.035	39
Rowland Heights Reg. Co. Park (Rowland Heights)	May 86	11	L	0.012	13
Rowland High School (Rowland Heights)	May 86	9	AF,L	0.016	17
Killian Elementary School (Rowland Heights)	May 86	3	AF,L	0.006	6
Walnut Elementary School (Walnut)	May 86	4	AF,L	0.003	4
WUSD Administrative Service Center (Walnut)	May 86	4	L	0.004	4
Walnut Ranch Park (Walnut)	Jun 86	26	L	0.020	22
Amar Road greenbelt (Walnut)	Jun 86	16	L	0.016	18
Nogales High School (L.A. Co.)	Jun 86	11	AF,L	0	0
Queen of Heaven Cemetery (Rowland Heights)	Jun 86	35	L	0	0
Diamond Bar Golf Course (Diamond Bar)	Jul 86	174	L,P	0.166	186
Schabarum Regional County Park (L.A. Co.)	Sep 86	233	L	0	0
Walnut Ridge Landscape Maintenance Dist. (Walnut)	Mar 87	25.5	L	0.040	45
Morningside Park (Walnut)	Mar 87	4	L	0.005	5
Gateway Corporate Center (Diamond Bar)	Jun 87	45	L	0.043	48
Library/Civic Center (Cerritos)	Dec 87	4	L	0.015	17
Olympic Natatorium (Cerritos)	Dec 87	6	L	0.019	21
Whitney Learning Center (Cerritos)	Dec 87	10	AF,L	0.025	28
Gonsalves Elementary School (Cerritos)	Dec 87	5	AF,L	0.017	19
Wittman Elementary School (Cerritos)	Dec 87	5	AF,L	0.014	16
Gahr High School (Cerritos)	Dec 87	28	AF,L	0.066	74
Area Development Project No. 2 (Cerritos)	Jan 88	11.5	L,P	0.059	67
Medians/Parkways (Cerritos)	Jan 88	42.8	L	0.152	170
605 Freeway (Cerritos)	Jan 88	58.6	L	0.105	117
91 Freeway (Cerritos)	Jan 88	70	L	0.028	31
Frontier Park (Cerritos)	Jan 88	2.5	L	0.009	10
Carmenita Junior High School (Cerritos)	Jan 88	5	AF,L	0.020	23
Cerritos Elementary School (Cerritos)	Jan 88	6	AF,L	0.017	19
Stowers Elementary School (Cerritos)	Jan 88	6	AF,L	0.028	31
Kennedy Elementary School (Cerritos)	Jan 88	7	AF,L	0.029	32
City Park East (Cerritos)	Jan 88	18	L	0.045	50
Satellite Park (Cerritos)	Jan 88	2	L	0.005	6
Leal Elementary School (Cerritos)	Jan 88	6	AF,L	0.011	13
Cerritos High School (Cerritos)	Jan 88	20	AF,L	0.045	50
Elliott Elementary School (Cerritos)	Jan 88	7	AF,L	0.011	12
Carmenita Park (Cerritos)	Jan 88	4.5	L	0.014	16
Juarez Elementary School (Cerritos)	Jan 88	7	AF,L	0.023	26
ABC Adult School & Office (Cerritos)	Jan 88	3	L	0.014	16
Tracy Education Center (Cerritos)	Jan 88	6	AF,L	0.005	5
Liberty Park (Cerritos)	Jan 88	20	L	0.074	83
Gridley Park (Cerritos)	Jan 88	9	L	0.021	23
Jacob Park (Cerritos)	Jan 88	4.5	L	0.011	12
Heritage Park (Cerritos)	Feb 88	12	L	0.036	40
Bragg Elementary School (Cerritos)	Feb 88	7	AF,L	0.020	23
Haskell Junior High School (Cerritos)	Feb 88	18	AF,L	0.052	59
Pat Nixon Elementary School (Cerritos)	Feb 88	5	AF,L	0.012	14
Cabrillo Lane Elementary School (Cerritos)	Feb 88	9	AF,L	0	0
Sunshine Park (Cerritos)	Feb 88	3.5	L	0.009	11
Friendship Park (Cerritos)	Feb 88	4	L	0.011	12
Bettencourt Park (Cerritos)	Feb 88	2	L	0.007	8

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.



**TABLE 7**  
**SUMMARY OF RECYCLED WATER USAGE**  
**(PAGE 3 OF 11)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Brookhaven Park (Cerritos)	Feb 88	2	L	0.006	6
Saddleback Park (Cerritos)	Feb 88	2	L	0.005	5
Westgate Park (Cerritos)	Feb 88	4	L	0.010	11
Rainbow Park (Cerritos)	Mar 88	2.5	L	0.007	8
Bellflower Christian School (Cerritos)	Mar 88	31.4	AF,L	0.040	45
Cerritos Community College (Cerritos)	Mar 88	55	AF,L	0.109	122
Cerritos Regional County Park (Cerritos)	Apr 88	59	L	0.117	131
Artesia Cemetery District (Cerritos)	Apr 88	10.9	L	0.024	27
Rosewood Park (Cerritos)	Apr 88	2.7	L	0.010	11
Sunshine Growers (Walnut)	May 88	7	O	0	0
Nebeker Ranch (Lancaster)	Jun 88	600	AG	3.881	4,270
Lakewood 1st Presbyterian Church (Long Beach)	Sep 88	1	L	0.009	10
Westhoff Elementary School (Walnut)	Sep 88	8	AF,L	0.007	7
Tree Farm (Palmdale)	Feb 89	46	O	0.023	25
Virginia Country Club (Long Beach)	Mar 89	135	L,P	0.244	273
Lakewood Golf Course (Long Beach)	Mar 89	128	L,P	0.378	424
Scherer Park (Long Beach)	Mar 89	24	L	0.032	36
Sports Complex (Cerritos)	Mar 89	25	AF,L	0.058	65
Sunnyside Memorial Park (Long Beach)	Apr 89	35	L	0.087	98
All Soul's Cemetery (Long Beach)	Apr 89	40	L	0.112	126
Cherry Avenue Park (Long Beach)	May 89	10	L	0.013	14
River (Rynerson) Park (Lakewood)	Aug 89	40	L	0.068	76
Monte Verde Park (Lakewood)	Aug 89	4	L	0.001	1
Mae Boyer Park (Lakewood)	Aug 89	8	L	0.026	29
Jose Del Valle Park (Lakewood)	Aug 89	12	L	0.026	29
Jose San Martin Park (Lakewood)	Aug 89	9.3	L	0.021	24
City Water Yard (Lakewood)	Aug 89	1	L	0.008	9
Woodruff Avenue greenbelt (Lakewood)	Aug 89	4.1	L	0.010	11
South Street greenbelt (Lakewood)	Aug 89	3.3	L	0.006	7
Mayfair Park (Lakewood)	Dec 89	18	L	0.041	46
Shoemaker On/Off Ramp - 91 Freeway (Cerritos)	Dec 89	4.6	L	0.014	16
Temple Avenue greenbelt (Walnut)	Jan 90	1	L	0.0003	0.3
Transpacific Development Co. (Cerritos)	Feb 90	6.9	L	0.013	14
Automated Data Processing (Cerritos)	Feb 90	0.7	L	0.004	5
Sheraton Hotel (Cerritos)	Mar 90	0.6	L	0.004	4
Walnut Tech Business Center (Walnut)	Apr 90	1	L	0.002	3
Cerritos Pontiac/GMC Truck (Cerritos)	May 90	0.5	L	0.002	3
Moothart Chrysler (Cerritos)	May 90	0.4	L	0.004	4
St. Joseph Parish School (Lakewood)	Aug 90	3.5	AF,L	0.014	15
Foster Elementary School (Lakewood)	Sep 90	6	AF,L	0.017	20
Windjammer Off Ramp - 91 Freeway (Cerritos)	Sep 90	0.8	L	0.002	3
Browning Oldsmobile (Cerritos)	Sep 90	0.1	L	0.0004	0.4
Civic Center Way and City Hall (Lakewood)	Nov 90	2.8	L	0.015	17
Los Coyotes Diagonal (Long Beach)	Mar 91	1	L	0.005	5
City Water Truck (Cerritos)	May 91	--	L	0.0004	0.4
Private Haulers (Cerritos)	May 91	--	I	0	0
Parkside Condominiums (Cerritos)	May 91	1.8	L	0.006	7
Mayfair High School (Lakewood)	May 91	36.5	AF,L	0.046	51
Wilson High School (Long Beach)	Jun 91	5	AF,L	0.026	30
Concordia Church (Cerritos)	Jun 91	4	L	0.012	13
Church of the Nazarene (Cerritos)	Aug 91	1	L	0.005	6
B&B Stables (Cerritos)	Aug 91	18	I	0.005	6
Lemon Avenue greenbelt (Walnut)	Sep 91	4.3	L	0.009	10
Lindstrom Elementary School (Lakewood)	Sep 91	12	AF,L	0.015	17

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**TABLE 7**  
**SUMMARY OF RECYCLED WATER USAGE**  
**(PAGE 4 OF 11)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Lakewood High School (Lakewood)	Sep 91	25	AF,L	0.027	30
Shadow Park Homeowner's Association (Cerritos)	Nov 91	6	L	0.020	23
South Coast AQMD Headquarters (Diamond Bar)	Nov 91	2	L	0.005	6
Long Beach Water Department office (Long Beach)	Jan 92	2	L	0.005	6
Reservoir Park (Signal Hill)	Feb 92	2	L	0.008	8
Burroughs Elementary School (Signal Hill)	Feb 92	4	AF,L	0.004	4
Andy's Nursery (Bellflower)	Feb 92	9	O	0.002	2
Lake Center Park (Santa Fe Springs)	Mar 92	8	L	0.021	24
Lake Center School (Santa Fe Springs)	Mar 92	8	AF,L	0.021	23
Clarkman Walkway (Santa Fe Springs)	Mar 92	0.1	L	0.0004	0.5
Hughes Middle School (Long Beach)	Apr 92	3	AF,L	0.013	15
405 Freeway at Walnut (Long Beach)	Apr 92	9	L	0.010	11
Area Development Project No. 6 (Cerritos)	Apr 92	9	L	0.055	62
Towne Center Walkway (Santa Fe Springs)	Apr 92	0.1	L	0.0005	1
Lakeview Child Care (Santa Fe Springs)	May 92	0.2	L	0.002	2
Orr & Day Road medians (Santa Fe Springs)	May 92	0.1	L	0.0003	0.03
Somerset Park (Long Beach)	May 92	3	L	0.001	1
Longfellow Elementary School (Long Beach)	May 92	1	AF,L	0.00001	0.01
Granada Park Homeowners Association (Cerritos)	May 92	3.8	L	0.011	13
Walnut Valley Water Dist. reservoir (Diamond Bar)	May 92	1	L	0.003	4
Florence Avenue medians (Santa Fe Springs)	Jun 92	3	L	0.003	3
Gauldin Elementary School (Downey)	Jun 92	8.4	AF,L	0.007	8
Rio San Gabriel School (Downey)	Jun 92	14.8	AF,L	0.025	28
Bellflower High School (Bellflower)	Jul 92	28.4	AF,L	0.078	87
Ernie Pyle Elementary School (Bellflower)	Aug 92	4.9	AF,L	0.013	15
Telegraph Road medians (Santa Fe Springs)	Aug 92	0.5	L	0.004	5
Lakeview Park (Santa Fe Springs)	Aug 92	6.7	L	0.014	15
Clark Estate (Santa Fe Springs)	Aug 92	4.3	L	0.006	7
Towne Center Green (Santa Fe Springs)	Aug 92	2.3	L	0.005	6
Pioneer Road medians (Santa Fe Springs)	Sep 92	0.4	L	0.039	44
Police Station (Santa Fe Springs)	Sep 92	0.2	L	0.002	2
Aquatic Center (Santa Fe Springs)	Sep 92	0.5	L	0.003	4
Lewis School (Downey)	Nov 92	4.6	AF,L	0.008	9
Wilderness Park (Downey)	Nov 92	24	L	0.101	113
First Chinese Baptist Church (Walnut)	Dec 92	0.3	L	0.002	2
605 Freeway at Foster (Bellflower)	Jan 93	14	L	0	0
Promenade Walkway (Santa Fe Springs)	Jan 93	0.3	L	0.002	2
Rio San Gabriel Park (Downey)	Jan 93	6.4	L	0.033	37
East Middle School (Downey)	Jan 93	26	AF,L	0.024	27
Zinn Park (Bellflower)	Jan 93	1.7	L	0.008	9
Cerritos Post Office (Cerritos)	Feb 93	0.7	L	0.007	8
605/105 Interchange (Bellflower)	Feb 93	22	L	0.0004	0.5
Hollywood Sports Center (Bellflower)	Feb 93	22.5	L	0.009	10
Santa Fe Springs High School (Santa Fe Springs)	Feb 93	14.5	AF,L	0.035	39
605/5 Freeway at Florence (Santa Fe Springs)	Feb 93	17	L	0.006	7
Center for the Performing Arts (Cerritos)	Mar 93	1	L	0.004	4
Old Downey Cemetery (Downey)	Apr 93	7.5	L	0.029	33
Thompson Park (Bellflower)	Apr 93	15	L	0.022	25
My Hoa Farm (Lakewood)	May 93	5	AG	0.014	15
105 Freeway at Bellflower (Downey)	May 93	17.9	L	0.014	16
Palms Park (Lakewood)	May 93	20	L	0.035	39
Crawford Park (Downey)	Jul 93	2.1	L	0.010	11
Humedo Nursery (Downey)	Aug 93	11	O	0.005	5
105 Freeway at Lakewood (Downey)	Sep 93	25	L	0.019	21

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**TABLE 7**  
**SUMMARY OF RECYCLED WATER USAGE**  
**(PAGE 5 OF 11)**

<u>Reuse Site (City)</u>	<u>Start-up</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
	<u>Date</u>			<u>(MGD)</u>	<u>(AFY)</u>
Shaw Industries Carpet Mill (Santa Fe Springs)	Sep 93	--	I	0.101	113
Palms Elementary School (Lakewood)	Sep 93	3.5	AF,L	0.020	22
Artesia High School (Lakewood)	Sep 93	20.9	AF,L	0.042	47
West Middle School (Downey)	Oct 93	19.5	AF,L	0.021	24
Circle Park (South Gate)	Oct 93	4	L	0.015	16
Burger King restaurant (Diamond Bar)	Oct 93	0.2	L	0.001	1
Majestic Mgmt., 19850 E. Business Pkwy (Walnut)	Nov 93	0.8	L	0.004	5
General Electric, 19705 E. Business Pkwy (Walnut)	Nov 93	1.6	L	0.007	8
Hollydale Park (South Gate)	Nov 93	46	L	0.088	99
Delta Dental (Cerritos)	Nov 93	1.8	L	0.003	3
Cal Poly LandLab (Pomona)	Nov 93	2.5	AG,L	0.012	14
Rodeo Ridge Estates (Walnut)	Dec 93	6.3	L	0.005	6
Robertson's Ready-Mix (Santa Fe Springs)	Dec 93	--	I	0.006	6
710/105 Interchange (Paramount)	Dec 93	18.5	L	0	0
Downey/Contreras greenbelt (Paramount)	Dec 93	0.1	L	0.0005	0.5
Compton Golf Course (Paramount)	Dec 93	13	L	0.027	30
Alondra Junior High School (Paramount)	Dec 93	14	AF,L	0.024	26
Mokler Elementary School (Paramount)	Dec 93	10	AF,L	0.010	11
Los Cerritos Elementary School (Paramount)	Dec 93	8	AF,L	0.011	13
Wirtz Elementary School (Paramount)	Dec 93	9	AF,L	0.014	15
Keppel Elementary School (Paramount)	Dec 93	4	AF,L	0.007	8
Billy Lee Nursery (Paramount)	Dec 93	2.5	O	0.009	11
Golden Springs Drive medians (Diamond Bar)	Jan 94	1.3	L	0.004	4
105 Freeway at Wright (Lynwood)	Jan 94	19.6	L	0	0
710 Freeway at M.L. King (Lynwood)	Jan 94	15.5	L	0.004	4
710 Freeway at Rosecrans (Compton)	Jan 94	24.2	L	0.010	11
Independence Park (Downey)	Feb 94	10.4	L	0.014	15
Paramount Park (Paramount)	Feb 94	9	L	0.026	29
Paramount High School (Paramount)	Feb 94	19	AF,L	0.033	27
Southern California Edison nursery (Cerritos)	Mar 94	3.5	O	0.006	7
Walnut Hills Village Shopping Center (Walnut)	Mar 94	2.4	L	0.005	6
Rosecrans/Paramount medians (Paramount)	Mar 94	0.2	L	0.008	9
Somerset medians (Paramount)	Apr 94	0.9	L	0.008	8
Rio Hondo Golf Course (Downey)	Apr 94	92.4	L	0.223	250
Zimmerman Park (Norwalk)	Apr 94	9.5	L	0.016	18
Vista Verde Park (Norwalk)	Apr 94	6.5	L	0.018	20
Gerdes Park (Norwalk)	Apr 94	8.6	L	0.019	21
Clearwater Junior High School (Paramount)	Apr 94	4	AF,L	0.037	42
Vestar Development (Cerritos)	Jun 94	9.6	L	0.042	47
Steam Engine Park (Paramount)	Jun 94	0.6	L	0.001	2
5 Freeway at Shoemaker/Firestone (Norwalk)	Jul 94	0.8	L	0.003	3
Spane Park (Paramount)	Jul 94	5	L	0.011	12
Orange/Cortland Parkway (Paramount)	Jul 94	1.3	L	0.002	3
Carpenter School (Downey)	Aug 94	7.4	AF,L	0.009	10
Brookside Equestrian Center (Walnut)	Aug 94	13.6	L	0.004	4
Field, S/W corner Norwalk/Telegraph (S.F. Springs)	Aug 94	5.2	L	0.022	24
Washington Elementary School (Whittier)	Sep 94	5	AF,L	0.005	6
605 Freeway at Beverly (Whittier)	Sep 94	30	L	0.029	33
John Anson Ford Park (Bell Gardens)	Sep 94	45	L	0.060	67
Ramona Park (Norwalk)	Oct 94	4.8	L	0.006	6
Alondra median (Paramount)	Oct 94	0.6	L	0.005	6
Imperial/Wright Road medians (Lynwood)	Oct 94	0.2	L	0.001	1
Walnut Valley Water District Office (Walnut)	Oct 94	0.2	L	0.001	2
Cattelus Development (Walnut)	Oct 94	18.9	L	0.013	14

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**TABLE 7**  
**SUMMARY OF RECYCLED WATER USAGE**  
**(PAGE 6 OF 11)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Circuit City, 501 Cheryl Lane (Walnut)	Oct 94	1	L	0.007	8
Dreyer's Grand Ice Cream, 351 Cheryl Ln. (Walnut)	Oct 94	0.6	L	0.003	3
Sorenson Elementary School (Whittier)	Oct 94	4	AF,L	0.003	3
Palm Park West (Whittier)	Nov 94	5	L	0.008	9
Metrolink Station (Industry)	Nov 94	0.6	L	0.003	3
Little Lake Park (Santa Fe Springs)	Dec 94	18	L	0.037	41
Sundance Condominiums (Cerritos)	Jan 95	9	L	0.033	37
Del Paso High School (Walnut)	Jan 95	3	AF,L	0.004	5
Dow Corning, 20832 Currier Road (Walnut)	Jan 95	0.1	L	0.0001	0.1
John Anson Ford Golf Course (Bell Gardens)	Feb 95	13.6	L	--	--
Circuit City Headquarters, Currier/Lemon (Walnut)	Apr 95	1.1	L	0.007	8
Sysco Food Service, 20701 Currier Road (Walnut)	Apr 95	2.3	L	0.013	15
Tung Hsin Trading, 20420 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.004	4
Syntaxbrilliant, 20480 E. Business Pkwy (Walnut)	Apr 95	0.9	L	0.002	3
Dura Freight Lines, 515-525 S. Lemon (Walnut)	Apr 95	0.5	L	0.001	1
S/W-S/E Corner Lemon/Bus. Parkway (Walnut)	Apr 95	0.2	L	0.004	5
TTSI, 20275 Business Parkway (Walnut)	Apr 95	1.3	L	0.004	5
Coaster Co. of America, 20300 Bus. Parkway (Walnut)	Apr 95	0.7	L	0.002	2
Dura Freight Lines, 20405 Bus. Parkway (Walnut)	Apr 95	1	L	0.003	3
Dura Freight Lines, 20595 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.003	3
Dura Freight Lines, 20445 E. Business Pkwy (Walnut)	Apr 95	0.7	L	0.001	1
Orange Grove School (Whittier)	Apr 95	6.6	AF,L	0.010	11
South Middle School (Downey)	May 95	15.8	AF,L	0.018	20
Nuffer Elementary School (Norwalk)	Jun 95	10.4	AF,L	0.009	10
Lampton Middle School (Norwalk)	Jun 95	9.5	AF,L	0.009	10
THUMS (Long Beach)	Jun 95	8	I	0.816	914
820 Fairway Drive medians (Industry)	Jun 95	0.1	L	0.001	1
Majestic Management, 435 S. Lemon (Walnut)	Jun 95	0.5	L	0.002	2
General Electric, 19805 E Business Pkwy (Walnut)	Jun 95	1.1	L	0.006	7
Menlo Logistics, 20002 E. Business Pkwy (Walnut)	Jun 95	4	L	0.008	9
General Electric, 20005 E. Business Parkway (Walnut)	Jun 95	6.7	L	0.012	14
Hargitt Middle School (Norwalk)	Jul 95	9.5	AF,L	0.021	23
Norwalk Adult School (Norwalk)	Jul 95	17.2	AF,L	0.030	34
John Glenn High School (Norwalk)	Jul 95	38.8	AF,L	0.047	53
Ramona Elementary School (Norwalk)	Jul 95	6.8	AF,L	0.008	9
New River Elementary School (Norwalk)	Jul 95	10.3	AF,L	0.012	13
Morrison Elementary School (Norwalk)	Sep 95	7.7	AF,L	0.011	12
Katherine Edwards Elementary School (Whittier)	Sep 95	19	AF,L	0.028	31
Longfellow Elementary School (Whittier)	Sep 95	4.5	AF,L	0.005	6
Walter Dexter Middle School (Whittier)	Sep 95	15.5	AF,L	0.010	12
D.D. Johnston Elementary School (Norwalk)	Sep 95	8.9	AF,L	0.009	10
Corvallis Middle School (Norwalk)	Sep 95	16.9	AF,L	0.027	31
Norwalk High School (Norwalk)	Sep 95	35.1	AF,L	0.037	41
Heritage Park (Santa Fe Springs)	Oct 95	9.2	L	0.013	15
Belloso Farm Nursery (Paramount)	Oct 95	2.5	O	0	0
Robertson's Ready-Mix (Paramount)	Nov 95	--	I	0.010	11
Cerritos Nursery (Cerritos)	Dec 95	3	O	0.009	10
Spadra Gas-to-Energy Plant (Pomona)	Dec 95	--	I	0.080	90
Founders Memorial Park (Whittier)	Jan 96	4	L	0.014	16
Los Nietos Park (Santa Fe Springs)	Jan 96	11.2	L	0.018	21
Bell Gardens Soccer Field (Bell Gardens)	Feb 96	2.6	AF	0.006	7
Jersey Ave. School/city athl. fields (S.F. Springs)	Mar 96	8	AF	0.008	9
Salt Lake Municipal Park (Huntington Park)	Apr 96	20.9	L	0.048	54
Sorenson Park (Whittier)	May 96	10.7	L	0.016	18

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**(PAGE 7 OF 11)**

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				<u>(MGD)</u>	<u>(AFY)</u>
Sorenson Library (Whittier)	May 96	0.4	L	0.0004	0.4
Encore Maintenance-Warmington Homes (Cerritos)	May 96	1.1	L	0.003	4
Bellflower Blvd. medians (Bellflower)	Jul 96	0.3	L	0.008	4
Alta Produce (Paramount)	Aug 96	4	AG	0.004	4
Artesia Off Ramp - 91 Freeway (Cerritos)	Aug 96	3.3	L	0.006	7
Ping Ting Hsu, 20701 Currier Road (Walnut)	Aug 96	0.1	L	0.0002	0.2
Belloso Farm Nursery (South Gate)	Sep 96	2.5	O	0.001	1
Temple Park (Downey)	Oct 96	1	L	0.002	2
Woodruff Avenue medians (Bellflower)	Oct 96	0.8	L	0.007	8
Tilos Inc., 20822 Currier Road (Walnut)	Oct 96	0.1	L	0.0002	0.2
Fairway Business Cntr., 19700 Bus. Parkway (Walnut)	Nov 96	0.4	L	0.002	2
Joe Rodgers Park (Long Beach)	Nov 96	4.5	L	0.009	10
Ham Park (Lynwood)	Dec 96	10	L	0	0
Jauregui Nursery (Paramount)	Dec 96	2	O	0.009	10
Heritage Corporate Center (Santa Fe Springs)	Jan 97	29.9	L	0.032	36
Belloso Farm Nursery (Bellflower)	Jan 97	8	O	0	0
Foster Road medians (Norwalk)	Jan 97	0.3	L	0.004	4
Rowland Heights Christian Church (Rowland Hghts.)	Feb 97	0.5	L	0.001	2
Rosecrans Avenue medians (Paramount)	Mar 97	0.2	L	0.007	8
Texaco/Somerset medians (Paramount)	Mar 97	0.2	L	0.002	2
McLane Mowers (Paramount)	Mar 97	0.6	L	0	0
ABC Nursery (Paramount)	Mar 97	16	O	0.004	5
L.A. Co. Vector Control Bldg. (S.F. Springs)	Mar 97	3.8	L	0.004	5
Greenstone Warehouse (Santa Fe Springs)	Apr 97	0.4	L	0.002	2
Viewsonic, 510 Cheryl/455 Brea Canyon (Walnut)	Jul 97	1.8	L	0.011	12
Jauregui Nursery (Long Beach)	Jul 97	5	O	0.048	54
McNab Avenue medians (Bellflower)	Jul 97	0.1	L	0.0005	1
Foster Road/Premier Ave. medians (Downey)	Aug 97	0.1	L	0.001	1
Palm Growers Nursery (Downey)	Oct 97	7.3	O	0	0
Alondra Blvd medians @ SGR (Bellflower)	Oct 97	0.1	L	0.0003	0.3
Puente Hills Landfill irrigation (Industry)	Nov 97	320	L	0.674	755
Puente Hills Landfill dust control (Industry)	Nov 97	130	I	0.221	248
Puente Hills Gas-to-Energy Facility (Industry)	Nov 97	-	I	0.523	586
Midway International (Cerritos)	Feb 98	0.3	L	0.001	1
Countryside Suites (Diamond Bar)	Mar 98	1.4	L	0.003	3
Lugo Park (Cudahy)	Apr 98	7	L	0.006	7
Rose Hills Memorial Park - upper area (Whittier)	Jun 98	298	L	0.528	591
El Dorado Lakes Condominiums (Long Beach)	Aug 98	11	L	0.028	32
Bloomfield Assts., 17871 Park Plaza Drive (Cerritos)	Sep 98	0.5	L	0.001	2
Maruichi American building (Santa Fe Springs)	Oct 98	0.4	L	0.002	2
Diamond Crest Homeowners Assn. (Diamond Bar)	Oct 98	14	L	0.019	21
Norm Ashley Park (Walnut)	Nov 98	0.2	L	0.001	1
Play Hut, 368 Cheryl Lane (Walnut)	Nov 98	0.8	L	0.004	4
Waterfall Estates (Rowland Heights)	Dec 98	1.2	L	0.003	3
WalMart (Long Beach)	Dec 98	3	L	0.018	20
Norwalk Golf Course (Norwalk)	Jan 99	8	L	0.030	34
Vestar Development (Long Beach)	Feb 99	8	L	0.035	40
Soco-Lynch Corp. building (Santa Fe Springs)	Feb 99	1	L	0.003	3
183 <sup>rd</sup> Street On Ramp - 91 Freeway (Cerritos)	Feb 99	0.6	L	0.0005	1
MC&C building (Santa Fe Springs)	Mar 99	0.7	L	0.009	10
Lakewood Blvd. medians (Paramount)	Mar 99	0.2	L	0.002	3
Progress Park (Paramount)	Mar 99	6.2	L	0.014	16
Garfield Avenue medians (Paramount)	Apr 99	0.1	L	0.002	2
Calvary Chapel (Diamond Bar)	Apr 99	1	L	0.016	17

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**(PAGE 8 OF 11)**

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				<u>(MGD)</u>	<u>(AFY)</u>
B&B Pallet Co. (South Gate)	May 99	-	I	0	0
Hi-Tek Warehouse, 20851 Currier Road (Walnut)	Jun 99	0.2	L	0.002	2
Garcia's Nursery (Bellflower)	Jun 99	6	O	0	0
Campus Group Inc, 319 Cheryl Road (Walnut)	Jul 99	0.1	L	0.001	1
Wind River Homeowners Assn. (Rowland Heights)	Jul 99	12.6	L	0.031	35
AT&T building, 12900 Park Plaza Drive (Cerritos)	Aug 99	0.9	L	0.012	14
Orange Avenue medians (Paramount)	Aug 99	0.1	L	0.004	5
Metropolitan State Hospital (Norwalk)	Sep 99	80	L	0	0
Moffit School (Norwalk)	Sep 99	1.6	AF,L	0.008	9
L.A. Fitness Inter., 20801 Golden Springs (Industry)	Sep 99	1.2	L	0.002	2
Comtop Enterprises, 268 Benton Court (Industry)	Sep 99	0.3	L	0.001	1
Gemini Foods Corp., 251 Benton Court (Industry)	Sep 99	0.6	L	0.003	4
Tri-Net Technology, 21709 Ferraro Parkway (Industry)	Sep 99	0.3	L	0.001	1
Hupa International, 21717 Ferraro Parkway (Industry)	Oct 99	0.3	L	0.004	4
Nu-Health Products, 20875-85-95 Currier (Walnut)	Oct 99	0.1	L	0.00002	0.03
Rio Hondo Channel (Downey)	Nov 99	0.8	L	0.002	2
Simms Park (Bellflower)	Dec 99	12.5	L	0.017	19
Lemon Avenue medians (Industry)	Dec 99	0.1	L	0.0003	0.3
Prudential Insurance Company (Walnut)	Jan 00	3.5	L	0.007	8
Foster Road Greenbelt (Norwalk)	Mar 00	3.3	L	0.007	8
McDonald's Restaurant (Diamond Bar)	Mar 00	0.1	L	0.001	2
San Luis Street @ flood channel (Paramount)	Apr 00	3	L	0.001	1
J&L Footwear, 250 Benton Court (Industry)	Jul 00	0.6	L	0.002	2
Jefferson School (Paramount)	Jul 00	0.5	AF,L	0.003	3
Columbus High School (Downey)	Aug 00	25	AF,L	0.018	20
J&M Farming (Whittier)	Sep 00	105	AG	0.084	94
Triangle Park (South Gate)	Nov 00	0.4	L	0.004	5
Markwins Inter. Corp., 22067 Ferraro (Industry)	Nov 00	1.9	L	0.003	3
Lee Wang LLC, 21901 Ferraro Parkway (Industry)	Nov 00	2	L	0.006	7
Sun Yin USA, 280 Maclin Court (Industry)	Nov 00	0.8	L	0.002	3
SL Investment Group LLC, 218 Maclin Ct. (Industry)	Nov 00	1.5	L	0.001	2
Morrow Meadows, 231 Benton Court (Industry)	Apr 01	0.9	L	0.014	16
Golden Springs Business Park (Santa Fe Springs)	Apr 01	31.4	L	0.140	157
The Cross Schools of Education (Walnut)	May 01	0.6	AF,L	0.001	1
Bellflower Storage (Bellflower)	Jun 01	3	L	0.003	3
Railroad Beautification (Paramount)	Jul 01	0.5	L	0.0002	0.2
Rio Hondo Channel (Bell Gardens)	Jul 01	0.3	L	0.0005	1
Bank of the West (Rowland Heights)	Sep 01	0.1	L	0.0002	0.2
Gym/Teen Center (Walnut)	Sep 01	0.6	L	0.001	1
CDM building (Santa Fe Springs)	Oct 01	0.1	L	0.003	3
Laskey-Weil building, 13101 Moore Street (Cerritos)	Oct 01	0.4	L	0.002	3
Willow Street medians (Long Beach)	Dec 01	2.4	L	0.002	2
Yellow Box Corp., 19835 Walnut Drive (Walnut)	Dec 01	0.3	L	0.001	1
Harvard Estates (Rowland Heights)	Dec 01	2	L	0.003	4
L.A. Co. Records Office (Norwalk)	Jan 02	2.7	L	0.015	17
Tays Cool Fuel (Paramount)	Feb 02	0.2	L	0.004	4
Walnut Nazarene Church (Walnut)	Feb 02	0.8	L	0.0003	0.3
Antelope Valley Farms (Palmdale)	Mar 02	2,100	AG	6.498	7,856
L.A. River landscaping (South Gate)	Mar 02	2.5	L	0.001	1
Majestic Mgmt., 168-188 Brea Canyon Rd. (Walnut)	Apr 02	0.6	L	0.002	2
Synnex, 108-118 Brea Canyon Rd. (Walnut)	Apr 02	0.7	L	0.002	2
Majestic Management, 108-288 Mayo Drive (Walnut)	Apr 02	0.1	L	0.005	5
Holiday Inn Express (Walnut)	May 02	0.4	L	0.002	3
Lemon Avenue Investments (Walnut)	Jun 02	0.6	L	0.002	2

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

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	<u>Date</u>			<u>(MGD)</u>	<u>(AFY)</u>
Magnolia at Snow Creek (Walnut)	Jul 02	5.4	L	0.017	19
Lakewood-Adoree to 5 <sup>th</sup> (Downey)	Jul 02	3.4	L	0.022	25
River Ridge Golf Course (Pico Rivera)	Jul 02	21.3	L	0.025	28
LBWD Impoundment (Long Beach)	Jul 02	-	I	0.008	9
Everbright Management, 1163 Fairway (Industry)	Sep 02	0.6	L	0.003	3
Everbright Management, 1169 Fairway (Industry)	Sep 02	0.2	L	0.001	1
Kelly Paper, 228 Brea Canyon Road (Walnut)	Sep 02	1.2	L	0.004	4
V-Tec Automotive, 19677 Valley Blvd. (Walnut)	Sep 02	0.1	L	0.0001	0.1
Grand and Valley landscaping (Walnut)	Sep 02	0.1	L	0.006	6
Extra Space Storage (Walnut)	Oct 02	0.8	L	0.002	2
Latter Days Saints Church (Walnut)	Oct 02	0.9	L	0.002	2
Nogales and Killian landscaping (Rowland Heights)	Oct 02	0.1	L	0.001	1
A&R West Family LLC, 20855 Golden Sprgs (D. Bar)	Nov 02	0.2	L	0.001	1
Chancellor Village Senior Housing (Cerritos)	Nov 02	0.9	L	0.003	3
Simon Trucking (Santa Fe Springs)	Nov 02	0.9	L	0.008	9
Foster/Coldbrook medians (Bellflower)	Nov 02	0.1	L	0.0004	0.4
L.A. County Library (Norwalk)	Nov 02	0.9	L	0.007	8
Metro State/Wheelabrator (Norwalk)	Jan 03	-	I	0.256	286
Alamitos Seawater Intrusion Barrier (Long Beach)	Feb 03	-	R	1.626	1,822
Boeing (Long Beach)	Mar 03	52	L	0.019	22
Brea Canyon Rd./Old Ranch Road medians (Industry)	May 03	0.1	L	0.0001	0.1
CLT Computers, Inc., 20153 Paseo del Prado (Walnut)	May 03	0.6	L	0.002	3
Rio Hondo College (Whittier)	Jun 03	85	AF,L	0.030	34
Mill Elementary School (Whittier)	Jun 03	15	AF,L	0.009	10
Del Amo Blvd. greenbelt (Lakewood)	Jul 03	0.3	L	0.002	2
Imperial Equestrian (South Gate)	Jul 03	1.5	L	0.005	6
Norwalk Walkway/Parking (Santa Fe Springs)	Jul 03	1	L	0.004	5
Autosmart Intl., 19885 Harrison Ave. (Industry)	Aug 03	0.2	L	0.001	1
Broadway.com, 19715 Harrison Ave. (Industry)	Aug 03	0.5	L	0.002	2
Bayharbor-Harrison Assn., 19901 Harrison (Industry)	Aug 03	0.8	L	0.004	4
J Pack International, 19789 Harrison Ave. (Industry)	Aug 03	0.5	L	0.001	1
Ziprint Image Corp., 19805 Harrison Ave. (Industry)	Aug 03	0.2	L	0.00001	0.01
San Malone Enterprises, 19865 Harrison (Industry)	Aug 03	0.3	L	0.003	4
Shinetec Group, Inc., 19685 Harrison Ave. (Industry)	Aug 03	0.4	L	0.001	1
Majestic Realty, Grand Ave./Village Staples (Walnut)	Aug 03	1.6	L	0.005	6
Orange Grove Services, Lemon/La Puente (Walnut)	Sep 03	0.4	L	0.003	3
Max Property LLC, 21401 Ferraro Pkwy. (Industry)	Sep 03	0.7	L	0.003	3
NP 21301 Ferraro Pkwy., 21301 Ferraro (Industry)	Sep 03	0.8	L	0.002	2
Tournament Players Golf Course (Santa Clarita)	Sep 03	95	L	0.287	322
568 TriNet Court (Walnut)	Oct 03	0.3	L	0.001	1
Steve Horn Way/Bellflower medians (Downey)	Nov 03	0.3	L	0.016	18
Walnut City Hall (Walnut)	Dec 03	0.6	L	0.0005	1
Walnut Senior Center (Walnut)	Dec 03	0.5	L	0.001	1
Hill's Pet Nutrition, 318 Brea Canyon Rd. (Walnut)	Dec 03	2.6	L	0.005	6
Young Hoon Cho, 1709 Nogales St. (Rowland Heights)	Mar 04	0.1	L	0.0005	1
Shell Station, 21103 Golden Springs Dr. (Diamond Bar)	Mar 04	0.1	L	0.0004	0.4
Ferraro/Grand East ramp (Industry)	Apr 04	3.8	L	0.004	4
Hing Wa Lee Plaza, 1569 Fairway Dr. (Walnut)	May 04	0.1	L	0.001	1
Tucker Elementary School (Long Beach)	May 04	3	AF, L	0.005	6
Southcoast Cabinet, 20625 Lycoming St. (Walnut)	Jun 04	0.3	L	0.002	2
APL Logistics, 408 Brea Canyon Rd. (Walnut)	Jun 04	2.1	L	0.004	5
Alamitos Hill Reservoir landscaping (Long Beach)	Jul 04	8.6	L	0.008	9
Adnoff Family Trust, 20801 Currier Rd. (Walnut)	Jul 04	0.1	L	0.001	1
Sentous Valley LLC, 2889 Valley Blvd. (Walnut)	Aug 04	0.1	L	0.0004	0.4

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

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				<u>(MGD)</u>	<u>(AFY)</u>
Pro Growers Nursery (Norwalk)	Sep 04	11.3	O	0.056	63
Kaiser Administration building (Downey)	Oct 04	2.5	L	0.005	5
Downey Studios (Downey)	Oct 04	1	L	0.005	6
Community Day School (Walnut)	Nov 04	0.1	AF,L	0.001	1
Majestic Mgmt., Bldg. 25 on Mayo Dr. (Walnut)	Jan 05	0.1	L	0.008	9
Gateway Pointe (Whittier)	Jan 05	8	L	0.018	20
Puente Hill Materials Recovery Facility (Industry)	Feb 05	2.4	L	0.013	15
Sy Develop. condos, 20118-20138 Colima, (Walnut)	Jun 05	0.1	L	0.0004	0.4
Dills Park (Paramount)	Jul 05	12.5	L	0.011	12
N/E corner Cheryl Lane/Baker Parkway (Industry)	Aug 05	3.3	L	0.022	24
Jakk's Pacific, Inc. 21733-21749 Baker (Industry)	Aug 05	1.2	L	0.003	3
20813 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
20265 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.0005	1
19849 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
Kohl's Center (Walnut)	Sep 05	2	L	0.010	11
Hollydale Elementary (South Gate)	Sep 05	3	AF,L	0.0002	0.3
Malburg Generation Station (Vernon)	Oct 05	-	I	0.741	831
Phoenix Private Schools (Rowland Heights)	Dec 05	0.1	AF,L	0.001	1
The Home Depot, 21535-21651 Baker (Industry)	Jan 06	2.8	L	0.008	9
Industry East Land LLC, 21415 Baker (Industry)	Jan 06	2.3	L	0.005	5
Stuart and Gray medians (Downey)	Dec 05	0.4	L	0.006	7
Woodruff and Maple medians (Bellflower)	Mar 06	0.1	L	0.0001	0.1
Charles Hailong Cui, 350 Cheryl Lane (Walnut)	Apr 06	0.7	L	0.007	8
J&E's Nursery (Industry)	Apr 06	5	O	0.010	12
Sculpture Garden (Santa Fe Springs)	May 06	0.6	L	0.00001	0.01
Fairway median@ Brea Canyon (Walnut)	Jun 06	0.3	L	0.001	1
Grand Avenue Crossing (Industry)	Jul 06	18.5	L	0.032	36
22002 Valley Blvd. (Industry)	Jul 06	1.6	L	0.003	3
Foster Road medians (Santa Fe Springs)	Jul 06	1	L	0.015	16
Rose Hills Memorial Park – lower area (Whittier)	Aug 06	858	L	0.531	595
Christian Chapel of Walnut Valley (Walnut)	Aug 06	2.2	L	0.004	5
Target Store T-2179, 747 Grand Ave. (Walnut)	Sep 06	3.9	L	0.009	10
Whittier Narrows Recreation Area (South El Monte)	Sep 06	568	L	0.708	793
Leg Avenue, 19601 E. Walnut Dr. (Walnut)	Oct 06	0.5	L	0.004	5
LandRover (Cerritos)	Dec. 06	0.3	L	0.004	4
Harold M. Pitman Co., 21908-21958 Baker (Industry)	Jan 07	0.8	L	0.002	2
Eastern Agricultural Site (Lancaster)	Feb 07	696	AG	1.025	1,148
Williams-Sonoma, 21508-21662 Baker (Industry)	Apr 07	4.8	L	0.012	13
FedEx Ground, 200 Old Ranch Road (Walnut)	May 07	28	L	0.011	13
Currier Road Devel. Inc., 20819 Currier Rd. (Walnut)	May 07	0.3	L	0.002	2
Bluff Park (Long Beach)	Jul 07	25.8	L	0.016	18
Stearns Park (Long Beach)	Jul 07	21	L	0.026	30
Bixby Park (Long Beach)	Jul 07	12.5	L	0.017	20
South El Monte High School (South El Monte)	Aug 07	16.1	AF, L	0.047	52
Williams-Sonoma, 21700 Baker (Industry)	Aug 07	2	L	0.003	4
Dura Freight Lines (20275 Business Parkway)	Nov 07	1.3	L	0.004	5
Douglas Park development (Long Beach)	Nov 07	2.1	L	0.025	28
21350 Valley Blvd. (Industry)	Feb 08	0.4	L	0.001	1
Grand Avenue Venture, 21508 Ferraro Pkwy (Walnut)	Apr 08	3.5	L	0.002	2
Space Learning Center (Downey)	Apr 08	10.5	L	0.028	32
Surgical Center, Carmenita & 166 <sup>th</sup> (Cerritos)	May 08	0.1	L	0.0004	0.4
UPS Parking Structure, 13150 Moore (Cerritos)	May 08	0.5	L	0.005	6
Grand Avenue/Baker Parkway medians (Industry)	May 08	6.7	L	0.012	14
Majestic Management, 21530-21590 Baker (Industry)	May 08	2	L	0.007	8

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.



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				<u>(MGD)</u>	<u>(AFY)</u>
Cornerstone Commerce Center (Downey)	Jun 08	0.8	L	0.004	4
Gomez Upholstery, 19935 Valley Blvd. (Walnut)	Jul 08	2	L	0.00004	0.04
Susann Sutseng Lee, 1335-1337 Otterbein (Row. Hgts.)	Jul 08	0.1	L	0.0002	0.2
Golden Springs Plaza (20657 Golden Sprgs (Dia. Bar)	Aug 08	0.4	L	0.0004	0.5
Chili's Restaurant, Golden Springs Dr. (Diamond Bar)	Sep 08	0.01	L	0.0005	1
Majestic Management, 21808 Garcia Lane (Industry)	Sep 08	0.5	L	0.001	1
Majestic Management, 21858 Garcia Lane (Industry)	Sep 08	0.4	L	0.001	1
Majestic Management, 21912 Garcia Lane (Industry)	Sep 08	0.3	L	0.001	1
Majestic Management, 21760-21788 Garcia (Industry)	Sep 08	0.4	L	0.001	1
CFT Development, Golden Springs Dr. (Diamond Bar)	Oct 08	0.01	L	0.0005	1
Mora Drive medians (Santa Fe Springs)	Oct 08		L	0.004	4
Jenny Hsieh, 20125 Valley Blvd. (Walnut)	Nov 08	0.03	L	0.00001	0.02
UPS Main Building, 13233 Moore (Cerritos)	Nov 08	4.4	L	0.005	6
Fountain Walk Senior, 18310 Carmenita (Cerritos)	Nov 08	0.1	L	0.0003	0.3
Public Works Dept. sewer flushing (Lancaster)	Jan 09	--	I	0.001	1
Public Works Dept. street sweeping (Lancaster)	Feb 09	--	I	0.00005	0.1
ASCIP Building, 16550 Bloomfield (Cerritos)	Feb 09	0.1	L	0.0001	0.1
Tincher Elementary School (Long Beach)	Feb 09	1.5	AF, L	0.001	1
Firestone Blvd. medians (Downey)	Feb 09	0.1	L	0.0002	0.03
Citibank, 8764 Firestone Blvd. (Downey)	Feb 09	0.1	L	0.0003	0.03
Brea Canyon Rd./Currier Road median (Walnut)	Feb 09	2	L	0.003	3
Cardinal Capital Partners, Currier/Lemon (Walnut)	Mar 09	2.5	L	0.002	2
Amergence Technology, 20480 E. Bus. Pkwy. (Walnut)	Apr 09	2	L	0.001	1
Family Property Holdings, 20888 Amar Rd. (Walnut)	May 09	0.04	L	0.00005	0.1
KW Global Inc., 293 Brea Canyon Drive (Walnut)	May 09	0.3	L	0.0001	0.1
Steve Horn Pkwy. medians @ Kaiser (Downey)	May 09	1.4	L	0.002	2
Walgreens/Big Lots, 9018 Firestone (Downey)	May 09	0.4	L	0.0003	0.3
Lancaster University Center (Lancaster)	May 09	2	L	0.002	2
Northeast Gateway demolition (Lancaster)	Jun 09	1	I	0.00001	0.01

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

## 2. LOS ANGELES BASIN

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The treatment plants in the Los Angeles Basin area are the Joint Water Pollution Control Plant (JWPCP) with ocean disposal, and six water reclamation plants (WRPs): La Cañada, Long Beach, Los Coyotes, Pomona, San Jose Creek, and Whittier Narrows. These facilities and the associated trunk sewers are commonly referred to as the Joint Outfall System (JOS) and together produced 417.45 MGD (467,776 AFY) of effluent in FY 08-09, a decrease of 4.7% from the preceding fiscal year. This decrease was due in large part to the on-going effects of water conservation and the nationwide economic recession. This level of flow is equal to that first seen in 1971 and again during the 1976-77 drought. Of the total amount of effluent produced, 131.19 MGD (147,005 AFY), or 31.4 %, was recycled water available for reuse. This was a slight decrease of 0.5% in total flow from the preceding fiscal year, but an actual increase in the percentage of total flow in the JOS. During FY 08-09, 51.15 MGD (57,316 AFY) was actively reused, a 15.6% decrease from the preceding fiscal year. This quantity was 39.0% of the recycled water available and 12.3% of the total effluent produced in the JOS (both percentages decreasing from the preceding year).

### 2.1 LA CAÑADA WRP

This treatment facility, completed in 1962, is the smallest one operated by the Sanitation Districts and is located on the site of the La Cañada-Flintridge Country Club (Figure 6), at 533 Meadowview Drive, La Cañada, CA 91011. In February 1996, an outfall trunk sewer (for waste activated sludge disposal and excess storm flows) was completed that connected this plant with the main sewer system in the Los Angeles Basin, officially making this plant a JOS facility. The plant, which produces disinfected secondary (activated sludge) effluent, has a capacity of 0.2 MGD; however, it only treated an average of 0.095 MGD (106 AFY) of wastewater generated by the 425 homes surrounding the country club in FY 08-09 (0.02% of the effluent produced in the JOS). This flow rate represents an 8.6% decrease in average daily flows from the preceding fiscal

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LA CAÑADA WRP FACTS	
Plant capacity	0.2 MGD
Water produced and reused:	0.095 MGD 106 AFY 8.6% FY decrease
Average O&M:	\$2,166/AF
No. of reuse sites:	1 105 acres

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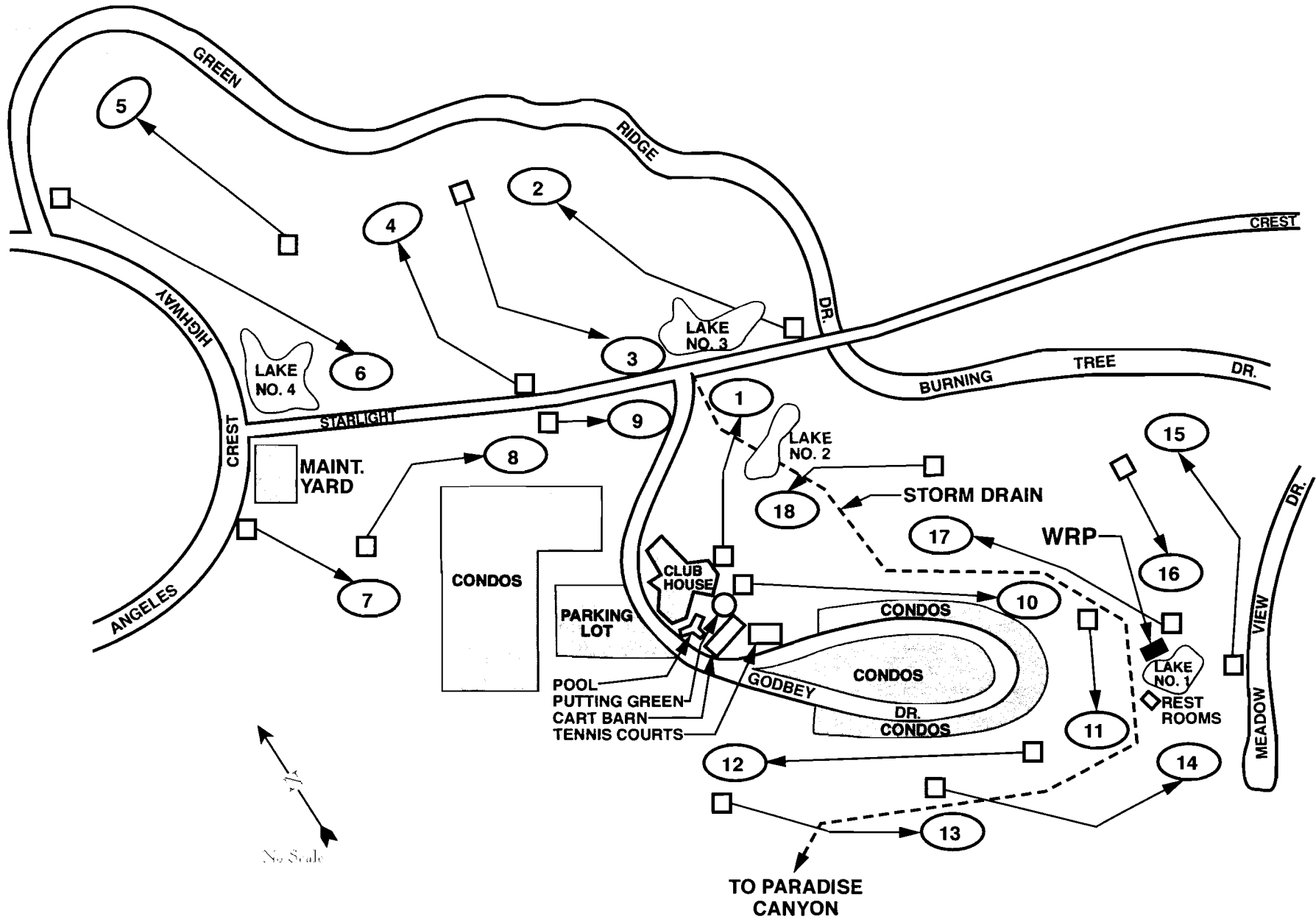
year, most likely a result of water conservation in response to the statewide water crisis. The average operation and maintenance (O&M) cost in FY 08-09 to produce this water was approximately \$2,166/AF.

Use of recycled water from this facility is permitted under California Regional Water Quality Control Board, Los Angeles Region (LARWQCB) Order No. 00-099. All of the disinfected secondary effluent from the plant is conveyed to four lakes on the 105-acre golf course. Lake water (augmented by potable water during the summer) is used for landscape irrigation of the golf course. The developers of the country club and neighboring homes financed the construction of the treatment plant, which was later sold to the Sanitation Districts for \$77,268, and the homeowners in District No. 28 finance the plant O&M costs. The operators of the country club are required to use all of the recycled water produced at this facility for irrigation.

### 2.2 LONG BEACH WRP

This treatment facility, located at 7400 East Willow Street, Long Beach, CA 90815, was completed in 1973 and was expanded in 1984 to its current design capacity of 25 MGD. However, it produced only 18.04 MGD (20,211AFY) of coagulated, filtered, disinfected tertiary recycled water in FY 08-09 (4.3% of the effluent

FIGURE 6  
LA CANADA-FLINTRIDGE COUNTRY CLUB



produced in the JOS), which was an 11.2% increase over the preceding fiscal year, at an average O&M cost of approximately \$298/AF. The increase in recycled water production was the result of portions of the secondary treatment facilities being returned to service following upgrading that took place during the preceding year.

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<b>LONG BEACH WRP FACTS</b>	
Plant capacity	25 MGD
Water produced:	18.04 MGD 20,211 AFY 11.2% FY increase
Average O&M:	\$298/AF
Water reused:	5.771 MGD 6,467 AFY 2.1% FY increase 32.0% of production
Delivery systems:	2 171,900 ft. of pipe
No. of reuse sites:	56 1,928.3 acres

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Recycled water quality for FY 08-09 is presented in Table B-1 of Appendix B. An average of 5.771 MGD (6,467 AFY), or 32.0% of the recycled water produced at this plant was delivered for reuse during FY 08-09. This represents a 2.1% increase over the preceding fiscal year due in large part to the increased availability of effluent. Use of recycled water from this facility during this fiscal year was permitted under LARWQCB Order Nos. 87-47 and 97-072 (for direct, nonpotable reuse), as well as R4-2005-0061 (for barrier injection).

### **2.2.1 LONG BEACH WATER DEPARTMENT**

Beginning in 1980, the City of Long Beach Water Department (LBWD) embarked on a multi-phase program to distribute recycled water throughout the city (Figure 7). A narrative description of the layout of LBWD's recycled water distribution system is contained in Appendix C. Table 8 lists the users of the LBWD system as of the end of FY 08-09.

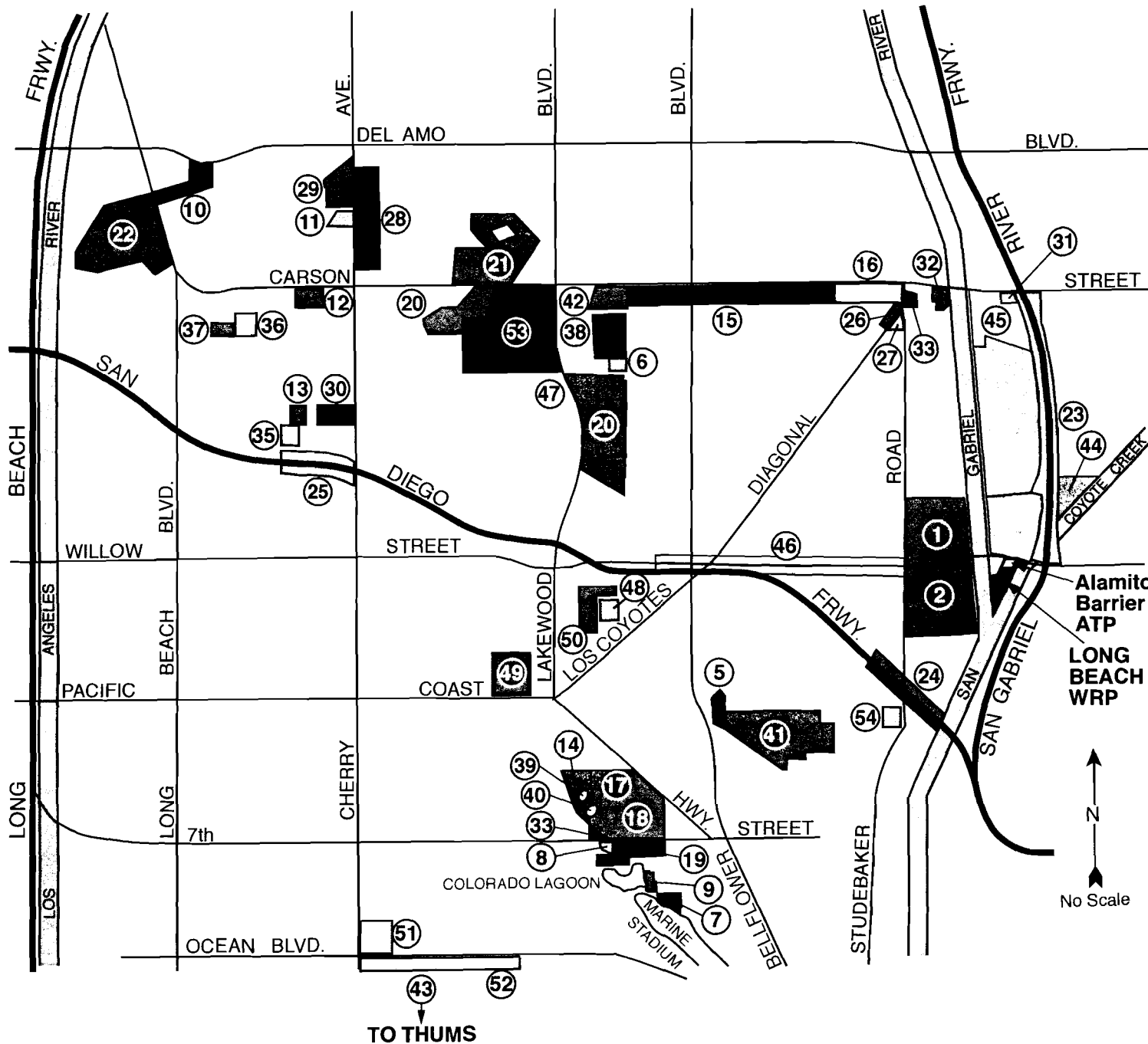
During FY 08-09, LBWD served 4.145 MGD (4,645 AFY), or 22.9% of the recycled water produced at this plant, through approximately 171,900 feet of pipeline (6- to 24-inches in diameter) to 55 direct, nonpotable reuse sites encompassing 1,928 acres (additional recycled water was delivered by LBWD through this system to the Alamitos Seawater Intrusion Barrier, see Section 2.2.2, below). This was a 9.0% decrease from the preceding fiscal year. One new reuse site was added to LBWD's recycled water distribution system in FY 08-09. In February 2009, Tincher Elementary School was connected.

LBWD sells the recycled water at a rate of \$641.20/AF for peak demand (nighttime) usage or \$458.28/AF for off-peak demand (daytime) usage, or between 50-70% of the potable water rate of \$916.07/AF.

### **2.2.2 ALAMITOS SEAWATER INTRUSION BARRIER**

Due to overdrafting of the Central Basin aquifer, which underlies and supplies water to the Metropolitan Los Angeles area, the groundwater level in that basin has dropped below sea level. This has allowed salt water to move inland into the aquifer at various points along the coastline. The Los Angeles County Department of Public Works (LACDPW) has constructed engineered, freshwater injection barriers in front of the advancing seawater at three locations in Los Angeles County, in an effort to stem the landward movement of seawater. One of these barrier projects, the Alamitos Seawater Intrusion Barrier (Alamitos Barrier) is two miles south of the Long Beach WRP, where it straddles the San Gabriel River and the Los Angeles/Orange County line and creates a pressure ridge in five aquifers across the Alamitos Gap. Historically, between 4,000 and 7,000 AFY of non-interruptible imported water jointly purchased from the Metropolitan Water District of Southern California (MWD) by the Water Replenishment District of Southern California (WRD) and the Orange County Water District (OCWD) was injected into the Alamitos Barrier. In 1993, additional injection wells were constructed, and have increased the freshwater injection capacity at the Alamitos Barrier to 7,500 AFY.

FIGURE 7  
LONG BEACH WATER DEPARTMENT REUSE SITES



- 1 El Dorado Park West
- 2 El Dorado Golf Course
- 3 El Dorado Park East
- 4 Nature Center
- 5 Whaley Park
- 6 Douglas Park
- 7 Marina Vista Park
- 8 Woodlands Park
- 9 Colorado Lagoon Park
- 10 Scherer Park
- 11 Cherry Ave. Park
- 12 Somerset Park
- 13 Reservoir Park
- 14 Joe Rodgers Park
- 15 Heartwell Park
- 16 Heartwell Golf Course
- 17 Recreation Park
- 18 Recreation Golf Course
- 19 Recreation 9-Hole Golf Course
- 20 Skylinks Golf Course
- 21 Lakewood Golf Course
- 22 Virginia Country Course
- 23 Cal Trans - 605 Frwy.  
@ Warlow, Pioneer, Spring
- 24 Cal Trans - 405 Frwy. @ Atherton
- 25 Cal Trans - 405 Frwy. @ Walnut
- 26 Los Coyotes Diagonal greenbelt
- 27 Lakewood 1st Presbyterian Church
- 28 All Souls Cemetery
- 29 Sunnyside Memorial Park
- 30 Long Beach Water Dept. Office
- 31 WalMart
- 32 Sunrise Growers Nursery
- 33 DeMille Junior High School
- 34 Wilson High School
- 35 Burroughs Elementary School
- 36 Hughes Middle School
- 37 Longfellow Elementary School
- 38 Veteran's Memorial Stadium
- 39 Recreation Park Bowling Green
- 40 Blair Field
- 41 Cal State University, Long Beach
- 42 Long Beach City College
- 43 THUMS
- 44 El Dorado Lakes Condominiums
- 45 Vestar Development (Towne Centre)
- 46 Willow Street medians
- 47 Boeing
- 48 Tucker Elementary School
- 49 Alamitos Hill Reservoir
- 50 Stearns Park
- 51 Bixby Park
- 52 Bluff Park
- 53 Douglas Park Development
- 54 Tincher Elementary School

**TABLE 8**  
**SUMMARY OF RECYCLED WATER USAGE**  
**LONG BEACH WATER DEPARTMENT**  
**(PAGE 1 OF 2)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreeage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
El Dorado Park West	Aug 80	135	L	0.143	160
El Dorado Golf Course	Aug 80	150	L	0.266	298
Recreation Park	Oct 82	26	L	0.053	59
Recreation Golf Course	Oct 82	149	L	0.228	255
Whaley Park	Jun 83	9	L	0.021	23
El Dorado Park East	Jan 84	300	L	0.465	521
Nature Center	Jan 84	60	L	0.053	59
605 Freeway at Wardlow	Feb 84	50	L	0.027	31
Heartwell Park	Feb 84	120	L	0.176	197
Skylinks Golf Course	Apr 84	155	L,P	0.293	329
Douglas Park	Apr 84	3	L	0.006	6
405 Freeway at Atherton	May 84	5	L	0.00002	0.02
DeMille Junior High School	Jun 84	5	AF,L	0.032	36
Heartwell Golf Park	Jun 84	30	L	0.064	72
Veterans Memorial Stadium	Jan 85	6	AF	0.020	22
Recreation Park Bowling Green	Aug 85	3	L	0.006	6
California State University, Long Beach	Dec 85	52	AF,L	0.131	147
Long Beach City College	Feb 86	15	AF,L	0.015	17
Recreation 9-Hole Golf Course	Mar 86	37	L	0.060	68
Blair Field	Apr 86	5	AF	0.011	12
Woodlands Park	Apr 86	7	L	0.012	13
Colorado Lagoon Park	Apr 86	4	L	0.004	5
Marina Vista Park	Apr 86	30	L	0.033	36
Lakewood 1st Presbyterian Church	Sep 88	1	L	0.009	10
Virginia Country Club	Mar 89	135	L,P	0.244	273
Lakewood Golf Course	Mar 89	128	L,P	0.378	424
Scherer Park	Mar 89	24	L	0.032	36
Sunnyside Memorial Park	Apr 89	35	L	0.087	98
All Soul's Cemetery	Apr 89	40	L	0.112	126
Cherry Avenue Park	May 89	10	L	0.013	14
Los Coyotes Diagonal	Mar 91	1	L	0.005	5
Wilson High School	Jun 91	5	AF,L	0.026	30
Long Beach Water Department office	Jan 92	2	L	0.005	6
Reservoir Park (Signal Hill)	Feb 92	2	L	0.008	8
Burroughs Elementary School (Signal Hill)	Feb 92	4	AF,L	0.004	4
Hughes Middle School	Apr 92	3	AF,L	0.013	15
405 Freeway at Walnut	Apr 92	9	L	0.010	11
Somerset Park	May 92	3	L	0.001	1
Longfellow Elementary School	May 92	1	AF,L	0.00001	0.01
THUMS	Jun 95	8	I	0.816	914
Joe Rodgers Park	Nov 96	4.5	L	0.009	10
Jauregui Nursery	Jul 97	5	O	0.048	54
El Dorado Lakes Condominiums	Aug 98	11	L	0.028	32
WalMart	Dec 98	3	L	0.018	20
Vestar Development	Feb 99	8	L	0.035	40
Willow Street medians	Dec 01	2.4	L	0.002	2
Long Beach Water Department Impoundment	Jul 02	-	I	0.008	9
Alamitos Seawater Intrusion Barrier (WRD)	Feb 03	-	R	1.626	1,822
Boeing	Mar 03	52	L	0.019	22
Tucker Elementary School	May 04	3	AF, L	0.005	6
Alamitos Hill Reservoir landscaping	Jul 04	8.6	L	0.008	9
Bluff Park	Jul 07	25.8	L	0.016	18
Stearns Park	Jul 07	21	L	0.026	30

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 8  
SUMMARY OF RECYCLED WATER USAGE  
LONG BEACH WATER DEPARTMENT  
(PAGE 2 OF 2)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Bixby Park	Jul 07	12.5	L	0.017	20
Douglas Park residential/commercial development	Nov 07	2.1	L	0.025	28
Tincher Elementary School	Feb 09	1.5	AF, L	0.001	1
<b>TOTALS</b>		<b>1,928.3</b>		<b>5.744</b>	<b>6,436</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

Originally conceived of in the late 1980's, the Leo J. Vander Lans Treatment Facility (LVLf) treats tertiary effluent from the Long Beach WRP with membrane filtration and reverse osmosis (MF/RO), followed by application of ultraviolet light (UV) for the destruction of NDMA. The advanced treated product water is then blended with MWD supplies for injection into the seawater intrusion barrier. This project uses the existing 27-inch MWD supply line to the Alamitos Barrier. Construction of the treatment processes on four acres of land directly north of the Long Beach WRP began in late 2001 and was completed in mid 2003. After equipment testing and permit adoption by the LARWQCB, actual recycled water deliveries for injection began in October 2005. The approximate \$15 million cost for the LVLf was funded in part by MWD's Local Resource Program and the federal government.

During FY 08-09, the LVLf produced 1.626 MGD (1,822 AFY) of advanced treated recycled water that was injected into the Alamitos Barrier, or 9.0% of the effluent produced at the Long Beach WRP. This was a 46.7% increase in the amount of recycled water used for this application from the preceding fiscal year, although still below the production capacity of the LVLf.

### 2.3 LOS COYOTES WRP

This treatment facility, located at 16515 Piuma Avenue, Cerritos, CA 90703, was completed in 1970 and was expanded in 1975 to its current design capacity of 37.5 MGD. This plant produced an average of 27.13 MGD (30,405 AFY) of coagulated, filtered, disinfected tertiary recycled water during FY 08-09 (6.5% of the effluent produced in the JOS), which was an increase of 5.0% over the preceding fiscal year, at an average O&M cost of approximately \$300/AF. The increase was the result of returning secondary treatment aeration tanks back into service following upgrades made during the previous year. Effluent water quality for FY 08-09 is presented in Table B-2 of Appendix B.

Through three contracts, an average of 5.634 MGD (6,313 AFY), or 20.8% of the recycled water produced at this plant was delivered during FY 08-09 for use in the cities of Bellflower, Bell Gardens, Cerritos, Compton, Downey, Lakewood, Lynwood, Norwalk, Paramount, Santa Fe Springs, South Gate, and Vernon. This represents a 6.7% decrease in reuse flows from the preceding fiscal year. Since the majority of reuse from this plant is for landscape irrigation, the decrease in use is directly attributable to the significant increase in rainfall from the preceding fiscal year. Use of recycled water from this facility is permitted under LARWQCB Order Nos. 87-51 and 97-072.

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LOS COYOTES WRP FACTS	
Plant capacity	37.5 MGD
Water produced:	27.13 MGD 30,405 AFY 5.0% FY increase
Average O&M:	\$300/AF
Water reused:	5.634 MGD 6,313 AFY 6.7% FY decrease 20.8% of production
Delivery systems:	4 362,600 ft. of pipe
No. of reuse sites:	269 2,344.6 acres

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#### 2.3.1 CITY OF BELLFLOWER

Recycled water deliveries to a single, 5-acre site (Ruth B. Caruthers Park) in this city began in November 1978. During FY 08-09, an average of 0.056 MGD (63 AFY), or about 0.2% of the recycled water produced at this plant, was used at this site for landscape irrigation. A 30 HP pump at the end of the plant's effluent forebay supplies recycled water to the park through 1,900 feet of 4-inch pipe that crosses the San Gabriel River along a footbridge.



### *2.3.2 CITY OF CERRITOS*

Initial deliveries to this city also began in November 1978 and consisted of landscape irrigation and ornamental lake supply at the 25-acre Ironwood Nine Golf Course next to the Los Coyotes WRP. Recycled water was supplied to this site by means of a 50 HP pump at the plant's effluent forebay (next to the City of Bellflower pump) and 75 feet of 6-inch pipe. This system was abandoned in May 1988 when the City of Cerritos completed its citywide distribution system (Figure 8). A narrative description of the layout of the City of Cerritos' recycled water distribution system is contained in Appendix D. Table 9 lists all of the users of recycled water on the City of Cerritos distribution system as of the end of FY 08-09.

Three new users of recycled water were added to the City of Cerritos distribution system during FY 08-09. In November 2008, landscaping at the UPS main building (13233 Moore St.) and the Fountain Walk Senior Housing (18310 Carmenita Rd.) were connected. In February 2009, the landscaping at the ASCIP Building (16550 Bloomfield Ave.) was connected. During FY 08-09, the City of Cerritos used 1.813 MGD (2,032 AFY), or 6.7% of the recycled water produced at the Los Coyotes WRP, for landscape irrigation and impoundments on 755 acres at 82 individual sites. This was a decrease of 6.0% from the preceding fiscal year. City trucks also hauled a small amount of recycled water for landscape irrigation. No private water trucks hauled recycled water during this fiscal year. The City of Cerritos charged its recycled water customers \$326.70/AF, or 53% of the potable water rate of \$614.20/AF.

### *2.3.3 CITY OF LAKEWOOD*

In August 1989, the City of Lakewood connected to two of the stub-outs provided in the City of Cerritos recycled water distribution system to supply their own distribution system. In 1989, this system consisted of 28,300 feet (5.4 miles) of pipelines that initially served eight sites: River (Rynerson), Mae Boyer, Monte Verde, Del Valle, and San Martin Parks, the City Water Yard, and the South Street and Woodruff Boulevard greenbelts, with Mayfair Park being connected later that year. Nine other sites have been connected since then. All of the users of recycled water from the City of Lakewood distribution system, as of the end of FY 08-09, are shown in Figure 9 and listed in Table 10. A narrative description of the layout of the City of Lakewood's recycled water distribution system is contained in Appendix E.

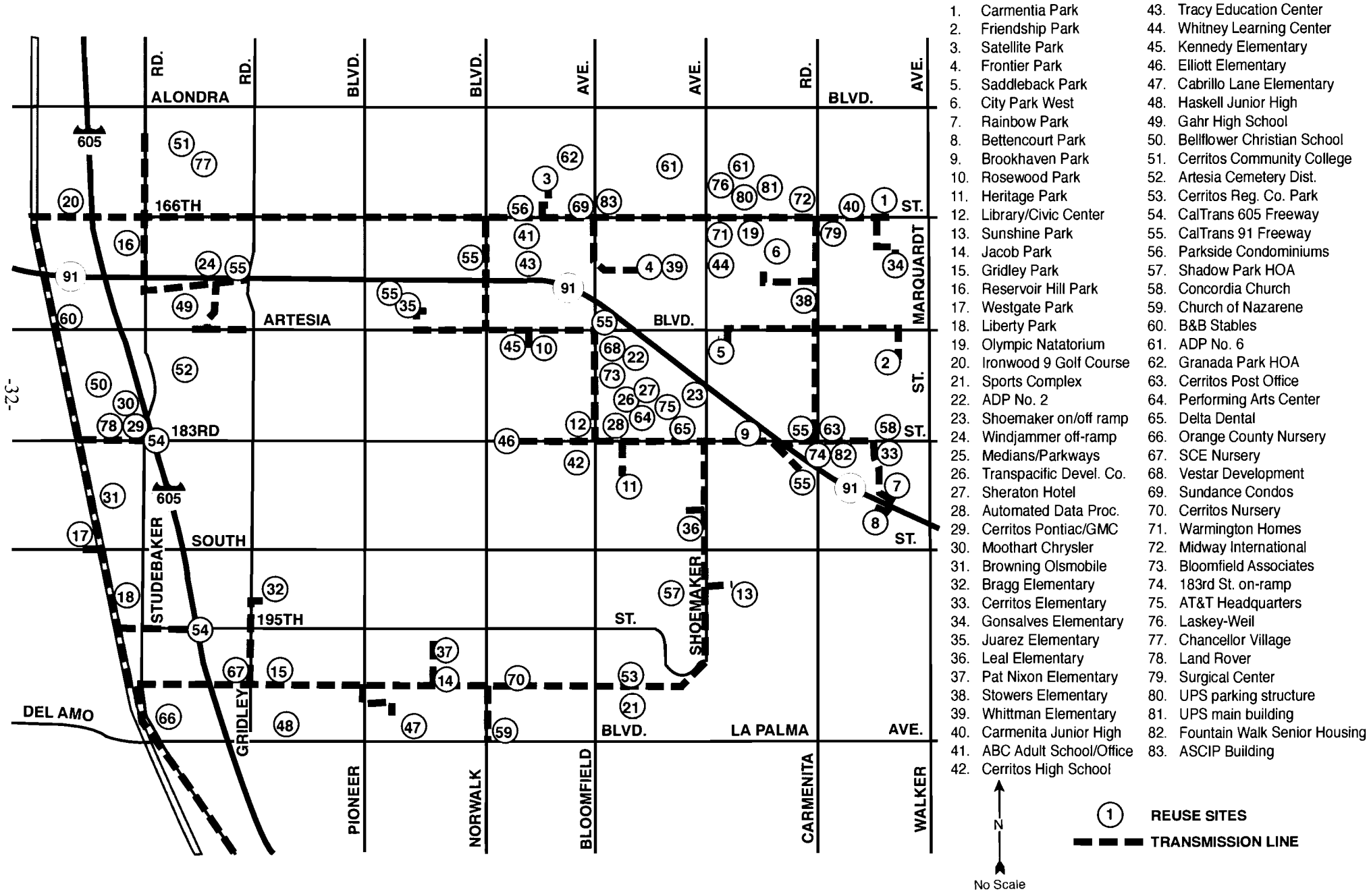
During FY 08-09, the City of Lakewood used 0.358 MGD (401 AFY), or 1.3% of recycled water produced at the Los Coyotes WRP, for irrigation of landscaping, athletic fields, and vegetables on approximately 191 acres at 17 individual sites. This was a decrease of 12.4% from the preceding fiscal year.

The City of Lakewood is charged \$261.36/AF by the City of Cerritos. The City of Lakewood, in turn, retails the recycled water to its customers for \$444.31/AF, or 53% of its potable rate of \$832.00/AF. However, the city reimburses its recycled water customers for their capital expenditures to convert their on-site facilities to accept recycled water.

### *2.3.4 CENTRAL BASIN MUNICIPAL WATER DISTRICT (CENTURY SYSTEM)*

Central Basin Municipal Water District (CBMWD), a regional wholesale water purveyor and member agency of MWD, is the lead agency in developing the regional Century recycled water distribution system that serves the cities of Bellflower, Bell Gardens, Compton, Downey, Lakewood, Lynwood, Norwalk, Paramount, Santa Fe Springs, and South Gate. The \$15 million project initially consisted of 26 miles of pipeline connected to one of the 24-inch distribution lines coming from the City of Cerritos pump station. The backbone of the distribution system is a 30-inch pipeline paralleling the San Gabriel River. Construction of both phases was completed in 1993, with the delivery of recycled water to over 167 sites for applications such as landscape irrigation of parks, schools, and freeway slopes, nursery stock irrigation, and various industrial applications. To

# FIGURE 8 CITY OF CERRITOS RECLAIMED WATER DISTRIBUTION SYSTEM



**TABLE 9**  
**SUMMARY OF RECYCLED WATER USAGE**  
**CITY OF CERRITOS**  
**(PAGE 1 OF 2)**

<u>Reuse Site</u>	<u>Start-up Date</u>	<u>Acreege</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Ironwood 9 Golf Course	Nov 78	25	L,P	0.094	106
Library/Civic Center	Dec 87	4	L	0.015	17
Olympic Natatorium	Dec 87	6	L	0.019	21
Whitney Learning Center	Dec 87	10	AF,L	0.025	28
Gonsalves Elementary School	Dec 87	5	AF,L	0.017	19
Wittman Elementary School	Dec 87	5	AF,L	0.014	16
Gahr High School	Dec 87	28	AF,L	0.066	74
Area Development Project No. 2	Jan 88	11.5	L,P	0.059	67
Medians/Parkways	Jan 88	42.8	L	0.152	170
605 Freeway	Jan 88	58.6	L	0.105	117
91 Freeway	Jan 88	70	L	0.028	31
Frontier Park	Jan 88	2.5	L	0.009	10
Carmenita Junior High School	Jan 88	5	AF,L	0.020	23
Cerritos Elementary School	Jan 88	6	AF,L	0.017	19
Stowers Elementary School	Jan 88	6	AF,L	0.028	31
Kennedy Elementary School	Jan 88	7	AF,L	0.029	32
City Park East	Jan 88	18	L	0.045	50
Satellite Park	Jan 88	2	L	0.005	6
Leal Elementary School	Jan 88	6	AF,L	0.011	13
Cerritos High School	Jan 88	20	AF,L	0.045	50
Elliott Elementary School	Jan 88	7	AF,L	0.011	12
Carmenita Park	Jan 88	4.5	L	0.014	16
Juarez Elementary School	Jan 88	7	AF,L	0.023	26
ABC Adult School & Office	Jan 88	3	L	0.014	16
Tracy Education Center	Jan 88	6	AF,L	0.005	5
Liberty Park	Jan 88	20	L	0.074	83
Gridley Park	Jan 88	9	L	0.021	23
Jacob Park	Jan 88	4.5	L	0.011	12
Heritage Park	Feb 88	12	L	0.036	40
Bragg Elementary School	Feb 88	7	AF,L	0.020	23
Haskell Junior High School	Feb 88	18	AF,L	0.052	59
Pat Nixon Elementary School	Feb 88	5	AF,L	0.012	14
Cabrillo Lane Elementary School	Feb 88	9	AF,L	0	0
Sunshine Park	Feb 88	3.5	L	0.009	11
Friendship Park	Feb 88	4	L	0.011	12
Bettencourt Park	Feb 88	2	L	0.007	8
Brookhaven Park	Feb 88	2	L	0.006	6
Saddleback Park	Feb 88	2	L	0.005	5
Westgate Park	Feb 88	4	L	0.010	11
Rainbow Park	Mar 88	2.5	L	0.007	8
Bellflower Christian School	Mar 88	31.4	AF,L	0.040	45
Cerritos Community College	Mar 88	55	AF,L	0.109	122
Cerritos Regional County Park	Apr 88	59	L	0.117	131
Artesia Cemetery District	Apr 88	10.9	L	0.024	27
Rosewood Park	Apr 88	2.7	L	0.010	11
Sports Complex	Mar 89	25	AF,L	0.058	65
Shoemaker On/Off Ramp - 91 Freeway	Dec 89	4.6	L	0.014	16
Transpacific Development Co.	Feb 90	6.9	L	0.013	14
Automated Data Processing	Feb 90	0.7	L	0.004	5
Sheraton Hotel	Mar 90	0.6	L	0.004	4
Cerritos Pontiac/GMC Truck	May 90	0.5	L	0.002	3
Moothart Chrysler	May 90	0.4	L	0.004	4
Windjammer Off Ramp - 91 Freeway	Sep 90	0.8	L	0.002	3

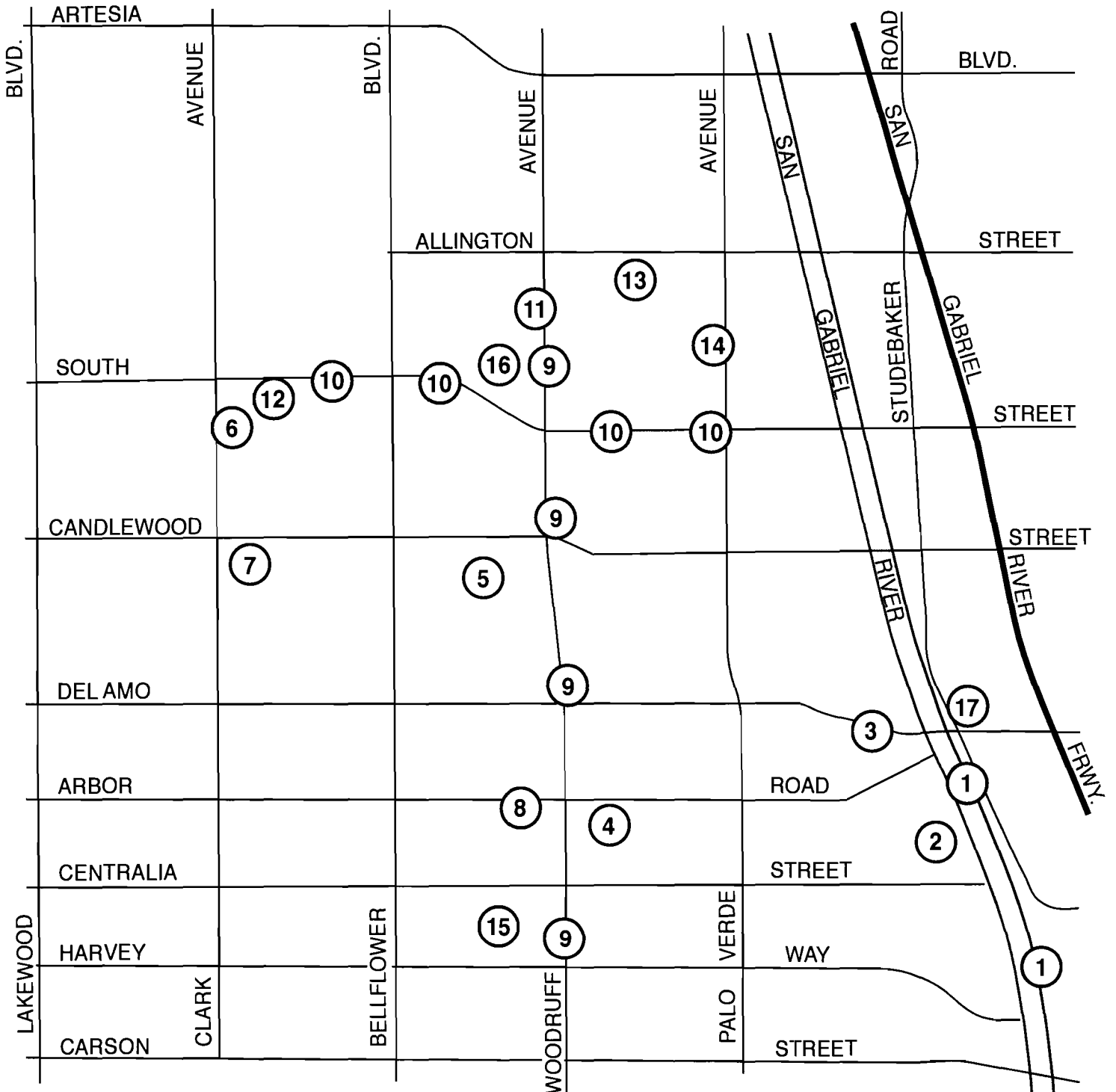
NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 9**  
**SUMMARY OF RECYCLED WATER USAGE**  
**CITY OF CERRITOS**  
**(PAGE 2 OF 2)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Browning Oldsmobile	Sep 90	0.1	L	0.0004	0.4
City Water Truck	May 91	--	L	0.0004	0.4
Private Haulers	May 91	--	I	0	0
Parkside Condominiums	May 91	1.8	L	0.006	7
Concordia Church	Jun 91	4	L	0.012	13
Church of the Nazarene	Aug 91	1	L	0.005	6
B&B Stables	Aug 91	18	I	0.005	6
Shadow Park Homeowner's Association	Nov 91	6	L	0.020	23
Area Development Project No. 6	Apr 92	9	L	0.055	62
Granada Park Homeowners Association	May 92	3.8	L	0.011	13
Cerritos Post Office	Feb 93	0.7	L	0.007	8
Center for the Performing Arts	Mar 93	1	L	0.004	4
Delta Dental	Nov 93	1.8	L	0.003	3
Southern California Edison nursery	Mar 94	3.5	O	0.006	7
Vestar Development	Jun 94	9.6	L	0.042	47
Sundance Condominiums	Jan 95	9	L	0.033	37
Cerritos Nursery	Dec 95	3	O	0.009	10
Encore Maintenance-Warmington Homes	May 96	1.1	L	0.003	4
Artesia Off Ramp - 91 Freeway	Aug 96	3.3	L	0.006	7
Midway International	Feb 98	0.3	L	0.001	1
Bloomfield Associates, 17871 Park Plaza Drive	Sep 98	0.5	L	0.001	2
183 <sup>rd</sup> Street On Ramp - 91 Freeway	Feb 99	0.6	L	0.0005	1
AT&T building, 12900 Park Plaza Drive	Aug 99	0.9	L	0.012	14
Laskey-Weil building, 13101 Moore Street	Oct 01	0.4	L	0.002	3
Chancellor Village Senior Housing	Nov 02	0.9	L	0.003	3
LandRover	Dec. 06	0.3	L	0.004	4
Surgical Center, Carmenita & 166 <sup>th</sup>	May 08	0.1	L	0.0004	0.4
UPS Parking Structure, 13150 Moore	May 08	0.5	L	0.005	6
UPS Main Building, 13233 Moore	Nov 08	4.4	L	0.005	6
Fountain Walk Senior Housing, 18310 Carmenita	Nov 08	0.1	L	0.0003	0.3
ASCIP Building, 16550 Bloomfield	Feb 09	0.1	L	0.0001	0.1
<b>TOTALS</b>		<b>755.0</b>		<b>1.813</b>	<b>2,032</b>

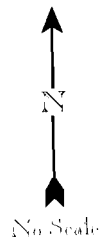
NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**FIGURE 9  
CITY OF LAKEWOOD REUSE SITES**



- ① RIVER (RYNERSON) PARK
- ② MONTE VERDE PARK
- ③ MAE BOYER PARK
- ④ JOSE DEL VALLE PARK
- ⑤ JOSE SAN MARTIN PARK
- ⑥ MAYFAIR PARK
- ⑦ CIVIC CENTER WAY & CITY HALL
- ⑧ CITY WATER YARD
- ⑨ WOODRUFF AVENUE GREENBELT

- ⑩ SOUTH STREET GREENBELT
- ⑪ ST. JOSEPH'S PARISH SCHOOL
- ⑫ FOSTER ELEMENTARY SCHOOL
- ⑬ MAYFAIR HIGH SCHOOL
- ⑭ LINDSTROM ELEMENTARY SCHOOL
- ⑮ LAKEWOOD HIGH SCHOOL
- ⑯ MY HOA FARM
- ⑰ DEL AMO BLVD. MEDIANS



**TABLE 10  
SUMMARY OF RECYCLED WATER USAGE  
CITY OF LAKEWOOD**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
River (Rynerson) Park	Aug 89	40	L	0.068	76
Monte Verde Park	Aug 89	4	L	0.001	1
Mae Boyer Park	Aug 89	8	L	0.026	29
Jose Del Valle Park	Aug 89	12	L	0.026	29
Jose San Martin Park	Aug 89	9.3	L	0.021	24
City Water Yard	Aug 89	1	L	0.008	9
Woodruff Avenue greenbelt	Aug 89	4.1	L	0.010	11
South Street greenbelt	Aug 89	3.3	L	0.006	7
Mayfair Park	Dec 89	18	L	0.041	46
St. Joseph Parish School	Aug 90	3.5	AF,L	0.014	15
Foster Elementary School	Sep 90	6	AF,L	0.017	20
Civic Center Way and City Hall	Nov 90	2.8	L	0.015	17
Mayfair High School	May 91	36.5	AF,L	0.046	51
Lindstrom Elementary School	Sep 91	12	AF,L	0.015	17
Lakewood High School	Sep 91	25	AF,L	0.027	30
My Hoa Farm	May 93	5	AG	0.014	15
Del Amo Blvd. greenbelt	Jul 03	0.3	L	0.002	2
<b>TOTALS</b>		<b>190.8</b>		<b>0.358</b>	<b>401</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

ensure reliable and efficient delivery of recycled water to the City of Vernon's Malburg Generation Station, along with existing and future Sanitation Districts' customers, CBMWD worked with the City of South Gate to construct a booster pump at the city's Hollydale Park in November 2004. The Hollydale Pump Station has improved the overall water pressure and supply reliability for CBMWD's recycled water customers in various local cities, including the cities of South Gate, Lynwood, Huntington Park, and Vernon.

This system was also connected in 1994 to the completed portions of the Rio Hondo recycled water distribution system, as detailed in Section 2.5.5 below. Both the Century and Rio Hondo distribution systems can be partially supplied with recycled water from either the Los Coyotes or San Jose Creek WRPs individually or in combination. However, for the sake of consistency, recycled water usage along the Century facilities is reported in the water reuse reports as coming from the Los Coyotes WRP, and along the Rio Hondo facilities as coming from the San Jose Creek WRP. Figure 10 shows all of the pipelines for both distribution systems, as well as all of the current recycled water use sites. A narrative description of the layout of the Century recycled water distribution system is contained in Appendix F. Table 11 lists all of the recycled water use sites connected to the Century distribution system through FY 08-09.

CBMWD has constructed the delivery facilities right up to the end user; however, the local retail water purveyor is the entity actually supplying the recycled water. Over the past year, three of the retail purveyors, the cities of Downey, Santa Fe Springs and Lynwood, constructed an additional 20,800 linear feet of recycled water lines connecting to the CBMWD distribution system. During FY 08-09, five new sites were added to the Century recycled water distribution system. In October 2008, the Mora Drive medians in Santa Fe Springs were connected. In February 2009, the Firestone Blvd. medians and the Citibank landscaping (8764 Firestone Blvd.) in the City of Downey were connected. In May 2009, the medians along Steve Horn Parkway and the landscaping around Walgreens/Big Lots (9018 Firestone Blvd.) in the City of Downey were connected.

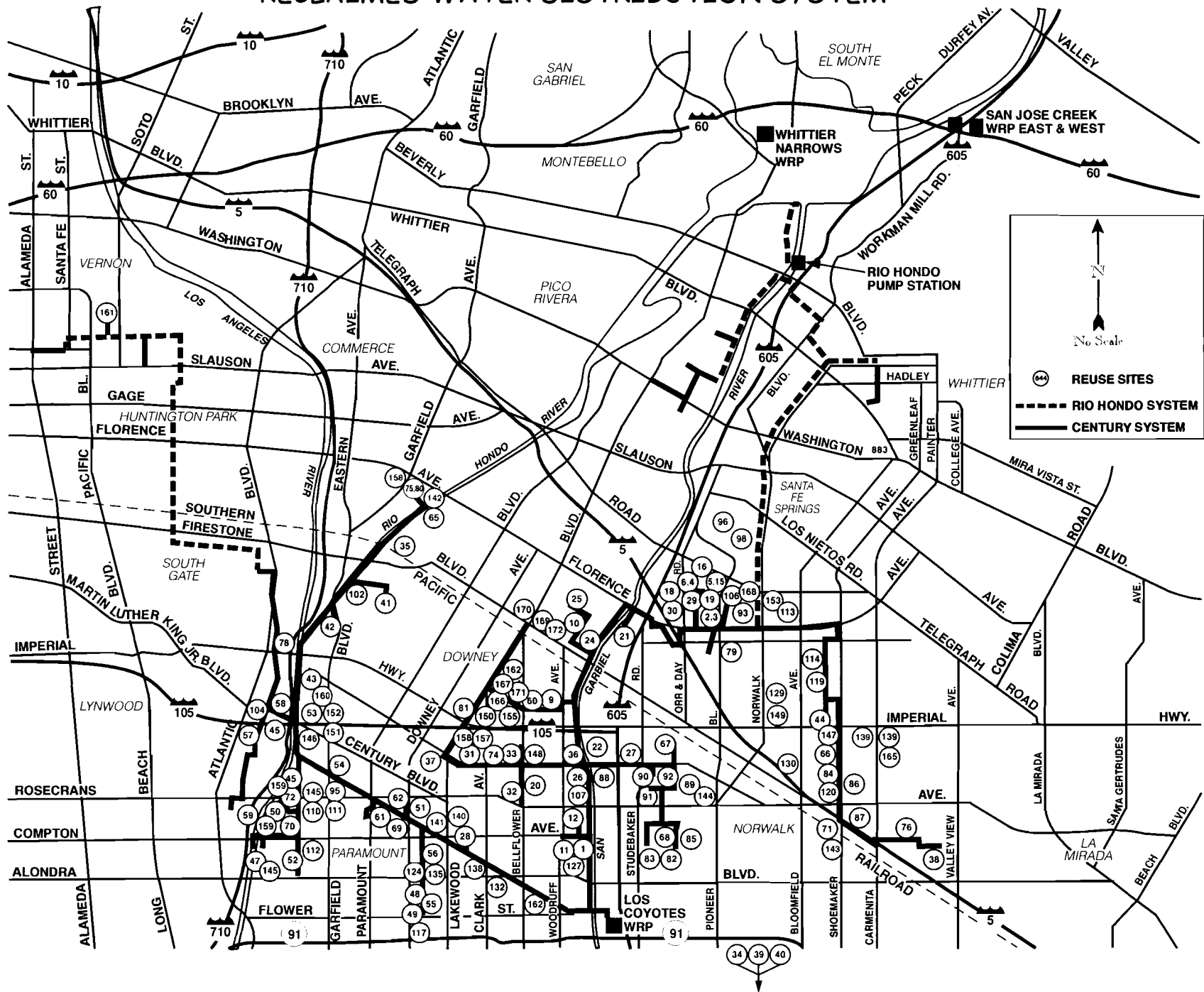
During FY 08-09, CBMWD delivered 3.407 MGD (3,818 AFY) of recycled water through 11 retail water purveyors to 165 individual sites for landscape and athletic field irrigation on approximately 1,393 acres and for industrial process water. This was a decrease of 6.9% from the preceding fiscal year.

Most of the recycled water delivered through the Century system actually originated at the San Jose Creek WRP. However, the usage is still reported from the Los Coyotes WRP, as there is no way to differentiate which reuse sites receive which recycled water. CBMWD wholesales the recycled water to its customers, the retail water purveyors, on a monthly use, tiered rate schedule (\$444 for the first 50 AF, and \$413 for anything above 50 AF). This is between 65% and 70% of the rate of \$635/AF it charges for Tier 1 non-interruptible potable water supplied by MWD, and between 55% and 59% of the rate of \$751/AF it charges for Tier 2 supplies. Recycled water delivered outside of CBMWD's service area is subject to a \$20/AF surcharge on each of the two tiers. Recycled water deliveries to the Malburg power plant in Vernon receive an industrial use rate (\$337 for the first 25 AF, \$313 for the next 25 AF, \$290 for the next 50 AF, and \$267 for anything above 100 AF). The retail purveyors then set their own rates for the recycled water.

## **2.4 POMONA WRP**

Several treatment plants serving the east San Gabriel Valley were constructed and operated by other agencies as early as 1927. The current Pomona WRP, located at 295 Humane Way, Pomona, CA 91766, was completed in 1966 and most recently expanded in June 1991, allowing the plant to treat up to 15 MGD. In FY 08-09, the plant produced 8.93 MGD (10,006 AFY) of coagulated, filtered, disinfected tertiary recycled water (2.1% of the effluent produced in the JOS), which was an 1.7% increase over the preceding fiscal year, at an average FY 08-09 O&M cost of approximately \$387/AF. Recycled water quality for FY 08-09 is presented in Table B-3 of Appendix B.

**FIGURE 10**  
**CENTRAL BASIN MUNICIPAL WATER DISTRICT**  
**RECLAIMED WATER DISTRIBUTION SYSTEM**





**TABLE 11**  
**SUMMARY OF RECYCLED WATER USAGE**  
**CENTURY RECLAMATION PROGRAM**  
**(PAGE 1 OF 4)**

<u>Reuse Site (City) (Map No.)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Andy's Nursery (Bellflower) (1)	Feb 92	9	O	0.002	2
Lake Center Park (Santa Fe Springs) (2)	Mar 92	8	L	0.021	24
Lake Center School (Santa Fe Springs) (3)	Mar 92	8	AF,L	0.021	23
Clarkman Walkway (Santa Fe Springs) (4)	Mar 92	0.1	L	0.0004	0.5
Towne Center Walkway (Santa Fe Springs) (5)	Apr 92	0.1	L	0.0005	1
Lakeview Child Care (Santa Fe Springs) (6)	May 92	0.2	L	0.002	2
Orr & Day Road medians (Santa Fe Springs) (7)	May 92	0.1	L	0.0003	0.03
Florence Avenue medians (Santa Fe Springs) (8)	Jun 92	3	L	0.003	3
Gauldin Elementary School (Downey) (9)	Jun 92	8.4	AF,L	0.007	8
Rio San Gabriel School (Downey) (10)	Jun 92	14.8	AF,L	0.025	28
Bellflower High School (Bellflower) (11)	Jul 92	28.4	AF,L	0.078	87
Ernie Pyle Elementary School (Bellflower) (12)	Aug 92	4.9	AF,L	0.013	15
Telegraph Road medians (Santa Fe Springs) (13)	Aug 92	0.5	L	0.004	5
Lakeview Park (Santa Fe Springs) (14)	Aug 92	6.7	L	0.014	15
Clark Estate (Santa Fe Springs) (15)	Aug 92	4.3	L	0.006	7
Towne Center Green (Santa Fe Springs) (16)	Aug 92	2.3	L	0.005	6
Pioneer Road medians (Santa Fe Springs) (17)	Sep 92	0.4	L	0.039	44
Police Station (Santa Fe Springs) (18)	Sep 92	0.2	L	0.002	2
Aquatic Center (Santa Fe Springs) (19)	Sep 92	0.5	L	0.003	4
Lewis School (Downey) (20)	Nov 92	4.6	AF,L	0.008	9
Wilderness Park (Downey) (21)	Nov 92	24	L	0.101	113
605 Freeway at Foster (Bellflower) (22)	Jan 93	14	L	0	0
Promenade Walkway (Santa Fe Springs) (23)	Jan 93	0.3	L	0.002	2
Rio San Gabriel Park (Downey) (24)	Jan 93	6.4	L	0.033	37
East Middle School (Downey) (25)	Jan 93	26	AF,L	0.024	27
Zinn Park (Bellflower) (26)	Jan 93	1.7	L	0.008	9
605/105 Interchange (Bellflower) (27)	Feb 93	22	L	0.0004	0.5
Hollywood Sports Center (Bellflower) (28)	Feb 93	22.5	L	0.009	10
Santa Fe Springs High School (Santa Fe Springs) (29)	Feb 93	14.5	AF,L	0.035	39
605/5 Freeway at Florence (Santa Fe Springs) (30)	Feb 93	17	L	0.006	7
Old Downey Cemetery (Downey) (31)	Apr 93	7.5	L	0.029	33
Thompson Park (Bellflower) (32)	Apr 93	15	L	0.022	25
105 Freeway at Bellflower (Downey) (33)	May 93	17.9	L	0.014	16
Palms Park (Lakewood) (34)	May 93	20	L	0.035	39
Crawford Park (Downey) (35)	Jul 93	2.1	L	0.010	11
Humedo Nursery (Downey) (36)	Aug 93	11	O	0.005	5
105 Freeway at Lakewood (Downey) (37)	Sep 93	25	L	0.019	21
Shaw Industries Carpet Mill (Santa Fe Springs) (38)	Sep 93	--	I	0.101	113
Palms Elementary School (Lakewood) (39)	Sep 93	3.5	AF,L	0.020	22
Artesia High School (Lakewood) (40)	Sep 93	20.9	AF,L	0.042	47
West Middle School (Downey) (41)	Oct 93	19.5	AF,L	0.021	24
Circle Park (South Gate) (42)	Oct 93	4	L	0.015	16
Hollydale Park (South Gate) (43)	Nov 93	46	L	0.088	99
Robertson's Ready-Mix (Santa Fe Springs) (44)	Dec 93	--	I	0.006	6
710/105 Interchange (Paramount) (45)	Dec 93	18.5	L	0	0
Downey/Contreras greenbelt (Paramount) (46)	Dec 93	0.1	L	0.0005	0.5
Compton Golf Course (Paramount) (47)	Dec 93	13	L	0.027	30
Alondra Junior High School (Paramount) (48)	Dec 93	14	AF,L	0.024	26
Mokler Elementary School (Paramount) (49)	Dec 93	10	AF,L	0.010	11
Los Cerritos Elementary School (Paramount) (50)	Dec 93	8	AF,L	0.011	13
Wirtz Elementary School (Paramount) (51)	Dec 93	9	AF,L	0.014	15
Keppel Elementary School (Paramount) (52)	Dec 93	4	AF,L	0.007	8
Billy Lee Nursery (Paramount) (56)	Dec 93	2.5	O	0.009	11

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 11**  
**SUMMARY OF RECYCLED WATER USAGE**  
**CENTURY RECLAMATION PROGRAM**  
**(PAGE 2 OF 4)**

Reuse Site (City)	Start-up Date	Acreage	Type of Use	Usage	
				(MGD)	(AFY)
105 Freeway at Wright (Lynwood) (57)	Jan 94	19.6	L	0	0
710 Freeway at M.L. King (Lynwood) (58)	Jan 94	15.5	L	0.004	4
710 Freeway at Rosecrans (Compton) (59)	Jan 94	24.2	L	0.010	11
Independence Park (Downey) (60)	Feb 94	10.4	L	0.014	15
Paramount Park (Paramount) (61)	Feb 94	9	L	0.026	29
Paramount High School (Paramount) (62)	Feb 94	19	AF,L	0.033	27
Rosecrans/Paramount medians (Paramount) (63)	Mar 94	0.2	L	0.008	9
Somerset medians (Paramount) (64)	Apr 94	0.9	L	0.008	8
Rio Hondo Golf Course (Downey) (65)	Apr 94	92.4	L	0.223	250
Zimmerman Park (Norwalk) (66)	Apr 94	9.5	L	0.016	18
Vista Verde Park (Norwalk) (67)	Apr 94	6.5	L	0.018	20
Gerdes Park (Norwalk) (68)	Apr 94	8.6	L	0.019	21
Clearwater Junior High School (Paramount) (69)	Apr 94	4	AF,L	0.037	42
Steam Engine Park (Paramount) (70)	Jun 94	0.6	L	0.001	2
5 Freeway at Shoemaker/Firestone (Norwalk) (71)	Jul 94	0.8	L	0.003	3
Spane Park (Paramount) (72)	Jul 94	5	L	0.011	12
Orange/Cortland Parkway (Paramount) (73)	Jul 94	1.3	L	0.002	3
Carpenter School (Downey) (74)	Aug 94	7.4	AF,L	0.009	10
John Anson Ford Park (Bell Gardens) (75)	Sep 94	45	L	0.060	67
Ramona Park (Norwalk) (76)	Oct 94	4.8	L	0.006	6
Alondra median (Paramount) (77)	Oct 94	0.6	L	0.005	6
Imperial/Wright Road medians (Lynwood) (78)	Oct 94	0.2	L	0.001	1
Little Lake Park (Santa Fe Springs) (79)	Dec 94	18	L	0.037	41
John Anson Ford Golf Course (Bell Gardens) (80)	Feb 95	13.6	L	--	--
South Middle School (Downey) (81)	May 95	15.8	AF,L	0.018	20
Nuffer Elementary School (Norwalk) (82)	Jun 95	10.4	AF,L	0.009	10
Lampton Middle School (Norwalk) (83)	Jun 95	9.5	AF,L	0.009	10
Hargitt Middle School (Norwalk) (84)	Jul 95	9.5	AF,L	0.021	23
Norwalk Adult School (Norwalk) (85)	Jul 95	17.2	AF,L	0.030	34
John Glenn High School (Norwalk) (86)	Jul 95	38.8	AF,L	0.047	53
Ramona Elementary School (Norwalk) (87)	Jul 95	6.8	AF,L	0.008	9
New River Elementary School (Norwalk) (88)	Jul 95	10.3	AF,L	0.012	13
Morrison Elementary School (Norwalk) (89)	Sep 95	7.7	AF,L	0.011	12
D.D. Johnston Elementary School (Norwalk) (90)	Sep 95	8.9	AF,L	0.009	10
Corvallis Middle School (Norwalk) (91)	Sep 95	16.9	AF,L	0.027	31
Norwalk High School (Norwalk) (92)	Sep 95	35.1	AF,L	0.037	41
Heritage Park (Santa Fe Springs) (93)	Oct 95	9.2	L	0.013	15
Belloso Farm Nursery (Paramount) (94)	Oct 95	2.5	O	0	0
Robertson's Ready-Mix (Paramount) (95)	Nov 95	--	I	0.010	11
Los Nietos Park (Santa Fe Springs) (96)	Jan 96	11.2	L	0.018	21
Bell Gardens Soccer Field (Bell Gardens) (97)	Feb 96	2.6	AF	0.006	7
Jersey Ave. School/city athl. fields (S.F. Springs) (98)	Mar 96	8	AF	0.008	9
Bellflower Blvd. medians (Bellflower) (99)	Jul 96	0.3	L	0.008	4
Alta Produce (Paramount) (100)	Aug 96	4	AG	0.004	4
Belloso Farm Nursery (South Gate) (101)	Sep 96	2.5	O	0.001	1
Temple Park (Downey) (102)	Oct 96	1	L	0.002	2
Woodruff Avenue medians (Bellflower) (103)	Oct 96	0.8	L	0.007	8
Ham Park (Lynwood) (104)	Dec 96	10	L	0	0
Jauregui Nursery (Paramount) (105)	Dec 96	2	O	0.009	10
Heritage Corporate Center (Santa Fe Springs) (106)	Jan 97	29.9	L	0.032	36
Belloso Farm Nursery (Bellflower) (107)	Jan 97	8	O	0	0
Foster Road medians (Norwalk) (108)	Jan 97	0.3	L	0.004	4
Rosecrans Avenue medians (Paramount) (109)	Mar 97	0.2	L	0.007	8

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 11**  
**SUMMARY OF RECYCLED WATER USAGE**  
**CENTURY RECLAMATION PROGRAM**  
**(PAGE 3 OF 4)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Texaco/Somerset medians (Paramount) (110)	Mar 97	0.2	L	0.002	2
McLane Mowers (Paramount) (111)	Mar 97	0.6	L	0	0
ABC Nursery (Paramount) (112)	Mar 97	16	O	0.004	5
L.A. Co. Vector Control Bldg. (S.F. Springs) (113)	Mar 97	3.8	L	0.004	5
Greenstone Warehouse (Santa Fe Springs) (114)	Apr 97	0.4	L	0.002	2
McNab Avenue medians (Bellflower) (115)	Jul 97	0.1	L	0.0005	1
Foster Road/Premier Ave. medians (Downey) (116)	Aug 97	0.1	L	0.001	1
Palm Growers Nursery (Downey) (117)	Oct 97	7.3	O	0	0
Alondra Blvd medians @ SGR (Bellflower) (118)	Oct 97	0.1	L	0.0003	0.3
Maruichi American building (Santa Fe Springs) (119)	Oct 98	0.4	L	0.002	2
Norwalk Golf Course (Norwalk) (120)	Jan 99	8	L	0.030	34
Soco-Lynch Corp. building (Santa Fe Springs) (121)	Feb 99	1	L	0.003	3
MC&C building (Santa Fe Springs) (122)	Mar 99	0.7	L	0.009	10
Lakewood Blvd. medians (Paramount) (123)	Mar 99	0.2	L	0.002	3
Progress Park (Paramount) (124)	Mar 99	6.2	L	0.014	16
Garfield Avenue medians (Paramount) (125)	Apr 99	0.1	L	0.002	2
B&B Pallet Co. (South Gate) (126)	May 99	-	I	0	0
Garcia's Nursery (Bellflower) (127)	Jun 99	6	O	0	0
Orange Avenue medians (Paramount) (128)	Aug 99	0.1	L	0.004	5
Metropolitan State Hospital (Norwalk) (129)	Sep 99	80	L	0	0
Moffit School (Norwalk) (130)	Sep 99	1.6	AF,L	0.008	9
Rio Hondo Channel (Downey) (131)	Nov 99	0.8	L	0.002	2
Simms Park (Bellflower) (132)	Dec 99	12.5	L	0.017	19
Foster Road Greenbelt (Norwalk) (133)	Mar 00	3.3	L	0.007	8
San Luis Street @ flood channel (Paramount) (134)	Apr 00	3	L	0.001	1
Jefferson School (Paramount) (135)	Jul 00	0.5	AF,L	0.003	3
Columbus High School (Downey) (136)	Aug 00	25	AF,L	0.018	20
Triangle Park (South Gate) (137)	Nov 00	0.4	L	0.004	5
Golden Springs Business Park (Santa Fe Springs) (139)	Apr 01	31.4	L	0.140	157
Bellflower Storage (Bellflower) (140)	Jun 01	3	L	0.003	3
Railroad Beautification (Paramount) (141)	Jul 01	0.5	L	0.0002	0.2
Rio Hondo Channel (Bell Gardens) (142)	Jul 01	0.3	L	0.0005	1
CDM building (Santa Fe Springs) (143)	Oct 01	0.1	L	0.003	3
L.A. Co. Records Office (Norwalk) (144)	Jan 02	2.7	L	0.015	17
Tays Cool Fuel (Paramount) (145)	Feb 02	0.2	L	0.004	4
L.A. River landscaping (South Gate) (146)	Mar 02	2.5	L	0.001	1
Lakewood-Adoree to 5 <sup>th</sup> (Downey) (150)	Jul 02	3.4	L	0.022	25
Simon Trucking (Santa Fe Springs) (147)	Nov 02	0.9	L	0.008	9
Foster/Coldbrook medians (Bellflower) (148)	Nov 02	0.1	L	0.0004	0.4
L.A. County Library (Norwalk) (149)	Nov 02	0.9	L	0.007	8
Metro State/Wheelabrator (Norwalk) (129)	Jan 03	-	I	0.256	286
Imperial Equestrian (South Gate) (152)	Jul 03	1.5	L	0.005	6
Norwalk Walkway/Parking (Santa Fe Springs) (153)	Jul 03	1	L	0.004	5
Steve Horn Way/Bellflower medians (Downey) (155)	Nov 03	0.3	L	0.016	18
Pro Growers Nursery (Norwalk) (156)	Sep 04	11.3	O	0.056	63
Kaiser Administration building (Downey) (157)	Oct 04	2.5	L	0.005	5
Downey Studios (Downey) (158)	Oct 04	1	L	0.005	6
Dills Park (Paramount) (159)	Jul 05	12.5	L	0.011	12
Hollydale Elementary (South Gate) (160)	Sep 05	3	AF,L	0.0002	0.3
Malburg Generation Station (Vernon) (161)	Oct 05	-	I	0.741	831
Stuart and Gray medians (Downey) (162)	Dec 05	0.4	L	0.006	7
Woodruff and Maple medians (Bellflower) (163)	Mar 06	0.1	L	0.0001	0.1
Sculpture Garden (Santa Fe Springs) (164)	May 06	0.6	L	0.00001	0.01

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 11**  
**SUMMARY OF RECYCLED WATER USAGE**  
**CENTURY RECLAMATION PROGRAM**  
**(PAGE 4 OF 4)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Foster Road medians (Santa Fe Springs) (165)	Jul 06	1	L	0.015	16
Space Learning Center (Downey) (166)	Apr 08	10.5	L	0.028	32
Cornerstone Commerce Center (Downey) (167)	Jun 08	0.8	L	0.004	4
Mora Drive medians (Santa Fe Springs) (168)	Oct 08		L	0.004	4
Firestone Blvd. medians (Downey) (169)	Feb 09	0.1	L	0.0002	0.03
Citibank, 8764 Firestone Blvd. (Downey) (170)	Feb 09	0.1	L	0.0003	0.03
Steve Horn Pkwy. medians @ Kaiser (Downey) (171)	May 09	1.4	L	0.002	2
Walgreens/Big Lots, 9018 Firestone (Downey) (172)	May 09	0.4	L	0.0003	0.3
<b>TOTALS</b>		<b>1,393.8</b>		<b>3.407</b>	<b>3,818</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial,  
L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

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POMONA WRP FACTS	
Plant capacity	15 MGD
Water produced:	8.93 MGD 10,005 AFY 1.7% FY increase
Average O&M:	\$387/AF
Water reused: (excluding recharge)	3.501 MGD 3,923 AFY 3.2% FY decrease 39.2% of production
Delivery systems:	3 190,100 ft. of pipe
No. of reuse sites:	197 2,480.7 acres

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Three agencies, the Pomona Water Department, Walnut Valley Water District (WVWD), and Rowland Water District (RWD), along with the Sanitation Districts' Spadra Landfill, together used 3.501 MGD (3,923 AFY) or 39.2% of the plant's total production. (Note: RWD took over operation of that portion of the WVWD recycled water distribution system that ran through its service area.) This was a 3.2% decrease from the preceding fiscal year.

The remaining recycled water is discharged to south fork of San Jose Creek, which is tributary to the unlined portion of the San Gabriel River. Therefore, nearly 100% of the recycled water produced at this plant is reused, since most of the river discharge percolates into the underlying groundwater. Use of recycled water from this facility is permitted by the LARWQCB under Order Nos. 81-34 and 97-072 for direct, nonpotable applications, and No. 91-100 for groundwater replenishment.

**2.4.1 POMONA WATER DEPARTMENT**

Documented use of recycled water in the Pomona area goes as far back as 1904 when effluents treated to various levels were used on the many farms and ranches in the area. The

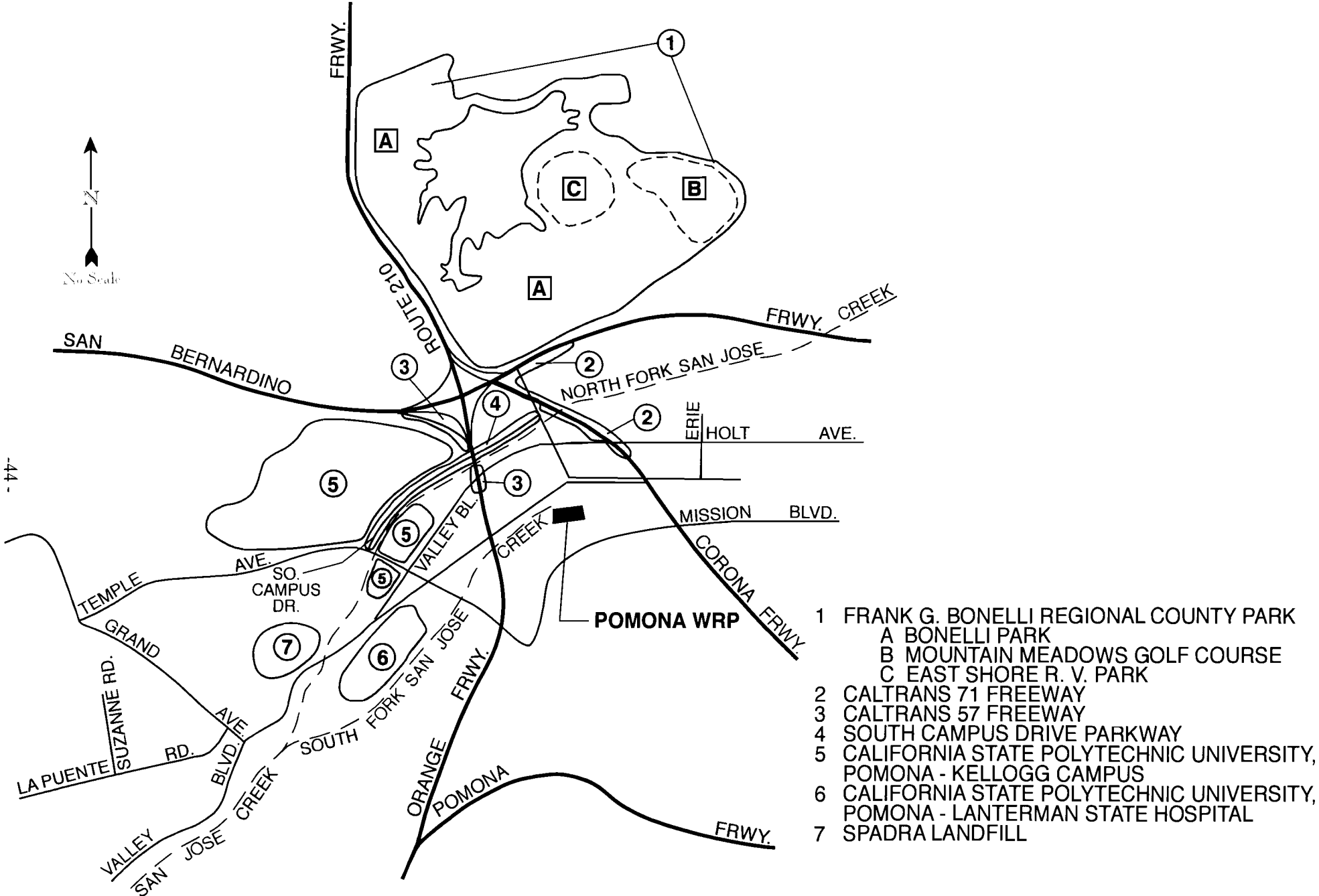
City of Pomona Water Department began using recycled water from the Sanitation Districts' current treatment facility in December 1973 when agricultural irrigation at California State Polytechnic University, Pomona (Cal Poly) and its (sometime) satellite farming operation at Lanterman State Hospital, and landscape irrigation along South Campus Drive Parkway were connected to a recycled water distribution system. In later years, two freeway interchanges, two paper mills (both now shut down), and a county regional park were added.

The distribution system consists of a 490 HP, 9,000 gpm pump station that feeds two, 21-inch transmission lines. One 21-inch line runs east along Pomona Boulevard and Vernon Avenue. The other 21-inch line runs north along Ridgeway Street to a T-section at South Campus Drive and the 71 Freeway. From this point, an 18-inch line continues north along Ridgeway, then east along Murchison Avenue for a short distance before it terminates at a 4.5 million gallon storage reservoir in Bonelli Park. At the T-section, a 16-inch line runs west along South Campus Drive, serving the parkway, Cal Poly, and the 57 and 71 Freeways. A 21-inch unreinforced concrete gravity line from the Pomona WRP serves the former Landfill site, Lanterman Hospital, and the WVWD pump station.

During FY 08-09, the Pomona Water Department delivered 1.942 MGD (2,176 AFY), or 21.7% of the recycled water from the Pomona WRP, to six retail customers on 1,427 acres as shown in Figure 11. This was a 0.15% increase over the preceding fiscal year. Table 12 lists the users of the Pomona Water Department system as of the end of FY 08-09. There were no new users added during this fiscal year. The usage at the Sanitation Districts' now closed Spadra Landfill, previously reported in this section along with these seven customers, is reported separately in Section 2.4.2 below.

During FY 08-09, the Pomona City Council took action to reduce the large disparity between its potable and recycled water rates. The Pomona Water Department sold the recycled water to its customers at a rate of \$491.91/AF from its pressure system. This is 70% of its potable water rate of \$702.73/AF.

**FIGURE 11  
POMONA WATER DEPARTMENT AND SPADRA LANDFILL REUSE SITES**



- 1 FRANK G. BONELLI REGIONAL COUNTY PARK
  - A BONELLI PARK
  - B MOUNTAIN MEADOWS GOLF COURSE
  - C EAST SHORE R. V. PARK
- 2 CALTRANS 71 FREEWAY
- 3 CALTRANS 57 FREEWAY
- 4 SOUTH CAMPUS DRIVE PARKWAY
- 5 CALIFORNIA STATE POLYTECHNIC UNIVERSITY,  
POMONA - KELLOGG CAMPUS
- 6 CALIFORNIA STATE POLYTECHNIC UNIVERSITY,  
POMONA - LANTERMAN STATE HOSPITAL
- 7 SPADRA LANDFILL

**TABLE 12**  
**SUMMARY OF RECYCLED WATER USAGE**  
**POMONA WATER DEPARTMENT & SANITATION DISTRICTS' SPADRA SITE**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Cal Poly, Pomona-Kellogg	Dec 73	500	AG,L,O,P,AF	1.141	1,278
Lanerman Hospital	Dec 73	100	AG	0	0
South Campus Drive Parkway	Dec 73	8	L	0.016	18
Route 57 and 10 Freeways	May 75	18	L	0.001	1
Bonelli Regional County Park	Apr 77	789	L	0.781	876
Route 71 and 10 Freeways	Apr 81	12	L	0.003	3
Spadra Landfill landscape	Jul 84	53	L	0.325	364
Spadra Landfill dust control	Jul 84	--	I	0.014	16
Cal Poly LandLab	Nov 93	2.5	AG,L	0.012	14
Spadra Gas-to-Energy Plant	Dec 95	--	I	0.080	90
<b>TOTALS</b>		<b>1,482.5</b>		<b>2.373</b>	<b>2,659</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

#### *2.4.2 SPADRA LANDFILL SITE*

The Sanitation Districts' Spadra Landfill began receiving recycled water from the Pomona WRP in July 1984 from the 21-inch unreinforced concrete gravity line from the plant. A pressure-sustaining valve on the line at the landfill site provides enough static head in the pipeline for the pumps of the landfill to utilize. Cal Poly's LandLab project began receiving recycled water from the landfill site in November 1993, and the Spadra Gas-to-Energy (SGE) Facility began using recycled water in its cooling towers in December 1995. These sites are shown in Figure 11 and they are also included in Table 12 along with the users of the Pomona Water Department system.

During FY 08-09, 0.431 MGD (483AFY), or 4.8% of the recycled water from the Pomona WRP, was used on approximately 56 acres at the former Spadra Landfill site, the SGE Facility, and Cal Poly's LandLab. This was a 16.4% decrease from the preceding fiscal year.

#### *2.4.3 WALNUT VALLEY WATER DISTRICT*

In March 1986, WVWD completed the initial construction of its recycled water distribution system. This system consists of a 3,500 gpm pump station and an 8,000 gallon wet well at the end of the 21-inch concrete gravity line from the Pomona WRP, approximately 166,320 linear feet (31.5 miles) of pipelines, and a two million gallon reservoir. A second, two million gallon reservoir was constructed in mid 1992 to provide more storage for the nighttime peak demands. The distribution system is supplemented during the peak summer demand periods with nonpotable water from a well located next to the recycled water line on Fairway Avenue and with imported water from MWD at the pump station. Initially, 26 individual sites were served following completion of the distribution system. Figure 12 and Table 13 present the users of the WVWD system as of the end of FY 08-09. A narrative description of the layout of the WVWD recycled water distribution system is contained in Appendix G.

In FY 08-09, 15 new sites were added to the WVWD distribution system. In July 2008, the landscaping around the Gomez Upholstery (19935 Valley Blvd.) and Susann Sutseng Lee (1335-1337 Otterbein Avenue) commercial buildings were connected. In August 2008, the landscaping around Golden Springs Plaza LLC (20657 Golden Springs Drive) was connected. In September, the landscaping around the Chili's Restaurant on Golden Springs Drive and four Majestic Management commercial buildings (21808, 21858, 21912, and 21760-21788 Garcia Lane) were connected. In October 2008, the landscaping around CFT Developments (Lot #1 on Golden Springs Drive) was connected. In November 2008, the landscaping around the Jenny Hsieh commercial building (20125 Valley Blvd.) was connected. In February 2009, the Brea Canyon Road/Currier Road medians at the Alameda Corridor Extension (ACE) construction site were connected. In March 2009, the landscaping at Cardinal Capital Partners (Currier and Lemon) was connected. During April 2009, the landscaping at Amergence Technology Inc. (20480 E. Business Parkway) was connected. In May 2009, the landscaping at Family Property Holdings, LLC (20888 Amar Road) and KW Global Inc. (293 Brea Canyon Road) were connected.

During FY 08-09, WVWD delivered 1.112 MGD (1,246 AFY), or 12.5% of the recycled water produced at the Pomona WRP, a decrease of 4.2% from the preceding fiscal year. WVWD received the recycled water directly from the Sanitation Districts and retailed it to its 179 customers (which irrigate approximately 701 acres) at 85% of its potable water rate of \$762.30/AF, or \$649.04/AF.

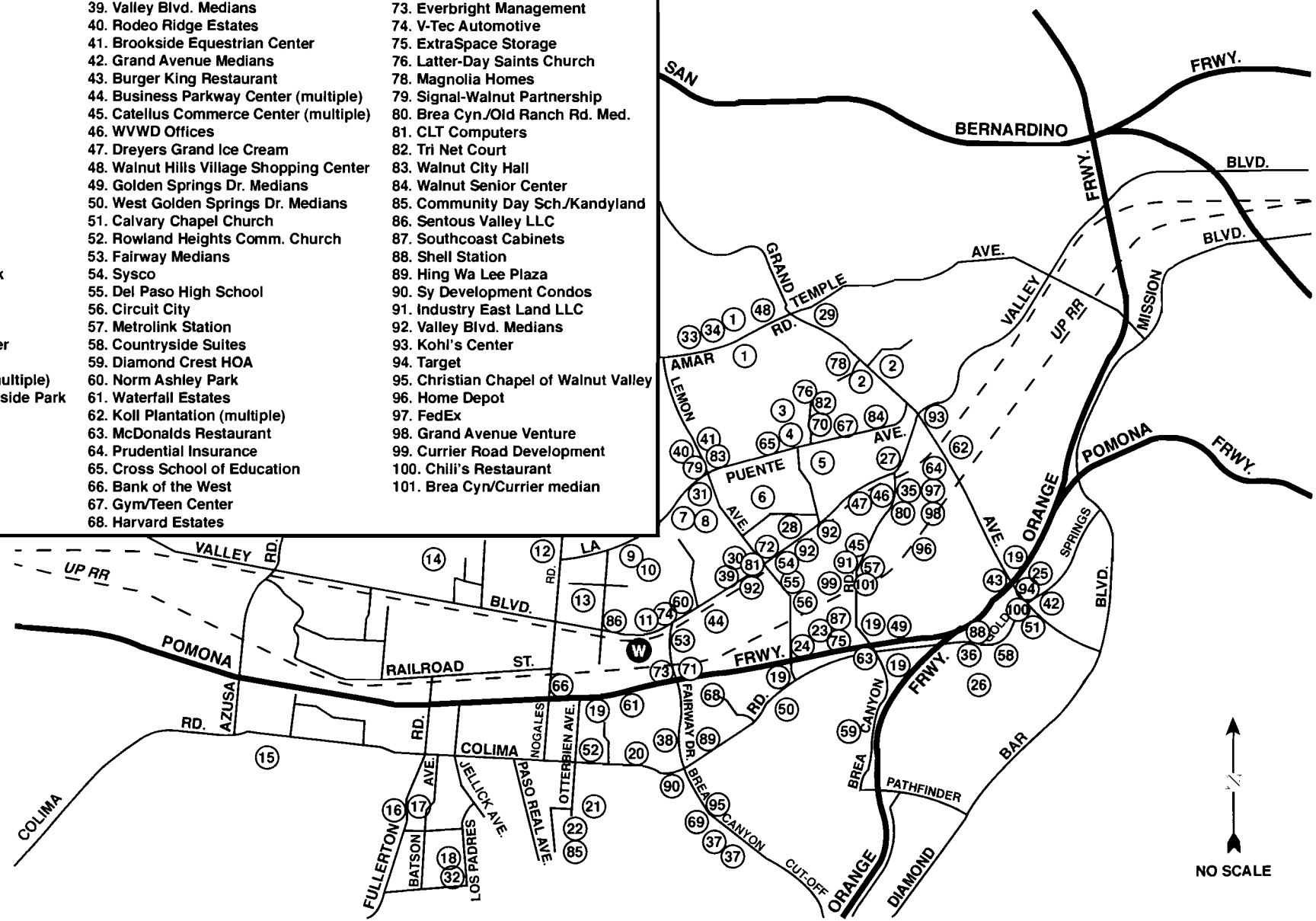
#### *2.4.4 ROWLAND WATER DISTRICT*

In January 2003, the RWD assumed operation of the 29,280 feet (5.5 miles) of the WVWD recycled water system that ran through RWD's service area. Eight reuse sites that were formerly served by WVWD were then



# FIGURE 12 WALNUT VALLEY WATER DISTRICT RECLAIMED WATER DISTRIBUTION SYSTEM

- |   |  |                                       |
|---|--|---------------------------------------|
| 1. Walnut Ranch LMD                     | 35. Grand Crossing (multiple)            | 69. Wind River HOA                    |
| 2. Snow Creek Park & LMD                | 36. SCAQMD Headquarters                  | 70. Walnut Nazarene Church            |
| 3. Suzanne Park                         | 37. Recycled Water Reservoirs            | 71. Holiday Inn Express               |
| 4. Suzanne Middle School                | 38. First Chinese Baptist Church         | 72. Lemon Avenue Investments          |
| 5. Walnut High School                   | 39. Valley Blvd. Medians                 | 73. Everbright Management             |
| 6. Vejar Elementary School              | 40. Rodeo Ridge Estates                  | 74. V-Tec Automotive                  |
| 7. Morris Elementary School             | 41. Brookside Equestrian Center          | 75. ExtraSpace Storage                |
| 8. Lemon Creek Park                     | 42. Grand Avenue Medians                 | 76. Latter-Day Saints Church          |
| 9. Friendship Park                      | 43. Burger King Restaurant               | 78. Magnolia Homes                    |
| 10. Hollingsworth Elem. School          | 44. Business Parkway Center (multiple)   | 79. Signal-Walnut Partnership         |
| 11. Lanesboro Park                      | 45. Catellus Commerce Center (multiple)  | 80. Brea Cyn./Old Ranch Rd. Med.      |
| 12. Nogales High School                 | 46. WVWD Offices                         | 81. CLT Computers                     |
| 13. Rincon Middle School                | 47. Dreyers Grand Ice Cream              | 82. Tri Net Court                     |
| 14. Sunshine Park                       | 48. Walnut Hills Village Shopping Center | 83. Walnut City Hall                  |
| 15. Schabarum Park                      | 49. Golden Springs Dr. Medians           | 84. Walnut Senior Center              |
| 16. Queen of Heaven Cemetery            | 50. West Golden Springs Dr. Medians      | 85. Community Day Sch./Kandyland      |
| 17. Rowland Elementary School           | 51. Calvary Chapel Church                | 86. Sentous Valley LLC                |
| 18. Farjardo Elementary School          | 52. Rowland Heights Comm. Church         | 87. Southcoast Cabinets               |
| 19. CalTrans                            | 53. Fairway Medians                      | 88. Shell Station                     |
| 20. Rowland Heights County Park         | 54. Sysco                                | 89. Hing Wa Lee Plaza                 |
| 21. Rowland High School                 | 55. Del Paso High School                 | 90. Sy Development Condos             |
| 22. Killian Elementary School           | 56. Circuit City                         | 91. Industry East Land LLC            |
| 23. Walnut Elementary School            | 57. Metrolink Station                    | 92. Valley Blvd. Medians              |
| 24. WVUSD Admin. Service Center         | 58. Countryside Suites                   | 93. Kohl's Center                     |
| 25. Diamond Bar Golf Course             | 59. Diamond Crest HOA                    | 94. Target                            |
| 26. Gateway Corporate Center (multiple) | 60. Norm Ashley Park                     | 95. Christian Chapel of Walnut Valley |
| 27. Walnut Ridge LMD & Morningside Park | 61. Waterfall Estates                    | 96. Home Depot                        |
| 28. Sunshine Growers Nursery            | 62. Koll Plantation (multiple)           | 97. FedEx                             |
| 29. Temple Avenue Medians               | 63. McDonalds Restaurant                 | 98. Grand Avenue Venture              |
| 30. Valley Business Center              | 64. Prudential Insurance                 | 99. Currier Road Development          |
| 31. Lemon Avenue Medians                | 65. Cross School of Education            | 100. Chili's Restaurant               |
| 32. Fajardo Park                        | 66. Bank of the West                     | 101. Brea Cyn./Currier median         |
| 33. Walnut Ranch Park                   | 67. Gym/Teen Center                      |                                       |
| 34. Westhoff Elementary School          | 68. Harvard Estates                      |                                       |



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**TABLE 13**  
**SUMMARY OF RECYCLED WATER USAGE**  
**WALNUT VALLEY WATER DISTRICT**  
**(PAGE 1 OF 4)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Suzanne Park (Walnut)	Oct 80	12	L	0.014	16
Suzanne Middle School (Walnut)	May 86	4	AF,L	0.014	16
Walnut High School (Walnut)	May 86	15	AF,L	0.029	33
Vejar School (Walnut)	May 86	3	AF,L	0.009	11
Morris School (Walnut)	May 86	9	AF,L	0.009	10
Snow Creek Park (Walnut)	May 86	7	L	0.010	11
Snow Creek Landscape Maintenance Dist. (Walnut)	May 86	13.5	L	0.053	60
Lemon Creek Park (Walnut)	May 86	5	L	0.005	5
Friendship Park (West Covina)	May 86	6	L	0.007	8
Hollingsworth School (West Covina)	May 86	3	AF,L	0.008	9
Lanesboro Park (West Covina)	May 86	2	L	0.005	5
Rincon Middle School (West Covina)	May 86	3	AF,L	0.016	18
Sunshine Park (L.A. County)	May 86	4	L	0	0
Rowland Elementary School (Rowland Heights)	May 86	3	AF,L	0	0
Farjardo School (Rowland Heights)	May 86	4	AF,L	0	0
Farjardo Park (Rowland Heights)	May 86	4	L	0	0
Route 57 and 60 Freeways (Rowland Heights)	May 86	19.7	L	0.035	39
Rowland Heights Reg. Co. Park (Rowland Heights)	May 86	11	L	0.012	13
Rowland High School (Rowland Heights)	May 86	9	AF,L	0.016	17
Killian Elementary School (Rowland Heights)	May 86	3	AF,L	0.006	6
Walnut Elementary School (Walnut)	May 86	4	AF,L	0.003	4
WUSD Administrative Service Center (Walnut)	May 86	4	L	0.004	4
Walnut Ranch Park (Walnut)	Jun 86	26	L	0.020	22
Amar Road greenbelt (Walnut)	Jun 86	16	L	0.016	18
Nogales High School (L.A. Co.)	Jun 86	11	AF,L	0	0
Queen of Heaven Cemetery (Rowland Heights)	Jun 86	35	L	0	0
Diamond Bar Golf Course (Diamond Bar)	Jul 86	174	L,P	0.166	186
Schabaram Regional County Park (L.A. Co.)	Sep 86	233	L	0	0
Walnut Ridge Landscape Maintenance Dist. (Walnut)	Mar 87	25.5	L	0.040	45
Morningside Park (Walnut)	Mar 87	4	L	0.005	5
Gateway Corporate Center (Diamond Bar)	Jun 87	45	L	0.043	48
Sunshine Growers (Walnut)	May 88	7	O	0	0
Westhoff Elementary School (Walnut)	Sep 88	8	AF,L	0.007	7
Temple Avenue greenbelt (Walnut)	Jan 90	1	L	0.0003	0.3
Walnut Tech Business Center (Walnut)	Apr 90	1	L	0.002	3
Lemon Avenue greenbelt (Walnut)	Sep 91	4.3	L	0.009	10
South Coast AQMD Headquarters (Diamond Bar)	Nov 91	2	L	0.005	6
WVWD reservoir (Diamond Bar)	May 92	1	L	0.003	4
First Chinese Baptist Church (Walnut)	Dec 92	0.3	L	0.002	2
Burger King restaurant (Diamond Bar)	Oct 93	0.2	L	0.001	1
Majestic Mgmt., 19850 E. Business Pkwy (Walnut)	Nov 93	0.8	L	0.004	5
General Electric, 19705 E. Business Pkwy (Walnut)	Nov 93	1.6	L	0.007	8
Rodeo Ridge Estates (Walnut)	Dec 93	6.3	L	0.005	6
Golden Springs Drive medians (Diamond Bar)	Jan 94	1.3	L	0.004	4
Walnut Hills Village Shopping Center (Walnut)	Mar 94	2.4	L	0.005	6
Brookside Equestrian Center (Walnut)	Aug 94	13.6	L	0.004	4
WVWD Office (Walnut)	Oct 94	0.2	L	0.001	2
Cattelus Development (Walnut)	Oct 94	18.9	L	0.013	14
Circuit City, 501 Cheryl Lane (Walnut)	Oct 94	1	L	0.007	8
Dreyer's Grand Ice Cream, 351 Cheryl Lane (Walnut)	Oct 94	0.6	L	0.003	3
Metrolink Station (Industry)	Nov 94	0.6	L	0.003	3
Del Paso High School (Walnut)	Jan 95	3	AF,L	0.004	5
Dow Corning, 20832 Currier Road (Walnut)	Jan 95	0.1	L	0.0001	0.1
Circuit City Headquarters, Currier/Lemon (Walnut)	Apr 95	1.1	L	0.007	8

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 13**  
**SUMMARY OF RECYCLED WATER USAGE**  
**WALNUT VALLEY WATER DISTRICT**  
**(PAGE 2 OF 4)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Sysco Food Service, 20701 Currier Road (Walnut)	Apr 95	2.3	L	0.013	15
Tung Hsin Trading, 20420 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.004	4
Syntaxbrilliant, 20480 E. Business Pkwy (Walnut)	Apr 95	0.9	L	0.002	3
Dura Freight Lines, 515-525 S. Lemon (Walnut)	Apr 95	0.5	L	0.001	1
S/W-S/E Corner Lemon/Bus. Parkway (Walnut)	Apr 95	0.2	L	0.004	5
TTSI, 20275 Business Parkway (Walnut)	Apr 95	1.3	L	0.004	5
Coaster Co. of America, 20300 Bus. Parkway (Walnut)	Apr 95	0.7	L	0.002	2
Dura Freight Lines, 20405 Bus. Parkway (Walnut)	Apr 95	1	L	0.003	3
Dura Freight Lines, 20595 E. Business Pkwy (Walnut)	Apr 95	0.8	L	0.003	3
Dura Freight Lines, 20445 E. Business Pkwy (Walnut)	Apr 95	0.7	L	0.001	1
820 Fairway Drive medians (Industry)	Jun 95	0.1	L	0.001	1
Majestic Management, 435 S. Lemon (Walnut)	Jun 95	0.5	L	0.002	2
General Electric, 19805 E Business Pkwy (Walnut)	Jun 95	1.1	L	0.006	7
Menlo Logistics, 20002 E. Business Pkwy (Walnut)	Jun 95	4	L	0.008	9
General Electric, 20005 E. Business Parkway (Walnut)	Jun 95	6.7	L	0.012	14
Ping Ting Hsu, 20701 Currier Road (Walnut)	Aug 96	0.1	L	0.0002	0.2
Tilos Inc., 20822 Currier Road (Walnut)	Oct 96	0.1	L	0.0002	0.2
Fairway Business Cntr., 19700 Bus. Parkway (Walnut)	Nov 96	0.4	L	0.002	2
Rowland Heights Christian Church (Rowland Hgths.)	Feb 97	0.5	L	0.001	2
Viewsonic, 510 Cheryl/455 Brea Canyon (Walnut)	Jul 97	1.8	L	0.011	12
Countryside Suites (Diamond Bar)	Mar 98	1.4	L	0.003	3
Diamond Crest Homeowners Assn. (Diamond Bar)	Oct 98	14	L	0.019	21
Norm Ashley Park (Walnut)	Nov 98	0.2	L	0.001	1
Play Hut, 368 Cheryl Lane (Walnut)	Nov 98	0.8	L	0.004	4
Waterfall Estates (Rowland Heights)	Dec 98	1.2	L	0.003	3
Calvary Chapel (Diamond Bar)	Apr 99	1	L	0.016	17
Hi-Tek Warehouse, 20851 Currier Road (Walnut)	Jun 99	0.2	L	0.002	2
Campus Group Inc, 319 Cheryl Road (Walnut)	Jul 99	0.1	L	0.001	1
Wind River Homeowners Assn. (Rowland Heights)	Jul 99	12.6	L	0.031	35
L.A. Fitness Inter., 20801 Golden Springs (Industry)	Sep 99	1.2	L	0.002	2
Comtop Enterprises, 268 Benton Court (Industry)	Sep 99	0.3	L	0.001	1
Gemini Foods Corp., 251 Benton Court (Industry)	Sep 99	0.6	L	0.003	4
Tri-Net Technology, 21709 Ferraro Parkway (Industry)	Sep 99	0.3	L	0.001	1
Hupa International, 21717 Ferraro Parkway (Industry)	Oct 99	0.3	L	0.004	4
Nu-Health Products, 20875-85-95 Currier (Walnut)	Oct 99	0.1	L	0.00002	0.03
Lemon Avenue medians (Industry)	Dec 99	0.1	L	0.0003	0.3
Prudential Insurance Company (Walnut)	Jan 00	3.5	L	0.007	8
McDonald's Restaurant (Diamond Bar)	Mar 00	0.1	L	0.001	2
J&L Footwear, 250 Benton Court (Industry)	Jul 00	0.6	L	0.002	2
Markwins Inter. Corp., 22067 Ferraro (Industry)	Nov 00	1.9	L	0.003	3
Lee Wang LLC, 21901 Ferraro Parkway (Industry)	Nov 00	2	L	0.006	7
Sun Yin USA, 280 Maclin Court (Industry)	Nov 00	0.8	L	0.002	3
SL Investment Group LLC, 218 Maclin Ct. (Industry)	Nov 00	1.5	L	0.001	2
Morrow Meadows, 231 Benton Court (Industry)	Apr 01	0.9	L	0.014	16
The Cross Schools of Education (Walnut)	May 01	0.6	AF,L	0.001	1
Bank of the West (Rowland Heights)	Sep 01	0.1	L	0.0002	0.2
Gym/Teen Center (Walnut)	Sep 01	0.6	L	0.001	1
Yellow Box Corp., 19835 Walnut Drive (Walnut)	Dec 01	0.3	L	0.001	1
Harvard Estates (Rowland Heights)	Dec 01	2	L	0.003	4
Walnut Nazarene Church (Walnut)	Feb 02	0.8	L	0.0003	0.3
Majestic Mgmt., 168-188 Brea Canyon Rd. (Walnut)	Apr 02	0.6	L	0.002	2
Synnex, 108-118 Brea Canyon Rd. (Walnut)	Apr 02	0.7	L	0.002	2
Majestic Management, 108-288 Mayo Drive (Walnut)	Apr 02	0.1	L	0.005	5
Holiday Inn Express (Walnut)	May 02	0.4	L	0.002	3

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 13**  
**SUMMARY OF RECYCLED WATER USAGE**  
**WALNUT VALLEY WATER DISTRICT**  
**(PAGE 3 OF 4)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Lemon Avenue Investments (Walnut)	Jun 02	0.6	L	0.002	2
Magnolia at Snow Creek (Walnut)	Jul 02	5.4	L	0.017	19
Everbright Management, 1163 Fairway (Industry)	Sep 02	0.6	L	0.003	3
Everbright Management, 1169 Fairway (Industry)	Sep 02	0.2	L	0.001	1
Kelly Paper, 228 Brea Canyon Road (Walnut)	Sep 02	1.2	L	0.004	4
V-Tec Automotive, 19677 Valley Blvd. (Walnut)	Sep 02	0.1	L	0.0001	0.1
Grand and Valley landscaping (Walnut)	Sep 02	0.1	L	0.006	6
Extra Space Storage (Walnut)	Oct 02	0.8	L	0.002	2
Latter Days Saints Church (Walnut)	Oct 02	0.9	L	0.002	2
Nogales and Killian landscaping (Rowland Heights)	Oct 02	0.1	L	0.001	1
A&R West Family LLC, 20855 Golden Sprgs (D. Bar)	Nov 02	0.2	L	0.001	1
Brea Canyon Rd./Old Ranch Road medians (Industry)	May 03	0.1	L	0.0001	0.1
CLT Computers, Inc., 20153 Paseo del Prado (Walnut)	May 03	0.6	L	0.002	3
Autosmart Intl., 19885 Harrison Ave. (Industry)	Aug 03	0.2	L	0.001	1
Broadway.com, 19715 Harrison Ave. (Industry)	Aug 03	0.5	L	0.002	2
Bayharbor-Harrison Assn., 19901 Harrison (Industry)	Aug 03	0.8	L	0.004	4
J Pack International, 19789 Harrison Ave. (Industry)	Aug 03	0.5	L	0.001	1
Ziprint Image Corp., 19805 Harrison Ave. (Industry)	Aug 03	0.2	L	0.00001	0.01
San Malone Enterprises, 19865 Harrison (Industry)	Aug 03	0.3	L	0.003	4
Shinetec Group, Inc., 19685 Harrison Ave. (Industry)	Aug 03	0.4	L	0.001	1
Majestic Realty, Grand Ave./Village Staples (Walnut)	Aug 03	1.6	L	0.005	6
Orange Grove Services, Lemon/La Puente (Walnut)	Sep 03	0.4	L	0.003	3
Max Property LLC, 21401 Ferraro Pkwy. (Industry)	Sep 03	0.7	L	0.003	3
NP 21301 Ferraro Pkwy., 21301 Ferraro (Industry)	Sep 03	0.8	L	0.002	2
568 TriNet Court (Walnut)	Oct 03	0.3	L	0.001	1
Walnut City Hall (Walnut)	Dec 03	0.6	L	0.0005	1
Walnut Senior Center (Walnut)	Dec 03	0.5	L	0.001	1
Hill's Pet Nutrition, 318 Brea Canyon Rd. (Walnut)	Dec 03	2.6	L	0.005	6
Young Hoon Cho, 1709 Nogales St. (Rowland Heights)	Mar 04	0.1	L	0.0005	1
Shell Station, 21103 Golden Springs Dr. (Diamond Bar)	Mar 04	0.1	L	0.0004	0.4
Ferraro/Grand East ramp (Industry)	Apr 04	3.8	L	0.004	4
Hing Wa Lee Plaza, 1569 Fairway Dr. (Walnut)	May 04	0.1	L	0.001	1
Southcoast Cabinet, 20625 Lycoming St. (Walnut)	Jun 04	0.3	L	0.002	2
APL Logistics, 408 Brea Canyon Rd. (Walnut)	Jun 04	2.1	L	0.004	5
Adnoff Family Trust, 20801 Currier Rd. (Walnut)	Jul 04	0.1	L	0.001	1
Sentous Valley LLC, 2889 Valley Blvd. (Walnut)	Aug 04	0.1	L	0.0004	0.4
Community Day School (Walnut)	Nov 04	0.1	AF,L	0.001	1
Majestic Mgmt., Bldg. 25 on Mayo Dr. (Walnut)	Jan 05	0.1	L	0.008	9
Sy Develop. condos, 20118-20138 Colima, (Walnut)	Jun 05	0.1	L	0.0004	0.4
N/E corner Cheryl Lane/Baker Parkway (Industry)	Aug 05	3.3	L	0.022	24
Jakk's Pacific, Inc. 21733-21749 Baker (Industry)	Aug 05	1.2	L	0.003	3
20813 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
20265 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.0005	1
19849 Valley Blvd. medians (Walnut)	Sep 05	0.4	L	0.001	1
Kohl's Center (Walnut)	Sep 05	2	L	0.010	11
Phoenix Private Schools (Rowland Heights)	Dec 05	0.1	AF,L	0.001	1
The Home Depot, 21535-21651 Baker (Industry)	Jan 06	2.8	L	0.008	9
Industry East Land LLC, 21415 Baker (Industry)	Jan 06	2.3	L	0.005	5
Charles Hailong Cui, 350 Cheryl Lane (Walnut)	Apr 06	0.7	L	0.007	8
Fairway median@ Brea Canyon (Walnut)	Jun 06	0.3	L	0.001	1
Grand Avenue Crossing (Industry)	Jul 06	18.5	L	0.032	36
22002 Valley Blvd. (Industry)	Jul 06	1.6	L	0.003	3
Christian Chapel of Walnut Valley (Walnut)	Aug 06	2.2	L	0.004	5
Target Store T-2179, 747 Grand Ave. (Walnut)	Sep 06	3.9	L	0.009	10

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

**TABLE 13**  
**SUMMARY OF RECYCLED WATER USAGE**  
**WALNUT VALLEY WATER DISTRICT**  
**(PAGE 4 OF 4)**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Leg Avenue, 19601 E. Walnut Dr. (Walnut)	Oct 06	0.5	L	0.004	5
Harold M. Pitman Co., 21908-21958 Baker (Industry)	Jan 07	0.8	L	0.002	2
Williams-Sonoma, 21508-21662 Baker (Industry)	Apr 07	4.8	L	0.012	13
FedEx Ground, 200 Old Ranch Road (Walnut)	May 07	28	L	0.011	13
Currier Road Devel. Inc., 20819 Currier Rd. (Walnut)	May 07	0.3	L	0.002	2
Williams-Sonoma, 21700 Baker (Industry)	Aug 07	2	L	0.003	4
Dura Freight Lines (20275 Business Parkway)	Nov 07	1.3	L	0.004	5
21350 Valley Blvd. (Industry)	Feb 08	0.4	L	0.001	1
Grand Avenue Venture, 21508 Ferraro Pkwy (Walnut)	Apr 08	3.5	L	0.002	2
Grand Avenue/Baker Parkway medians (Industry)	May 08	6.7	L	0.012	14
Majestic Management, 21530-21590 Baker (Industry)	May 08	2	L	0.007	8
Gomez Upholstery, 19935 Valley Blvd. (Walnut)	Jul 08	2	L	0.00004	0.04
Susann Sutseng Lee, 1335-1337 Otterbein (Row. Hgts.)	Jul 08	0.1	L	0.0002	0.2
Golden Springs Plaza (20657 Golden Sprgs (Dia. Bar)	Aug 08	0.4	L	0.0004	0.5
Chili's Restaurant, Golden Springs Dr. (Diamond Bar)	Sep 08	0.01	L	0.0005	1
Majestic Management, 21808 Garcia Ln. (Industry)	Sep 08	0.5	L	0.001	1
Majestic Management, 21858 Garcia Ln. (Industry)	Sep 08	0.4	L	0.001	1
Majestic Management, 21912 Garcia Ln. (Industry)	Sep 08	0.3	L	0.001	1
Majestic Management, 21760-21788 Garcia (Industry)	Sep 08	0.4	L	0.001	1
CFT Development, Golden Springs Dr. (Diamond Bar)	Oct 08	0.01	L	0.0005	1
Jenny Hsieh, 20125 Valley Blvd. (Walnut)	Nov 08	0.03	L	0.00001	0.02
Brea Canyon Rd./Currier Road median (Walnut)	Feb 09	2	L	0.003	3
Cardinal Capital Partners, Currier/Lemon (Walnut)	Mar 09	2.5	L	0.002	2
Amergence Technology, 20480 E. Bus. Pkwy. (Walnut)	Apr 09	2	L	0.001	1
Family Property Holdings, 20888 Amar Rd. (Walnut)	May 09	0.04	L	0.00005	0.1
KW Global Inc., 293 Brea Canyon Drive (Walnut)	May 09	0.3	L	0.0001	0.1
<b>TOTALS</b>		<b>701.2</b>		<b>1.112</b>	<b>1,246</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

served by RWD: Rincon Middle School, Rowland Elementary School, Fajardo School, Nogales High School, Fajardo Park, Sunshine Park, Schabarum Regional County Park, and Queen of Heaven Cemetery, encompassing approximately 297 acres. No other sites have since been added. These sites are shown in Figure 12 and they are also included in Table 13 along with the users of the WVWD system.

During FY 08-09, RWD delivered 0.016 MGD (18 AFY), or <0.2% of the recycled water produced at the Pomona WRP. Due to uncertainties regarding the supply of recycled water (i.e., breaks in the gravity line from the Pomona WRP to the WVWD pump station), RWD chose to suspend recycled water deliveries from WVWD in January 2004. RWD only elected to receive recycled water beginning in March 2007 for deliveries to one reuse site only: Rincon Middle School. RWD purchases the recycled water from WVWD, retailing it at 59-86% of its potable rate of \$740.52-1,075.93/AF (varies due to “zone” elevation), or \$635.98/AF.

## 2.5 SAN JOSE CREEK WRP

### SAN JOSE CREEK WRP FACTS

Plant capacity	100 MGD
Water produced:	71.05 MGD 79,615 AFY 3.6% FY decrease
Average O&M:	\$248/AF (east) \$243/AF (west)
Water reused:	26.230 MGD 29,392 AFY 15.6% FY decrease 36.9% of production
Delivery systems:	6 159,270 ft. of pipe
No. of reuse sites:	29 2,705.5 acres

This treatment facility, located at 1965 Workman Mill Road, Whittier, CA 90601, was first built in 1971 with a design capacity of 37.5 MGD. The 25 MGD Stage II expansion was completed in 1982, and the 37.5 MGD Stage III expansion was completed and fully operational on January 6, 1993. The facility currently has a design capacity of 100 MGD, with enough space for a future 25 MGD Stage IV expansion (however, there is no set schedule for this project). During FY 08-09, Stages I & II (east side) produced 48.84 MGD (54,726 AFY) and Stage III (west side) produced 22.21 MGD (24,289 AFY), at average O&M costs of \$248/AF and \$243/AF, respectively. The entire facility, therefore, produced a total of 71.05 MGD (79,615 AFY) of coagulated, filtered, disinfected tertiary recycled water (17.0% of the effluent produced in the JOS), a 3.6% decrease from the preceding fiscal year.

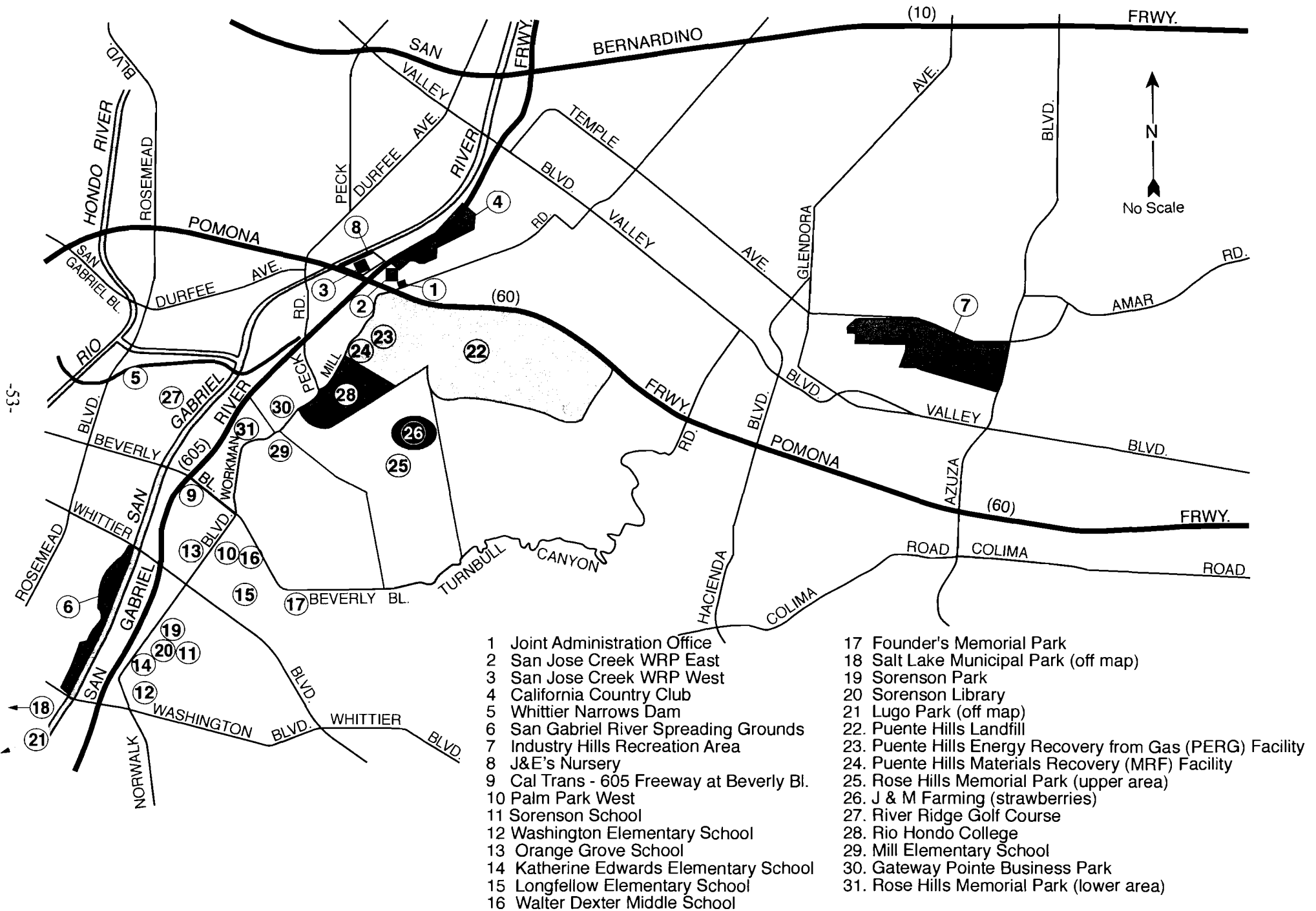
Recycled water quality from the east and west sides of the plant for FY 08-09 is presented in Tables B-4 and B-5, respectively, of Appendix B. Of the total amount of recycled water produced, 26.230 MGD (29,392 AFY), or 36.9%, was actively reused, which was a decrease of 15.6% from the preceding fiscal year.

The remaining effluent was discharged to the concrete-lined portion of the San Gabriel River below Firestone Boulevard where it flows to the ocean. Recycled water from this plant is used at 29 sites (not including recharge) shown in Figure 13 and listed in Table 14. Use of recycled water from this facility is permitted under LARWQCB Order Nos. 87-50 and 97-072 for direct, nonpotable applications, and No. 91-100 for groundwater replenishment.

### 2.5.1 WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

The great majority (84.2%) of recycled water actively used from the San Jose Creek WRP goes to recharge the Central Basin groundwater aquifer, which in FY 08-09 was 22.078 MGD (24,739 AFY). In FY 08-09, 9.35 MGD (10,485 AFY) was directed either to the San Gabriel Coastal Spreading Grounds or to the Rio Hondo

FIGURE 13  
SAN JOSE CREEK WRP REUSE SITES



**TABLE 14**  
**SUMMARY OF RECYCLED WATER USAGE**  
**SAN JOSE CREEK WRP**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Water Replenishment District	Jun 71	--	R	22.078	24,739
California Country Club (Industry)	Jun 78	120	L,P	0.447	501
Industry Hills Recreation Area (Industry)	Aug 83	600	L,P	0.832	933
Field, S/W corner Norwalk/Telegraph (S.F. Springs)	Aug 94	5.2	L	0.022	24
Washington Elementary School (Whittier)	Sep 94	5	AF,L	0.005	6
605 Freeway at Beverly (Whittier)	Sep 94	30	L	0.029	33
Sorenson Elementary School (Whittier)	Oct 94	4	AF,L	0.003	3
Palm Park West (Whittier)	Nov 94	5	L	0.008	9
Orange Grove School (Whittier)	Apr 95	6.6	AF,L	0.010	11
Katherine Edwards Elementary School (Whittier)	Sep 95	19	AF,L	0.028	31
Longfellow Elementary School (Whittier)	Sep 95	4.5	AF,L	0.005	6
Walter Dexter Middle School (Whittier)	Sep 95	15.5	AF,L	0.010	12
Founders Memorial Park (Whittier)	Jan 96	4	L	0.014	16
Salt Lake Municipal Park (Huntington Park)	Apr 96	20.9	L	0.048	54
Sorenson Park (Whittier)	May 96	10.7	L	0.016	18
Sorenson Library (Whittier)	May 96	0.4	L	0.0004	0.4
Puente Hills Landfill irrigation (Industry)	Nov 97	320	L	0.674	755
Puente Hills Landfill dust control (Industry)	Nov 97	130	I	0.221	248
Puente Hills Gas-to-Energy Facility (Industry)	Nov 97	-	I	0.523	586
Lugo Park (Cudahy)	Apr 98	7	L	0.006	7
Rose Hills Memorial Park – upper area (Whittier)	Jun 98	298	L	0.528	591
J&M Farming (Whittier)	Sep 00	105	AG	0.084	94
River Ridge Golf Course (Pico Rivera)	Jul 02	21.3	L	0.025	28
Rio Hondo College (Whittier)	Jun 03	85	AF,L	0.030	34
Mill Elementary School (Whittier)	Jun 03	15	AF,L	0.009	10
Gateway Pointe (Whittier)	Jan 05	8	L	0.018	20
Puente Hill Materials Recovery Facility (Industry)	Feb 05	2.4	L	0.013	15
J&E's Nursery (Industry)	Apr 06	5	O	0.010	12
Rose Hills Memorial Park – lower area (Whittier)	Aug 06	858	L	0.531	595
<b>TOTALS</b>		<b>2,710.5</b>		<b>26.230</b>	<b>29,392</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.



Spreading Grounds via the plant's discharge point from the east side to the San Jose Creek channel (44.5%). Another 10.75 MGD (12,055 AFY), or 51.2%, was discharged from the west side into the San Gabriel River upstream of the Zone 1 Ditch. Deliveries of recycled through the plant's 66-inch outfall pipe directly to the San Gabriel Coastal Spreading Grounds turnout resumed on March 19, 2009 as the diversion gate began to be incrementally opened to the spreading grounds, allowing 0.91 MGD (1,023 AFY), or 4.4%, to be recharged directly during this fiscal year. This was done slowly as to determine the impact on non-native fish that have colonized the lined portion of the San Gabriel River downstream of the Outfall's discharge point. The partial opening of the diversion gate will allow for much greater amounts of recycled water to be delivered directly to the spreading grounds for recharge in the future.

Of the total amount of recycled water delivered from the San Jose Creek WRP, 6.92 MGD (7,758 AFY), or 30.8%, went to the Rio Hondo Spreading Grounds and 15.56 MGD (17,453 AFY), or 69.2%, went to the San Gabriel Coastal Spreading Grounds. The LACDPW reported that none of the recycled water delivered had bypassed the spreading grounds and was lost to the ocean during the storm season. Any discrepancy between the total amount discharged and the totals recharged and bypassed is attributed to differences in metering between the Sanitation Districts and the LACDPW.

The groundwater recharge operation with recycled water had been limited by its 1991 permit to a three-year running total of 150,000 AFY, with no more than 35% recycled water being recharged (with maximums of 60,000 AFY and 50% in any one year). To allow the use of more recycled water, WRD requested that the LARWQCB revise the 1991 recharge permit to eliminate the existing annual and three-year total quantity limits (60,000 and 150,000 AF, respectively), and rely on a running 5-year average recycled water contribution of 35%. This permit modification was supported by State DPH staff and was adopted by the LARWQCB in April 2009. Sampling and analysis for TOC at the spreading grounds shallow monitoring wells will be increased from bimonthly to weekly for the first year of operation. Assuming there is sufficient dilution water, this change would allow approximately 5,000 AFY more of recycled water to be recharged.

### *2.5.2 CITY OF INDUSTRY*

In August 1983, the City of Industry completed a recycled water distribution system to serve the Industry Hills Recreation and Conservation Area. This system included a 7,100 gpm pump station at the San Jose Creek WRP, seven miles of 36-inch pipe following the San Jose Creek Channel, and a two million gallon reservoir with a 3,400 gpm booster pump station at Anaheim-Puente Road. From this point, a 16-inch pipe with a second, 3,300 gpm booster pump station brings recycled water into the 600-acre reuse site for landscape irrigation of two 18-hole golf courses and an equestrian center, and as a source of supply for eight ornamental lakes and storage impoundments. During FY 08-09, 0.832 MGD (933 AFY), or 1.2% of recycled water produced at this plant, was delivered and used at this site, and there were no new sites connected to the Industry distribution system.

### *2.5.3 CALIFORNIA COUNTRY CLUB*

In June 1978, deliveries of recycled water began to this 120-acre golf course located directly across the San Jose Creek Channel from the San Jose Creek WRP. An 8-inch polypropylene line inside a 24-inch reinforced concrete pipe siphon under the channel delivers chlorinated recycled water from the plant's "foam spray" system to the golf course's 0.75-acre lake No. 2. The golf course irrigation system is supplied by two pumps that can deliver a maximum of 1,800 gallons per minute (gpm) of recycled water from the lake. During FY 08-09, 0.447 MGD (501 AFY), or 0.6% of recycled water produced at this plant, was delivered to this site.

#### *2.5.4 J & E NURSERY*

This nursery has signed a lease with Los Angeles Department of Water and Power (LADWP) for the property immediately adjacent to San Jose Creek WRP West formerly occupied by Arbor and Chuy's nurseries. During FY 08-09, 0.010 MGD (12 AFY), or <0.02% of recycled water produced at this plant, was delivered to this site for the irrigation of ornamental plants for commercial resale. Contract No. 3286 with the San Gabriel Valley Water Company (SGVWC) replaced the old contract for the sale of recycled water directly to this nursery's predecessor (Contract No. 2835) beginning in September 1994, and the contract provisions have been extended to the new nursery operator. SGVWC resold the recycled water to the nursery for \$671.48/AF, a 15% discount from its corresponding potable water rate of \$786.96/AF.

#### *2.5.5 CENTRAL BASIN MUNICIPAL WATER DISTRICT (RIO HONDO SYSTEM)*

CBMWD continues to develop its second regional distribution system to deliver an estimated 5,000 to 10,000 AFY of recycled water from the San Jose Creek WRP to sites in the upper portion of its service area in the cities of Montebello, Pico Rivera, Commerce, Cudahy, Huntington Park, Bell Gardens, Vernon, Santa Fe Springs, and Whittier. This project is patterned after the regional concept of the "Century Project" described previously in Section 2.3.4. Interconnections with the Century system originating from the Los Coyotes WRP will allow for a looped system (once the western connection is completed, see Section 5.3.4, below) served by three independent treatment plants for additional reliability and system pressures. Both the Century and Rio Hondo distribution systems can be partially supplied with recycled water from either the Los Coyotes WRP or either side of the San Jose Creek WRP individually or in combination. However, for the sake of consistency, recycled water usage at the Rio Hondo facilities is reported in water reuse reports as coming from the San Jose Creek WRP, and at the Century facilities as coming from the Los Coyotes WRP, as there is no way to differentiate which reuse sites receive which recycled water. Recycled water is used at 15 sites shown in Figure 13 and listed in Table 14. A narrative description of the layout of the Rio Hondo recycled water distribution system is contained in Appendix H. The layout of the pipelines for both the Century and Rio Hondo distribution systems is shown in Figure 10.

During FY 08-09, CBMWD delivered 0.232 MGD (259 AFY), or 0.3% of the recycled water produced at this plant, to six water purveyors (SGVWC and the cities of Whittier, Cudahy, Huntington Park, Pico Rivera, and Santa Fe Springs) for landscape and athletic field irrigation on 159.1 acres at the 15 sites. This represents a 3.7% decrease from the preceding fiscal year. CBMWD has constructed the delivery facilities right up to the end user; however, the local retail water purveyor is the entity actually supplying the recycled water. No new sites were connected to the Rio Hondo recycled water distribution system during FY 08-09.

CBMWD wholesales the recycled water to its customers, the retail water purveyors, on a monthly use, tiered rate schedule (\$444 for the first 50 AF, and \$413 for anything above 50 AF). This is between 65% and 70% of the rate of \$635/AF it charges for Tier 1 non-interruptible potable water supplied by MWD, and between 55% and 59% of the rate of \$751/AF it charges for Tier 2 supplies. Recycled water delivered outside of CBMWD's service area is subject to a \$20/AF surcharge on each of the two tiers. Recycled water deliveries to the Malburg power plant in Vernon receive an industrial use rate (\$337 for the first 25 AF, \$313 for the next 25 AF, \$290 for the next 50 AF, and \$267 for anything above 100 AF). The retail purveyors then set their own rates for the recycled water.

#### *2.5.6 PUENTE HILLS/ROSE HILLS*

A distribution system has been completed that delivers recycled water from the San Jose Creek WRP for landscape irrigation and dust control at the Sanitation Districts' nearby Puente Hills Landfill and Materials Recovery Facility (MRF), for cooling tower supply at the Sanitation Districts' Puente Hills Energy Recovery

from Landfill Gas (PERG) Facility, and for landscape and agricultural irrigation at Rose Hills Memorial Park. These sites are shown in Figure 13 and listed in Table 14.

This project was conceived of as far back as 1978 as a means of reducing the Landfill's \$20,000 per month water bill; however, various impediments stalled this project over the years. Not the least of these impediments was the claim of "duplication of services" by the local water company that had served domestic water to the Puente Hills Landfill. To resolve this, Senate Bill 778 was passed and became law on January 1, 1995. This legislation allowed the Sanitation Districts to deliver their own recycled water to their landfill, without having to pay the water company for lost revenues, only for the physical facilities that would be rendered less useful.

Recycled water deliveries to the Puente Hills Landfill and the PERG Facility began in November 1997, while deliveries to Rose Hills began in June 1998 and to the MRF began in February 2005. The total project cost was approximately \$7.2 million and was funded by a low-interest State water reclamation loan. In order to serve the eastern portions of the Landfill and the upper areas of the cemetery, \$4 million of additional on-site distribution facilities were completed in mid 2001. A narrative description of the layout of the Puente Hills/Rose Hills recycled water distribution system is contained in Appendix I.

During FY 08-09, the Puente Hills/Rose Hills distribution system delivered 2.043 MGD (2,290 AFY), or 2.9% of the recycled water produced at this plant, to five users on approximately 855 acres, a decrease of 5.5% from the preceding fiscal year. Recycled water is used for landscape irrigation of slopes and for dust control on the working deck at the Puente Hills Landfill and MRF, for cooling tower supply at the PERG Facility, for landscape irrigation and impoundments at Rose Hills Memorial Park, and for the irrigation of strawberries by J&M Farming, which leases cemetery property from Rose Hills.

### *2.5.7 UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT (PHASE I EXTENSION)*

A distribution system has been completed that transports water from CBMWD's Rio Hondo distribution system to the Upper San Gabriel Valley Municipal Water District's (USGVMWD's) service area, referred to by this agency as its Phase I Extension. This system will ultimately deliver approximately 1,800 AFY from the San Jose Creek WRP to a number of sites. Rio Hondo College and Mill Elementary School were both connected in June 2003 and the Gateway Pointe commercial development was connected in January 2005. In August 2006, recycled water deliveries to 858 acres of the lower, older portion of Rose Hills Memorial Park began. Due to the age of its irrigation system, Rose Hills required extensive retrofitting, mainly consisting of the installation of a separate domestic water system to serve hose bibbs for visitor use (i.e., vase filling). These sites are shown in Figure 13 and listed in Table 14.

From the existing Whittier Connector Unit on CBMWD's Rio Hondo distribution system (Section 2.5.5 above), a 36-inch distribution pipeline located at intersection of Strong Avenue and Pioneer Avenue, USGVMWD installed a tee connecting to a 16-inch steel pipeline, which extends north along Pioneer Avenue to Workman Mill Road. Approximately 200 feet north of the intersection of Workman Mill Road and Mill Road, a 6-inch service lateral provides service to Mill Elementary School. The 16-inch steel pipeline continues north along Workman Mill Road and terminates approximately 50 feet south of the main entrance of Rio Hondo College in a 10-inch service connection to the college.

During FY 08-09, the USGVMWD distribution system delivered 0.588 MGD (659 AFY), or 0.8% of the recycled water produced at this plant, to four users on 966 acres, essentially the same amount as the preceding fiscal year. SGVWC, the retail purveyor for this system, resold the recycled water to three of its customers at its tariff rate of \$671.48/AF, or 85% of its corresponding potable water rate of \$789.96/AF. Since Rose Hills Memorial Park is not a part of SGVWC's service area, it receives recycled water at a contract rate of \$220/AF.

## 2.6 WHITTIER NARROWS WRP

This treatment facility, located at 301 North Rosemead Boulevard, El Monte, CA 91733, was the first activated sludge water reclamation plant built by the Sanitation Districts and was completed in 1962 with a design capacity of 15 MGD. Of the 6.04 MGD (6,769 AFY) of coagulated, filtered, disinfected tertiary recycled water produced during FY 08-09 (1.4% of the effluent produced in the JOS), at an average O&M cost of \$544/AF, 5.901 MGD (6,613 AFY) was actively reused. The amount produced was a 15.9% decrease in recycled water production from the preceding fiscal year, while the amount reused was a 12.4% decrease. The plant continued to be run at a greatly reduced flow during FY 08-09 for conversion to the NDN secondary treatment process. The entire treatment plant was actually shut down for this conversion between September 3 and October 15, 2008. A very small amount of recycled water, 0.13 MGD (141 AFY), bypassed the Rio Hondo Spreading Grounds in the City of Montebello and was lost to the ocean down the concrete-lined portion of the Rio Hondo due to storm flow in November and December 2008 and February 2009.

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WHITTIER NARROWS WRP FACTS	
Plant capacity	15 MGD
Water produced:	6.04 MGD 6,769 AFY 15.9% FY decrease
Average O&M:	\$544/AF
Water reused:	5.901 MGD 6,613 AFY 12.4% FY decrease 97.7% of production
Delivery systems:	1 18,900 ft. of pipe
No. of reuse sites:	3 604.3 acres

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Recycled water quality for FY 08-09 is presented in Table B-6 of Appendix B. Recycled water from this plant is used at two direct, nonpotable reuse sites and for groundwater recharge of the Central Basin, as shown on Figure 14 and listed in Table 15. Use of recycled water from this facility is permitted under LARWQCB Order Nos. 88-107 and 97-072 for direct, nonpotable applications, and No. 91-100 for groundwater replenishment.

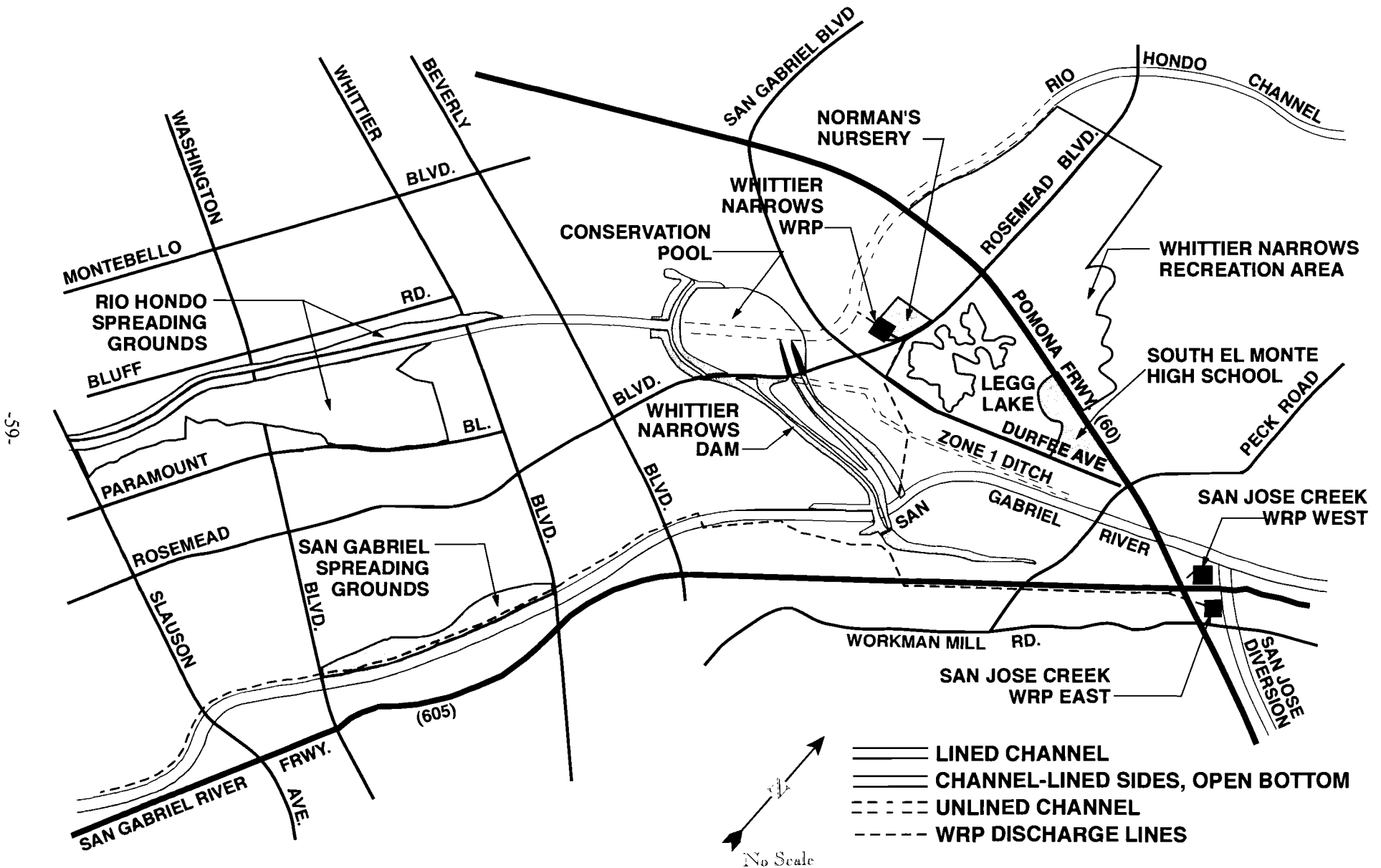
### 2.6.1 WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

The majority (90.7%) of recycled water discharged from this plant went to recharge the Central Basin aquifer. In FY 08-09, 5.113 MGD (5,730 AFY) was used to replenish the groundwater supply, a decrease of 11.2% from the preceding fiscal year. A portion of the recycled water (47.0%) was delivered to the Rio Hondo Spreading Grounds via the plant's main discharge point to the Rio Hondo, with another 42.5% being directed to the San Gabriel Coastal Spreading Grounds via the plant's 45-inch outfall pipe. The third discharge point, the Zone 1 Ditch leading to the Rio Hondo Spreading Grounds, received the remaining 10.5% of the recycled during the fiscal year. Of the 0.13 MGD (141 AFY) that was bypassed to the ocean during FY 08-09, all of it came from the flow that was discharged to the Rio Hondo.

### 2.6.2 F.L. NORMAN'S NURSERY

In March 1983, Flora Nursery leased from the Sanitation Districts the 17-acre parcel known as the arboretum site northwest of the junction of the 60 and 605 Freeways adjacent to the San Jose Creek WRP, and contracted for the purchase of recycled water from this plant for the irrigation of nursery stock. F.L. Norman's Nursery purchased this operation in March 1986. The Stage III expansion of the San Jose Creek WRP required the relocation of the nursery operations from the arboretum site to land owned by the Sanitation Districts and the Army Corps of Engineers next to the Whittier Narrows WRP. This relocation began in December 1988 and was completed in May 1989. Recycled water is supplied to the nursery operation directly from the plant's chlorine contact tanks through the nursery's own pump. During FY 08-09, 0.033 MGD (37 AFY), or 0.5% of

FIGURE 14  
WHITTIER NARROWS WRP REUSE SITES



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**TABLE 15**  
**SUMMARY OF RECYCLED WATER USAGE**  
**WHITTIER NARROWS WRP**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Water Replenishment District	Aug 62	--	R	5.113	5,730
Norman's Nursery (El Monte)	Mar 83	20.2	O	0.033	37
Whittier Narrows Recreation Area (South El Monte)	Sep 06	568	L	0.708	793
South El Monte High School (South El Monte)	Aug 07	16.1	AF, L	0.047	52
<b>TOTALS</b>		<b>604.3</b>		<b>5.901</b>	<b>6,613</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

the recycled water produced at this plant, was delivered to this 20.2-acre site for the irrigation of ornamental plants for commercial resale, a 31.5% decrease from the preceding fiscal year.

Contract No. 3286 with SGVWC replaced the old contract for the sale of recycled water directly to the nursery (Contract No. 2835) beginning in September 1994. SGVWC resold the recycled water to the nursery at its contract rate of \$671.48/AF, a 15% discount from its corresponding potable water rate of \$789.96/AF.

### *2.6.3 UPPER SAN GABRIEL VALLEY MUNICIPAL WATER DISTRICT (PHASE II-A EXTENSION)*

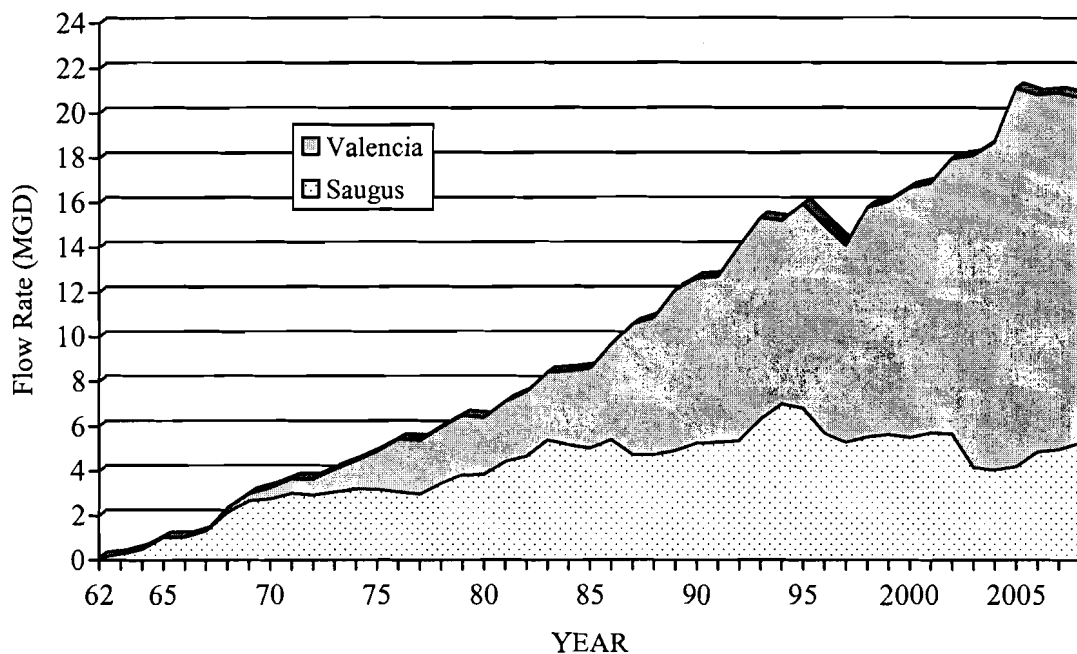
This project (designated Phase II-A by USGVMWD) was completed in September 2006, at which time deliveries of recycled water began to the Los Angeles County Department of Parks and Recreation's (LACDPR's) Whittier Narrows Recreation Area, located adjacent to the Whittier Narrows WRP. The athletic fields and landscaping at South El Monte High School were connected in July 2007. Construction of a pipeline to the adjacent Golf Course is to be completed and the golf course connected by the end of 2009. The \$9 million project was constructed with the help of a \$2.1 million Prop. 50 grant from the SWRCB and utilizes the plant's existing chlorine contact tanks, which will no longer be regularly needed for effluent disinfection after the plant is converted from sodium hypochlorite to UV disinfection.

During FY 08-09, the USGVMWD distribution system delivered 0.754 MGD (845 AFY) for use on 584 acres. This was 12.5% of the recycled water produced at this plant and an 18.6% decrease from the preceding fiscal year. USGVMWD wholesaled the recycled water to SGVWC, the retail purveyor for this system, who then resold the recycled water to the LACDPR at a contract rate of \$450.00/AF, or 57% of its corresponding potable water rate of \$789.96/AF. The County then leases a portion of its groundwater pumping rights to SGVWC in exchange, resulting in a lower effective rate for the recycled water.

### 3. SANTA CLARITA VALLEY

Two treatment plants serve this area, which includes the City of Santa Clarita, located northwest of the City of Los Angeles. The Valencia and Saugus WRPs together make up the Santa Clarita Valley Joint Sewerage System (SCVJSS) and have a design capacity of 28.1 MGD (31,487 AFY). During FY 08-09, these plants produced 20.71 MGD (23,208 AFY) of recycled water available for reuse, a 1.7% decrease from the preceding fiscal year. Figure 15 illustrates the growth of recycled water production from Valencia and Saugus WRPs from 1962 through the end of 2008. During most of the history of these plants, only occasional reuse via water truck hauling occurred. The use of recycled water through a distribution system began during FY 03-04, with 0.287 MGD (322 AFY), or 1.4% of the total amount of recycled water produced by both plants, being delivered from the Valencia WRP during FY 08-09.

**FIGURE 15**  
**SANTA CLARITA VALLEY JOINT SEWERAGE SYSTEM RECYCLED WATER PRODUCTION**  
**1962-2008**



#### 3.1 VALENCIA WRP

The Valencia WRP, located at 28185 The Old Road, Valencia, CA 91355, was completed in 1967. Following two subsequent expansions, construction of a 4.4 million gallon flow equalization tank in February 1995, the Stage 4 expansion completed in June 1996, a solids handling expansion completed in August 2002, the construction of additional aeration tanks for NDN in May 2003, and the majority of the Stage 5 expansion completed in mid 2005, the Valencia WRP now has a capacity of 21.6 MGD. In FY 08-09, the plant produced an average of 15.47 MGD (17,333 AFY) of recycled water, a 4.2% decrease from the preceding fiscal year. The average FY 08-09 O&M cost to produce this water was approximately \$550/AF, which includes solids processing (approximately \$139/AF) for both the Saugus and Valencia WRPs. Recycled water quality for FY 08-09 is presented in Table B-7 of Appendix B.



Use of recycled water from this facility is permitted under Los Angeles RWQCB Order Nos. 87-48 and 97-072. Reuse through a hard-plumbed delivery system began in August 2003, with 0.287 MGD (322 AF), or 1.9% of the recycled water produced, being used at a single reuse site during FY 08-09.

### 3.1.1 CASTAIC LAKE WATER AGENCY

The Castaic Lake Water Agency (CLWA), the regional importer and wholesaler of State Project water in the Santa Clarita Valley, has begun the implementation of a recycled water distribution system. In spring 1998, Kennedy/Jenks completed design of a 10,000 gpm pump station located adjacent to the Valencia WRP's chlorine contact tanks, with enough pipeline to go through the plant site to the street, with construction being completed in 1999. Construction of a 20- and 24-inch transmission line southerly along The Old Road to Valencia Boulevard was completed in May 2002. Recycled water deliveries for hydrostatic testing of the storage reservoir constructed at the Westridge Development reuse site as a part of this project began in August 2003, with irrigation of the Tournament Players Club golf course beginning the following month. These facilities are shown in Figure 16.

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VALENCIA WRP FACTS	
Plant capacity	21.6 MGD
Water produced:	15.47 MGD 17,333 AFY 4.2% FY decrease
Average O&M:	\$550/AF
Water reused:	0.287 MGD 322 AFY 1.9% of production 26.9% FY decrease
Delivery systems:	1
No. of reuse sites:	1 95 acres

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During FY 08-09, with 0.287 MGD (322AF), or 1.9% of the recycled water produced at the Valencia WRP was used at this site, a 26.9% decrease from the preceding fiscal year. Valencia Water Company, the retail purveyor for this system, purchased the recycled water from CLWA for \$385.74/AF and resold it at its tariff rate of \$419.92/AF, or 84% of its corresponding potable water rate of \$499.63/AF.

## 3.2 SAUGUS WRP

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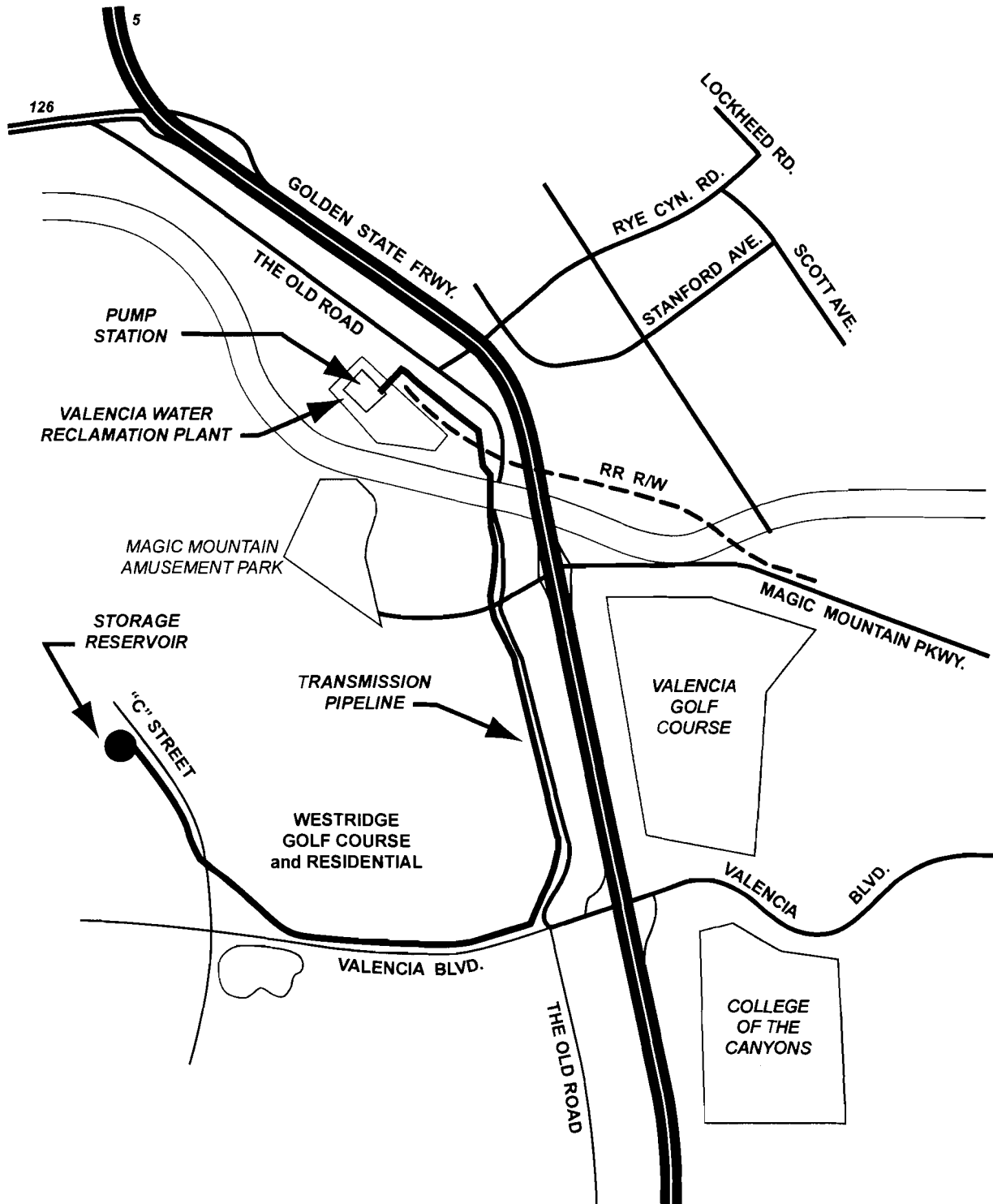
SAUGUS WRP FACTS	
Plant capacity	6.5 MGD
Water produced:	5.24 MGD 5,876 AFY 6.6% FY increase
Average O&M:	\$524/AF
Water reused:	none

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The Saugus WRP, located at 26200 Springbrook Avenue, Saugus, CA 91350, was completed in 1962. Three subsequent expansions and flow equalization facilities brought its current design capacity to 6.5 MGD. The treatment process was upgraded to tertiary with the addition of dual-media pressure filters in 1987. No future conventional expansions are possible due to space limitations on the site; any increase in plant capacity would have to be in some form of compact treatment technology, such as membrane bioreactors (MBRs). In FY 08-09, the plant produced an average of 5.24 MGD (5,876 AFY) of recycled water, which was a 6.6% increase from the preceding fiscal year, at an average O&M cost of \$524/AF. Recycled water quality for FY 08-09 is presented in Table B-8 of Appendix B.

Use of recycled water from this facility is permitted under LARWQCB Order Nos. 87-49 and 97-072; however, no recycled water was used from this facility in the past fiscal year.

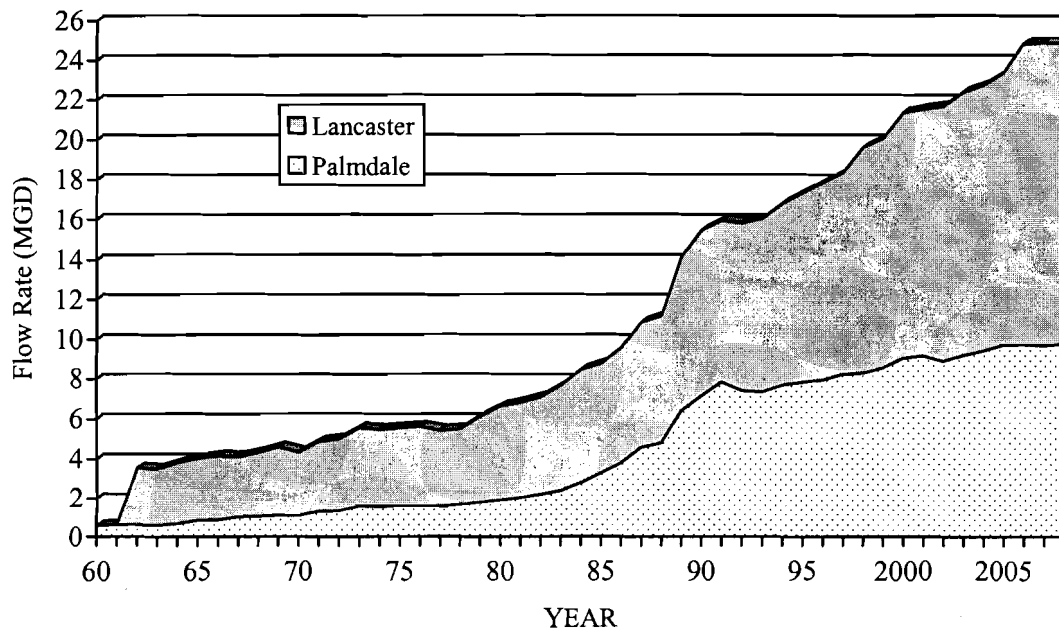
FIGURE 16  
 CASTAIC LAKE WATER AGENCY  
 RECLAIMED WATER DISTRIBUTION SYSTEM



## 4. ANTELOPE VALLEY

Two treatment plants serve the communities of the Antelope Valley, one each in the cities of Lancaster and Palmdale. Both WRPs produce secondary effluent by means of oxidation ponds followed by disinfection with chlorine. Both facilities also use anaerobic digesters and drying beds for solids processing. Together, during FY 08-09 the two WRPs treated approximately 24.02 MGD of wastewater to produce 18.76 MGD (21,016 AFY) of secondary effluent available for reuse, a decrease of 3.0% from the preceding fiscal year. Figure 17 illustrates the growth of influent flows at the Lancaster and Palmdale WRPs from 1960 through the end of 2008. In this case, influent is a more accurate gauge of plant flows because the actual amount of effluent is variable from month to month, as water is either lost in the oxidation ponds by evaporation/percolation or gained by rainfall. During FY 08-09, 18.690 MGD (20,943 AFY), or 99.7% of the recycled water produced, was actively reused, a 0.9% increase over the preceding fiscal year. Reuse flows from both WRPs are presented in Table 16.

**FIGURE 17**  
**ANTELOPE VALLEY WRPs INFLUENT FLOW**  
**1960-2008**



### 4.1 LANCASTER WRP

The existing treatment facility, located at 1865 West Avenue D, Lancaster, CA 93534, began operation in 1959, replacing an earlier treatment plant that had begun operation in 1941. The plant's capacity was expanded in 1989 to 8 MGD, with 460 million gallons (1,400 AF) of storage ponds to capture excess winter flows. The Stage III expansion increased plant capacity to 10 MGD in December 1992. The Stage IV expansion, consisting of a flow equalization basin, two sedimentation tanks and additional aeration equipment in the oxidation ponds, increased the plant's secondary treatment capacity to 16 MGD in May 1997. The membrane

**TABLE 16**  
**SUMMARY OF RECYCLED WATER USAGE**  
**LANCASTER AND PALMDALE WRPS**

<u>Reuse Site (City)</u>	<u>Start-up Date</u>	<u>Acreage</u>	<u>Type of Use</u>	<u>Usage</u>	
				<u>(MGD)</u>	<u>(AFY)</u>
Apollo Lakes Community Regional Park (Lancaster)	Jun 69	56	L,P	0.171	192
Piute Ponds (Lancaster)	May 81	400	E	6.559	7,350
Harrington Farms Pistachio Orchard (Palmdale)	Apr 85	23	AG	0.087	98
Nebeker Ranch (Lancaster)	Jun 88	600	AG	3.811	4,270
Tree Farm (Palmdale)	Feb 89	46	O	0.023	25
Antelope Valley Farms (Palmdale)	Mar 02	2,100	AG	6.498	7,282
Eastern Agricultural Site (Lancaster)	Feb 07	696	AG	1.025	1,148
Public Works Dept. sewer flushing (Lancaster)	Jan 09	--	I	0.001	1
Public Works Dept. street sweeping (Lancaster)	Feb 09	--	I	0.00005	0.1
Lancaster University Center (Lancaster)	May 09	2	L	0.002	2
Northeast Gateway demolition (Lancaster)	Jun 09	1	I	0.00001	0.01
<b>TOTALS</b>		<b>3,921</b>		<b>18.178</b>	<b>20,369</b>

NOTES: AF = Athletic field irrigation, AG = Agricultural irrigation, E = Environmental enhancement, I = Industrial, L = Landscape irrigation, O = Ornamental plant irrigation, P = Impoundment, R = Groundwater replenishment.

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LANCASTER WRP FACTS	
Plant capacity	17 MGD
Water produced and reused:	11.57 MGD 12,964 AFY 1.6% FY decrease
Average O&M:	\$301/AF
Delivery systems:	5
No. of reuse sites:	7 1,752 acres

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bioreactor (MBR) plant that went into operation in February 2007 (1.016 MGD, 1,138 AFY) raised the total plant treatment capacity to 17 MGD.

This plant treated an average of 14.24 MGD in FY 08-09, utilizing oxidation ponds to produce 11.57 MGD (12,964 AFY) of recycled water, or a 1.6% decrease from the preceding fiscal year. Approximately 10.3% of the production is tertiary effluent being produced by the Antelope Valley Tertiary Treatment Plant (0.170 MGD, 190 AFY) and by the MBR plant, with the remainder being secondary effluent. A portion of the wastewater entering the plant is lost due to evaporation from the oxidation and storage ponds during the summer, while additional flows are gained by precipitation during the winter. The average FY 08-09 O&M cost to produce secondary effluent (based on influent flow) was approximately \$301/AF (of which approximately \$45/AF was for solids processing). Besides a small amount of tertiary

effluent used for on-site irrigation and construction at the WRP, all of the recycled leaving the plant was reused at four sites shown in Figure 18, and presented in Table 16.

#### 4.1.1 PIUTE PONDS

The initial discharge point for disposal of effluent from the Lancaster WRP had been to Amargosa Creek that then flowed onto Rosamond Dry Lake. In order to prevent flooding of the dry lakebed (which is located within the boundaries of Edwards Air Force Base), a 1-¼ mile long dike was constructed in 1961 to impound the effluent. Approximately 200 acres of wetlands formed, becoming an important migratory stopover for ducks along the Pacific Flyway. In a memorandum of understanding signed in 1981 with Edwards Air Force Base and the State of California Department of Fish and Game, the Sanitation Districts agreed to maintain at least 200 acres of wetlands with recycled water in order to preserve Piute Ponds as a wildlife refuge. The secondary effluent is disinfected with chlorine in order to protect the health of Air Force officers who use this area as a duck-hunting club.

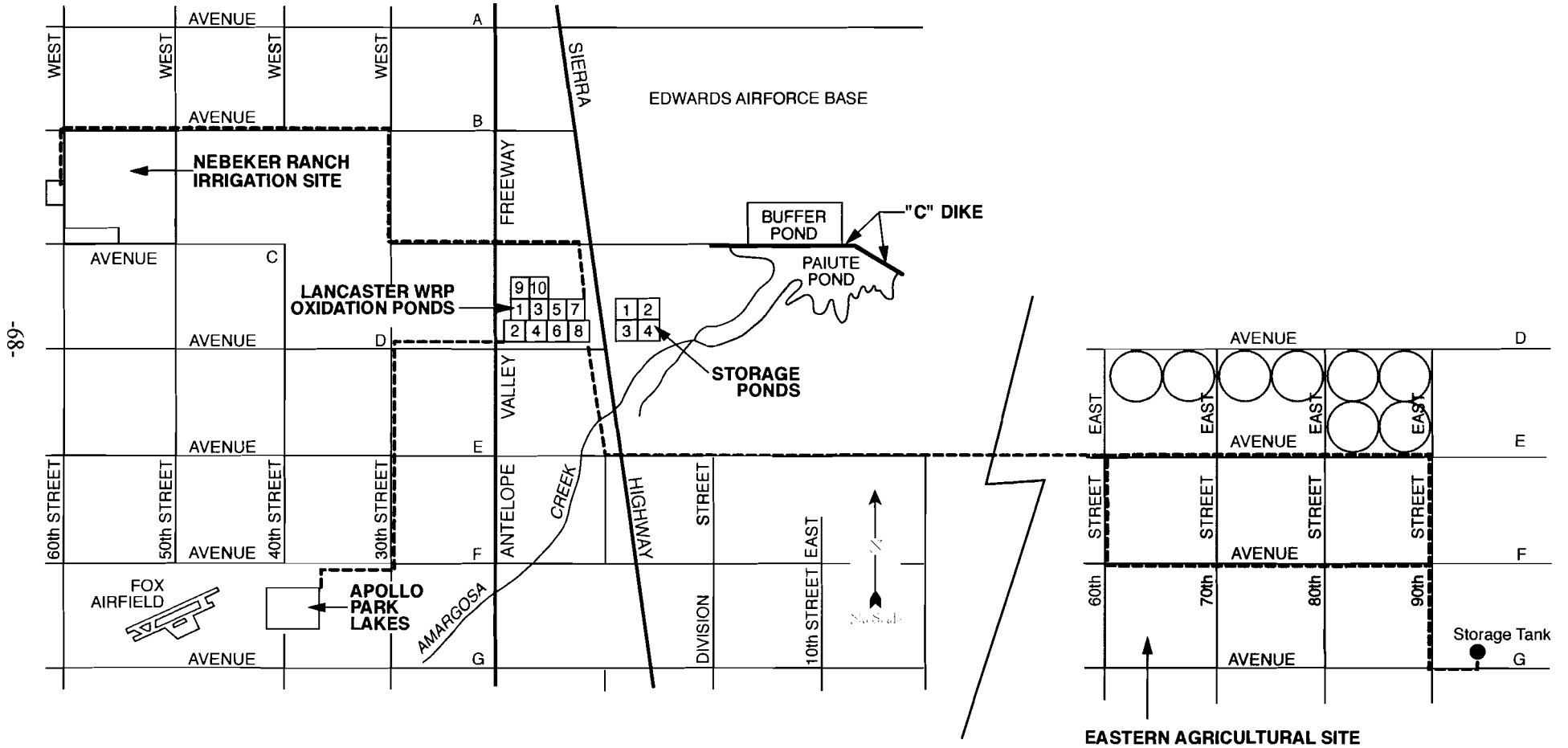
In FY 08-09, 6.559 MGD (7,350 AFY) was delivered to Piute Ponds (with a portion overflowing onto Rosamond Dry Lake), an increase of 6.3% over the preceding fiscal year. This reuse constitutes 56.7% of the recycled water produced at this facility.

#### 4.1.2 NEBEKER RANCH

The dike constructed by the Air Force did not eliminate the flow of recycled water onto Rosamond Dry Lake during winter when evaporation was at a minimum and additional rainfall runoff entered Piute Ponds. Five hundred million gallons of storage capacity were added in 1988 to collect excess recycled water produced during the winter for delivery to the 680-acre (approximately 600 acres cultivated) Nebeker Ranch, an alfalfa farm located approximately three miles northwest of the treatment plant. The ranch is served by a pump station and a 24-inch force main.

During FY 08-09, 3.811 MGD (4,270 AFY) of recycled water was used for agricultural irrigation at this site, a decrease of 13.7% from the preceding fiscal year. This reuse constitutes 32.9% of the recycled water produced at this plant.

**FIGURE 18  
LANCASTER WATER RECLAMATION PLANT FACILITIES**



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#### *4.1.3 APOLLO COMMUNITY REGIONAL PARK*

In 1962, the then Los Angeles County Engineer devised and developed an aquatic recreation area next to the General William J. Fox Airfield in the City of Lancaster. The source of water is an advanced treatment plant located at the Sanitation Districts' Lancaster WRP that consists of chemical coagulation (for the reduction of phosphate to inhibit algal growth), sedimentation, dual-media filtration, and chlorination. The Antelope Valley Tertiary Treatment Plant (AVTTP) was placed in operation in September 1969 with a capacity of 0.6 MGD. Recycled water from the AVTTP is delivered by means of a 12-inch force main for construction of the 56-acre Apollo Community Regional Park (formerly known as Apollo Lakes County Park), which was opened to the public in November 1972.

In FY 08-09, 0.171 MGD (192 AFY) of recycled water was delivered to maintain 26 acres (80 million gallon) of lakes at the park to make up for evaporative losses and for irrigation water withdrawn from the lakes for use on the park, a decrease of 21.6% from the preceding fiscal year. This reuse constitutes 1.5% of the recycled water produced at this plant. The three lakes in the park, named Aldrin, Armstrong, and Collins, are stocked with trout and catfish for public fishing, although no swimming is allowed. Contract No. 1601 specifies that the price paid by the County of Los Angeles for the recycled water produced by the AVTTP will be equivalent to 100% of the O&M costs incurred by the Sanitation Districts in operating this plant.

#### *4.1.4 EASTERN AGRICULTURAL SITE DEVELOPMENT AND STORAGE PROJECT*

In order to prevent unauthorized overflows of effluent from Piute Ponds onto Rosamond Dry Lake and to handle future increases in effluent flow, the 2020 Facilities Plan for the Lancaster WRP has identified new treatment processes (conventional NDN activated sludge replacing oxidation ponds, followed by tertiary filtration and disinfection) and treatment capacity expansion (18 MGD in 2010, with an ultimate capacity of 26 MGD by 2020). There has been an increased interest in the recycled water that will be produced by the new plant. Agreements for the purchase of recycled water have been executed with Los Angeles County Waterworks District 40 (13,500 AFY), City of Lancaster (950 AFY), and City of Palmdale (2,000 AFY). These agreements allow recycled water to be provided from the Lancaster and/or Palmdale WRPs. Since many industrial/municipal reuse projects and the required infrastructure are still in their early development stages, the Eastern Agricultural Site was developed to immediately utilize the water. Since demand for recycled water is seasonal and weather dependent, approximately 4,000 AF of storage ponds will be constructed by November 2010 when operation of the new facilities will begin. Agricultural operations will be performed by independent farmers, farming cooperatives, and/or farming corporations selected following a competitive bidding process. The Sanitation Districts are continuing to acquire the necessary land located east of the WRP, bounded by 60<sup>th</sup> Street East on the west, 90<sup>th</sup> Street East on the east, Avenue D on the north, and Avenue G on the south. In February 2006, construction of the 18-mile distribution pipeline was completed, with a narrative description of the layout of this system being presented in Appendix K.

In the interim while the new treatment facilities are being designed and constructed, a 1 MGD MBR pilot plant (with a temporary chlorine disinfection system and ultimately a UV disinfection system) was installed and put into operation in February 2007. The production from this plant is delivered to the first agricultural areas consisting of eight center pivot irrigation systems in the area bounded by 70<sup>th</sup> and 90 Streets East and Avenues D and E. This initial reuse area is being operated by Harrington Farms under contract to the Sanitation Districts. During FY 08-09, 1.025 MGD (1,148 AFY) of recycled water was used at this site for the irrigation of Sudan grass and a combination of barley, oats, and wheat, as well as for maintenance activities such as construction, dust control, and pipeline testing. Reuse at this site constitutes 8.9% of the recycled water produced at this plant.

**4.1.5 CITY OF LANCASTER - DIVISION STREET CORRIDOR**

A contract for the sale of recycled water produced at the Lancaster and Palmdale WRPs to the City of Lancaster was signed in March 2008 for deliveries of up to 950 AFY. Recycled water deliveries from the Lancaster WRP to the City’s Division Street Corridor Recycled Water Project (Division Street Corridor) began in January 2009. The City has begun construction of distribution system that will eventually deliver recycled water from the Lancaster WRP following its upgrade to tertiary treatment in 2010. For the time being, production from the MBR plant is being delivered to four new reuse sites that were connected during FY 08-09. During this year, the City’s Public Works Department used 0.001 MGD (1 AFY) for sewer flushing and 0.0001 MGD (0.1 AFY) for street sweeping of 2,125 curb-miles of roadways and parking lots, Lancaster University Center used 0.002 MGD (2 AFY) for landscape irrigation, and the short-term Northeast Gateway demolition site used 0.00001 MGD (0.01 AFY) for dust control.

**4.2 PALMDALE WRP**

This treatment facility, located at 39300 30<sup>th</sup> Street East, Palmdale, CA 93550, began operation in 1953 as 0.75 MGD plant, with subsequent expansions in 1958 (2.5 MGD), 1972 (3.1 MGD), 1989 (6.5 MGD), 1993 (8 MGD), and 1996 (15 MGD).

This plant treated an average of 9.50 MGD in FY 08-09 using oxidation ponds to produce 8.21 MGD (9,201 AFY) of secondary effluent, or a 1.1% increase over the preceding fiscal year. The average O&M cost to produce this water (based on influent flow) was approximately \$373/AF (of which approximately \$31/AF was for solids processing).

During FY 08-09, 7.121 MGD (7,979 AFY), or 86.7% of the plant’s production, was actively reused on 2,069 acres at three sites. All reuse occurred on property owned by the City of Los Angeles World Airports (LAWA) but now under long-term lease to the Sanitation Districts. This usage represents a 5.2% increase in reuse over the preceding fiscal year. The remaining recycled water was land applied on LAWA property, but only through March 2009. The area receiving recycled water is shown in Figure 19. The reuse sites are listed in Table 16 along with the reuse flows from the Lancaster WRP.

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PALMDALE WRP FACTS	
Plant capacity	15 MGD
Water produced:	8.21 MGD 9,201 AFY 1.1% FY increase
Average O&M:	\$373/AF
Water reused:	7.121 MGD 7,979 AFY 5.2% FY increase 86.7% of production
Delivery systems:	1
No. of reuse sites:	3 2,069 acres

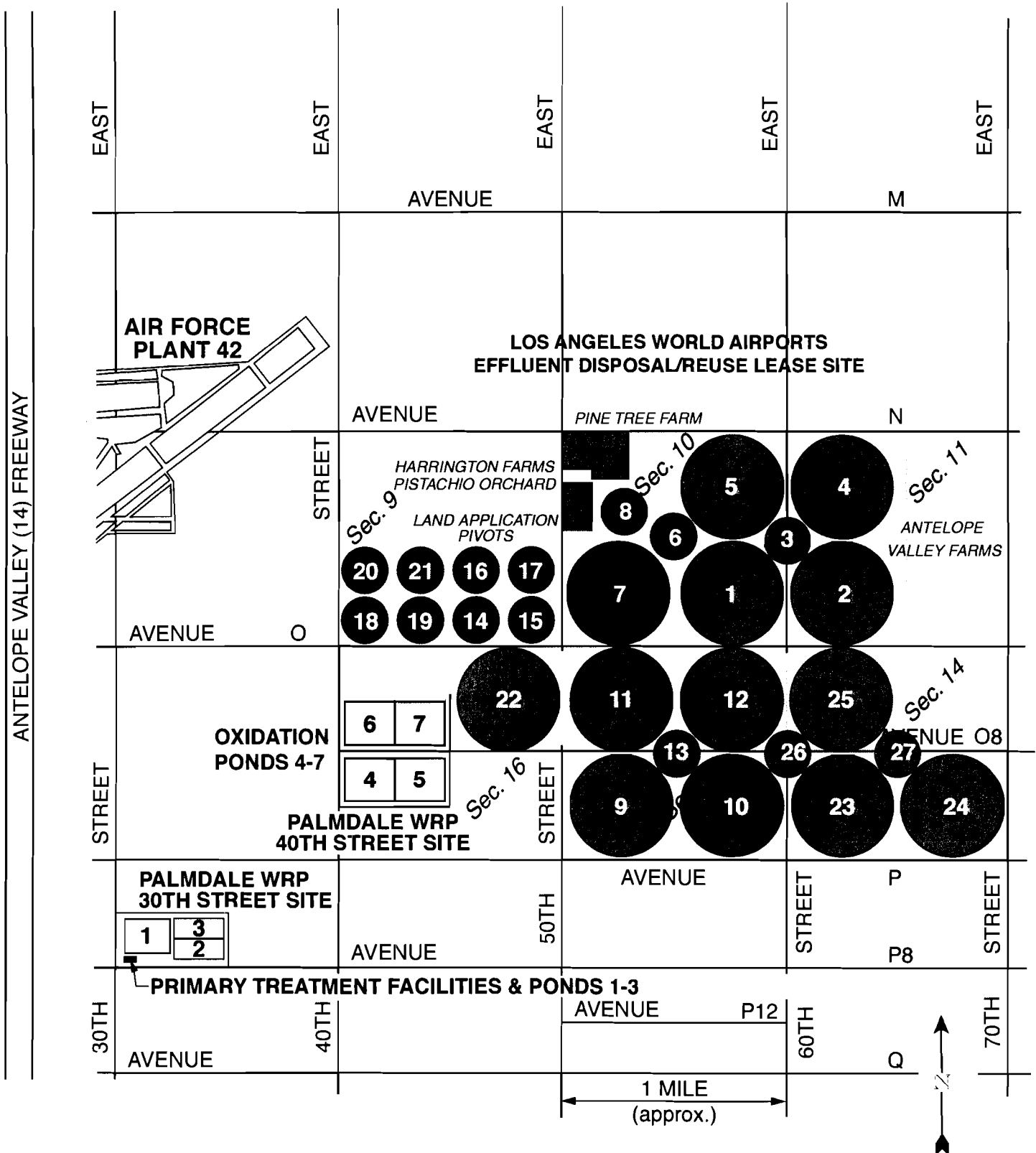
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**4.2.1 CITY OF LOS ANGELES WORLD AIRPORTS (LAWA) LEASE**

Recycled water from the Palmdale WRP has been sold to a series of local farmers since 1960. However, since the recycled water produced at the Palmdale WRP is secondary effluent, its applications are limited. In January 1981, the Sanitation Districts signed Contract No. 2474 for the delivery of all the plant’s effluent to LAWA (formerly known as the Department of Airports, or DOA), who had purchased much of the land in the area in anticipation of the construction of Palmdale International Airport. LAWA had planned to lease out the land that they owned to farmers until the airport could be built, and would resell the recycled water to these farmers, with the excess water being spread on uncultivated land. However, since LAWA was unable to find



**FIGURE 19  
PALMDALE WATER RECLAMATION PLANT FACILITIES**



tenants to buy the recycled water, a second contract (No. 3013) was signed in 1989 allowing the Sanitation Districts to land apply all water from the Palmdale WRP on LAWA land at no charge to either party.

In January 2001, in accordance with the latest Lahontan RWQCB Waste Discharge Requirements (WDRs), the Sanitation Districts submitted a Farm Management Plan (FMP), an Effluent Disposal Plan, and a Corrective Action Plan for the Palmdale WRP. The three documents provide an integrated solution for meeting the revised WDR established in the current permit, Order No. 6-00-57. Most recently in February 2002, the Sanitation Districts signed a long-term lease with LAWA for four square miles of land, which the Sanitation Districts plan to develop into an integrated reuse system for water leaving the Palmdale WRP. As the master leaseholder, the Sanitation Districts are directly responsible for all land application and reuse activities at the site and, accordingly, will implement agricultural management measures to minimize impacts to groundwater quality in land application areas. In March 2009, the Sanitation Districts eliminated land application and maximized reuse activities.

Recycled water is delivered to the Sanitation Districts' LAWA-leased property through approximately 2-½ miles of 36-inch DIP force main. An average of 0.087 MGD (98 AFY) was used during FY 08-09 to irrigate 23 acres of the Pistachio Orchard (previously planted and maintained by LAWA). Another 0.023 MGD (25 AFY) was used at a 46-acre Sanitation Districts-operated tree farm (formerly operated by Tree Mover). The Pistachio Orchard and Tree Farm are leased from the Sanitation Districts by Harrington Farms.

As a means of implementing the FMP, the Sanitation Districts embarked on the Palmdale Agricultural Effluent Reuse Project, submitting an Engineering Report for the Demonstration Phase to the Lahontan RWQCB in October 2001. In March 2002, this project officially began with Antelope Valley Farms installing two center-pivot irrigation systems (125 acres each) on land leased by the Sanitation Districts from LAWA. The only cost to the farmer was the capital costs for the irrigation systems and the O&M and energy costs for the booster pumps. By the end of FY 08-09, a total of 13 center pivots and 14 mini-pivots had been installed. Previously, one center pivot and ten mini pivots were used primarily for land application of effluent on crops (i.e., above agronomic rates) and were not considered as "reuse". However, all application of recycled water began meeting agronomic rates in March 2009, so it is now counted as reuse. During FY 08-09, this 2,000-acre site used 7.011 MGD (7,856 AFY), or 85.4% of the recycled water produced by the Palmdale WRP to grow livestock feed (first oats and later alfalfa). This was a 4.9% increase over the preceding fiscal year.

## **5. FUTURE WATER RECYCLING PROJECTS**

Several recycled water distribution projects throughout the Sanitation Districts' service area are in various stages of development to make use of up to an estimated 71,450 AFY of the remaining 59.2% of the recycled water currently produced but not yet beneficially reused. These projects are listed in Table 17 along with the WRP to supply the recycled water, the estimated quantities of recycled water, and the anticipated completion date. Unsecured funding, institutional concerns, and lack of regulatory approval have caused the anticipated completion dates for several projects to become undetermined.

**TABLE 17  
SUMMARY OF FUTURE WATER RECYCLING PROJECTS**

<b>Project Name</b>	<b>Recycled Water Source</b>	<b>Quantity (AFY)</b>	<b>Anticipated Completion</b>
Long Beach Water Department	Long Beach WRP	7,000	TBD
City of Lakewood	Los Coyotes WRP	100	TBD
Walnut Valley Water District	Pomona WRP	4,550	2010
City of Pomona Master Plan (recommended)	Pomona WRP	1,500	2030
Groundwater Reliability Improvement Program	San Jose Creek WRP	18,000	TBD
East San Gabriel Valley Regional	San Jose Creek WRP	8,900	2012
Southeast Water Reliability Project	San Jose Creek WRP	4,500	2013
USGVMWD II-a Rosemead Extension	Whittier Narrows WRP	300	Summer 2010
City of Arcadia	Whittier Narrows WRP	2,000	2013
Castaic Lake Water Agency	Valencia & Saugus WRPs	17,400	2030
City of Lancaster – Division Street	Lancaster or Palmdale WRP	900	Spring 2011
County Waterworks – Backbone System	Palmdale or Lancaster WRP	4,300	Early 2012
City of Palmdale	Palmdale or Lancaster WRP	2,000	TBD
<b>TOTAL</b>		<b>71,450</b>	
TBD = to be determined			

### **5.1 LONG BEACH WRP**

#### **5.1.1 LONG BEACH WATER DEPARTMENT MASTER PLAN**

In March 2003, the LBWD, with the assistance of Montgomery-Watson-Harza (MWH), completed an update of its recycled water Master Plan. MWH identified an additional 7,000 AFY of irrigation and industrial potable water customers that could be converted to recycled water, including the Haynes and AES power plants, the PacifiCenter development, several commercial laundries, the Port of Long Beach, the Carmelitos Housing Community, and numerous greenbelts.

Three phases of expansion were recommended in the revised Master Plan. Phase 2 would construct approximately 8,000 linear feet of 12-inch lines in the southwest portion of the city for approximately \$6 million, mainly serving the Haynes power plant. Phase 3 would be the rehabilitation of old pump stations and new booster pumps in the recycled water system for approximately \$5 million. Phase 4A would construct approximately 37,000 linear feet of 12- and 20-inch lines into the Port of Long Beach for approximately \$16 million. Phase 4B would construct approximately 58,000 linear feet of 12- and 20-inch lines along Santa Fe Avenue on the west side of town from Broadway to Wardlow to Walnut for approximately \$19 million. There is currently no time schedule for completion of these phases.

## **5.2 LOS COYOTES WRP**

### *5.2.1 CITY OF LAKEWOOD MASTER PLAN*

The City of Lakewood has commissioned Wildan and Associates to conduct a study to determine the feasibility of expanding its recycled water distribution system westward. This potential expansion could serve an additional 100 AFY to such sites as Bolivar and Biscailuz parks, Craig William Elementary School, the Intensive Learning Center, St. Pancratius School, and Hoover Junior High School. Such an extension could potentially cost in the neighborhood of \$2 million. Completion of this study is expected in 2010, and there is currently no schedule for implementation.

## **5.3 POMONA WRP**

### *5.3.1 WALNUT VALLEY WATER DISTRICT*

WVWD has contracted with Cathcart Garcia von Langen Engineers to develop a master plan for the future orderly expansion of its recycled water distribution system by up to an estimated 4,550 AFY. This master plan detailed the potential for expansion, particularly into the City of Diamond Bar and the Walnut Village annexation into the City of Walnut and determined the infrastructure and facilities that would be required. In addition to pipelines (ranging from 6- to 24-inch), seven pump stations, five new reservoirs, three reservoir conversions and four back-up wells would be added to the recycled water distribution system. Completion of this system expansion is expected by 2010 at a cost of approximately \$24 million.

WVWD is now contracting directly with the Sanitation Districts for the purchase of recycled water, instead of through the City of Pomona. In conjunction with the Sanitation Districts, WVWD has already begun the process of repairing/replacing the gravity line that serves both it and the Sanitation Districts' Spadra Landfill. Approximately half of the gravity line between the Pomona WRP and the Spadra site has already been replaced with 24-inch mortar-lined and coated steel pipe. Also in the future, WVWD and the Sanitation Districts may jointly construct a storage reservoir at or near the Spadra site to serve both agencies and make use of Pomona WRP recycled that is currently lost to the river.

### *5.3.2 CITY OF POMONA MASTER PLAN*

The City's consultant, Carollo Engineers, has completed a master plan for expanding their recycled water distribution system. The additional demand for their entire potential customer base was estimated at 6,150 AFY. However, the estimated maximum demand would be 11.6 MGD, which is not available to the City from the Pomona WRP. Therefore, additional sources of water would be required if all the potential reuse sites were connected. These water sources include potable water, non-potable groundwater from existing or rehabilitated wells, increased sewage flow to the Pomona WRP (i.e., flow equalization), and recycled water from the Inland

Empire Utilities Agency (although this agency has stated that it will not be delivering recycled water to the City within the Master Plan's time horizon of 2030).

The proposed expansion of the City's recycled water distribution system was divided into 10 segments serving an ultimate demand of 2,981 AFY. Because of the high, anticipated cost of implementing the entire proposed expansion (in addition to new distribution lines, eight new pump stations, five new storage reservoirs, and four additional pumps were needed), the Master Plan recommended that only three segments be built at this time, as they were the most cost effective and could be served by the existing recycled water supply from the Pomona WRP. This recommended project would be built in four phases from 2010 to 2030 and would yield an additional 1,497 AFY at an estimated capital cost of \$20.7 million. The Master Plan also recommended replacing the existing pumps at the Pomona WRP with variable frequency drives prior to construction of the third segment so that more of the WRP's production could be beneficially reused with less discharge to the San Jose Creek channel. The remaining segments, if built, would be constructed in two phases after 2030, serving an additional 1,484 AFY of demand at an estimated capital cost of \$52 million.

## **5.4 SAN JOSE CREEK WRP**

### ***5.4.1 GROUNDWATER RELIABILITY IMPROVEMENT PROGRAM***

USGVMWD and its partner, the San Gabriel Valley Municipal Water District (SGVMWD), had been developing a plan to replace imported State Project water (purchased either through MWD or directly) with a like amount of recycled water from the Sanitation Districts' San Jose Creek WRP West to prevent long-term groundwater overdraft of the basin. The initial proposal was for transmission line running north along the San Gabriel River to the Santa Fe Spreading Grounds to deliver a long-term average of 16,000 AFY (maximum of 25,000 AFY) of tertiary treated recycled water.

Because of opposition from a local brewery and a California Environmental Quality Act (CEQA) lawsuit, a compromise "demonstration" recharge project was proposed that would use a of maximum of 10,000 AFY of recycled water for recharge downstream of the Santa Fe Dam at five concrete drop structures in the San Gabriel River. The five, new discharge points in the San Gabriel River that would be the recharge locations for this project were identified in the June 2009 revised NPDES permit for the San Jose Creek WRP. Contracts for the sale of recycled water from the Sanitation Districts to USGVMWD and SGVMWD were executed in August and September 1998, respectively. However, permit action was delayed when LARWQCB staff proposed that this groundwater recharge project immediately comply with surface water human health-based criteria (California Toxics Rule, or CTR) for water bodies (i.e., the unlined San Gabriel River) that are existing or potential drinking water sources. CTR criteria for some constituents are significantly lower than Title 22 drinking water standards and are not attainable with current conventional tertiary treatment. Since that time, the designation as an existing or potential drinking water source has been removed from a number of water bodies in the Los Angeles Basin, including this portion of the San Gabriel River. CTR human health criteria for non-drinking water sources and criteria for aquatic life and all other applicable Basin Plan Objectives would be applied to the recycled water at the point of discharge to the San Gabriel River. Subsequently raised concerns about the disinfection by-product, NDMA, in recycled water had continued to prevent this project from moving forward. As such, the only way to obtain compliance with these requirements would be by the addition of advanced treatment to that portion of the recycled water to be recharged. Because of the substantial additional cost that would be incurred, the project had been indefinitely postponed.

However, interest in this project has been rekindled following MWD's May 2007 cessation of all deliveries of imported water for spreading. USGVMWD, WRD and the Sanitation Districts entered into an MOU on September 24, 2008 to develop the Groundwater Reliability Improvement Program (GRIP). As envisioned,

Phase I of GRIP would consist of an advanced treatment plant (MF/RO/advanced oxidation) located at or adjacent to San Jose Creek WRP West that would produce 18,000 AFY for recharge in both the Main San Gabriel and Central groundwater basins. Phase II would increase production capacity to 46,000 AFY. MWH is currently developing a feasibility plan, although there is no timetable for completion of this project.

#### ***5.4.2 EAST SAN GABRIEL VALLEY REGIONAL RECYCLED WATER SYSTEM***

For a number of years, the City of Industry has been planning to extend its recycled water distribution system, since the demand at its single reuse site (Industry Hills Recreation Area) only uses a small portion of the capacity of the City's 36-inch distribution line coming from the Sanitation Districts' San Jose Creek WRP. The proposed expansion has had several incarnations over the years, including the possibility of locating a 10,000 AF open reservoir in the Tres Hermanos area of the City of Diamond Bar for seasonal storage of recycled water. In 2000, a Memorandum of Understanding to develop a regional distribution system was signed by the City of Industry, Suburban Water Systems (SWS, which had purchased the City of West Covina's water system), BKK Landfill, RWD, and WVWD. A revised contract between the Sanitation Districts and City of Industry was negotiated to include the additional quantities of recycled water, and was signed on September 27, 2000. Because of anticipated higher recycled water demands, the City of Industry has requested an adjusted supply contract with the Sanitation Districts to support these needs. This regional system is expected to utilize approximately 8,900 AFY more, and will be developed in two separate portions: one serving the City of Industry and Rowland Water District, and the other developed by USGVMWD to serve SWS, BKK Landfill, and WVWD. These are discussed separately below.

**City of Industry** – The City and its recycled water system operator, RWD, have completed a new pump station and 2.1 MG reservoir at Anaheim-Puente Road.

**USGVMWD** – USGVMWD is calling its portion of the system its “Phase II-B Expansion” and it will serve 3,700 AFY to 29 customers. This system will be constructed in four sub-phases and will consist of one pump station, two storage reservoirs, and approximately 26,640 linear feet of 6- to 24-inch pipeline. The first sub-phase would begin at the intersection of Azusa Avenue and Temple Avenue, connecting to the existing 36-inch pipeline. A new 24-inch line would then extend in Temple Avenue northeast to Amar Road. West of the connection, a 16-inch pipeline would continue in Amar Road west to Azusa Avenue, then north in Azusa Avenue to a new road into the Big League Dreams Development/BKK landfill entrance road. East of Temple, the pipeline in Amar would be 24 inches in diameter and continue east to approximately Nogales Street. One of the new reservoirs would be built as part of this sub-phase. The second sub-phase would continue north along Azusa Avenue as a 16-inch pipeline to East Vine Avenue, then eastward in East Vine Avenue as a 16-inch pipeline across Citrus Street to the South Hills Country Club, a proposed recycled water customer. The third sub-phase would continue from the Amar Road system eastward as a 16-inch pipeline, then turn east and south in Amber Valley Drive to Creekside Drive and west in Shadow Oak Drive as an 8-inch pipeline. This sub-phase would also include construction of the second reservoir, a pumping station, and a pressure reducing station on the 8-inch pipeline. The fourth sub-phase would be a 12-inch diameter pipeline extending east from Temple Avenue in West Covina to Woodgate Drive to Shadow Oak Drive. The pipeline would continue in Shadow Oak Drive into the City of Walnut, where the line would continue east in Shadow Oak past Nogales to approximately Beverly Drive and also south as an 8-inch pipeline in Nogales to La Puente Road, then east in La Puente Road to west of the Lemon Road intersection. Construction of USGVMWD's portion of the project will be split into five packages, with construction of the first two beginning in approximately August 2009. Design of each subsequent phase beginning approximately nine to 12 months after construction has begun on the preceding phase, as the entire project needs to be completed in three years due to State Revolving Funds (SRF) requirements.

### *5.4.3 SOUTHEAST WATER RELIABILITY PROJECT*

CBMWD is planning a system expansion that will loop the Rio Hondo (Torres) and Century (Ibbetson) systems for flow reliability and which will aid in chlorination. The ultimate capacity for the combined, looped systems would be 15,000 AFY. The selected option is now called the Southeast Water Reliability Project. This will consist of approximately 11.4 miles of 30-inch steel or ductile iron pipeline to be built from the City of Pico Rivera, through the cities of Montebello, Commerce, and East Los Angeles, to the City of Vernon. This extension will serve a second proposed power plant in the City of Vernon, as well as other industrial users, and the Montebello Golf Course and other irrigation sites. Letters of intent to serve recycled water have been received by the cities of Pico Rivera and Montebello, and the City of Vernon has already adopted a recycled water rate. Design of this project as a 30-inch line has been completed, with construction on the first phase from Pico Rivera to the Montebello Golf Course expected to start in January 2010. Construction of the Phase 2 from Montebello to Vernon will depend on funding and other outstanding institutional issues.

In addition, CBMWD had planned to construct a 4 million gallon recycled water storage reservoir at its Rio Hondo pump station that would replace the storage tank that had been previously leased from the City of Santa Fe Springs. This became necessary after the lease on the City of Santa Fe Springs tank had expired and this facility was converted back to a potable water tank. In the meantime, a potable water back-up system was installed at the pump station in 2001. Construction on the tank had been put on hold due to financial considerations, but is expected to be a part of the first phase of the SWRP expansion. The site of the storage tank may be relocated to the Montebello Hills to take advantage of elevation for gravity feed of the system.

In 2008, CBMWD was approached by the LADPW regarding the possibility of constructing a new recycled water pipeline on Mines Avenue in the City of Pico Rivera that could deliver recycled water for landscape irrigation at multiple sites on or near Mines Avenue. As proposed, the "Pico Rivera Recycled Water Project – Phase I" will be a sub-project to LADPW's "San Gabriel River Coastal Basin Spreading Grounds Pump Station and Pipeline" project, a 78-inch pipeline that would act as conduit for moving storm water, imported water, or recycled water between the San Gabriel River and Rio Hondo Spreading grounds. The Phase I Project will be a 1-mile long, 8-inch recycled water pipeline placed in the same trench used for the larger 78-inch conduit project. After much discussion with LADPW staff and the City of Pico Rivera, and with the support of Congresswoman Grace Napolitano, the 8-inch recycled water pipeline was added to LADPW's "Request for Proposals" (RFP) for the 78-inch conduit. The agreement stipulates who is the lead agency and what percentage of funding each agency is responsible for. The agreement breaks out the Pico Rivera Recycled Water Project into two phases:

**Phase I** – LADPW is the lead agency for the 8-inch recycled water pipeline and will be responsible for all construction and construction management. CBMWD's role is to provide a pipeline design. Because this project is important to all three agencies, final project costs will be equally split three ways. The estimated start of construction for this project is September 2009.

**Phase II** – The second phase in the agreement is a project that will connect the Mines Avenue pipeline to CBMWD's existing recycled water system and the service laterals that will provide recycled water to the individual sites along the Mines Avenue corridor. CBMWD will be the lead agency on this portion of the Pico Rivera Recycled Water Project. Project costs will be split evenly with the City of Pico Rivera. A construction start date has not been set.

With the assistance from Congresswoman Napolitano's office, CBMWD applied for funding through the U.S. Bureau of Reclamation's Title XVI program. The Title XVI program provides for cost recovery on 25% of all construction costs. If and when CBMWD receives federal funding, the grant will be applied equally to everyone's share. Since construction costs will be shared with LADPW and Pico Rivera, the impact to CBMWD will be greatly reduced. Federal funding, if approved, will further reduce impacts to CBMWD.

Finally, construction bids are coming in much lower than anticipated in the engineer's estimates, so this will result in additional savings to CBMWD. All actual construction costs will be covered through pay-go funds.

## **5.5 WHITTIER NARROWS WRP**

### *5.5.1 USGVMWD PHASE II-A ROSEMEAD EXTENSION*

USGVMWD will be adding approximately 300 AFY of additional recycled water demand at 17 new sites (schools, parks, commercial and office buildings, and street medians) for landscape irrigation and cooling towers. A mitigated Negative Declaration was adopted in April 2009, with construction beginning in the fall of 2009 on 14,467 linear feet of pipeline from their recycled water system serving the Whittier Narrows Recreation Area. The extension will begin with 3,633 feet of 12-inch line running west along Garvey Ave. between River Ave. and Earle Avenue, with two, short 6-inch laterals running north on Willard Ave. and Earle Ave (761 and 822 feet, respectively). A 6,393 foot, 8-inch line will Tee off of the 12-inch line on Garvey and run south on Walnut Grove Ave. to a point just north of Cameta Dr. From this 8-inch line, a 180 foot, 4-inch lateral will branch off to the west at Gravalia Ave., a 1,440 foot, 6-inch lateral will branch off to the east on Klingerman St., and a 1,258 foot, 6-inch line will branch off to the west on Rush St. Completion of this project is expected by the summer of 2010.

### *5.5.2 CITY OF ARCADIA*

The City of Arcadia has commissioned Stetson Engineers to examine the feasibility of extending the USGVMWD's distribution system from the Whittier Narrows WRP (described previously in Section 2.6.3) northward to serve approximately 2,000 AFY to the Santa Anita Racetrack, the Los Angeles County arboretum, Arcadia High School, the county golf course, and other greenbelt areas by approximately 2013. This project has been designated Phase III by USGVMWD.

## **5.6 VALENCIA AND SAUGUS WRPS**

### *5.6.1 CASTAIC LAKE WATER AGENCY*

In 2002, CLWA, the regional importer and wholesaler of State Water Project water in the Santa Clarita Valley, developed a recycled water master plan (Master Plan) for the use of 17,400 AFY of recycled water produced at both the Sanitation Districts' Valencia and Saugus WRPs by the year 2030. CLWA's adopted the Final EIR in 2007 and is currently revising their Master Plan to incorporate changes in phasing of the plan and identify new potential recycled water customers in their service area. CLWA is in discussion with the Sanitation District for a new contract for the purchase and sale of recycled water with an annual entitlement of approximately 17,400 AFY to support the Master Plan. Implementation of the Master Plan has been delayed since the first phase of the distribution system went on line in 2003 for a number of reasons: lack of funding for infrastructure, concern with potential permitting requirements, uncertainty related to salinity issues in the Santa Clara River, and less than expected growth resulting in slower recycled water flow increases. CLWA is currently in the process of developing the next phase of the Master Plan implementation and is working Sanitation District's staff to address these issues and comply with all regulatory requirements.



## **5.7 LANCASTER AND PALMDALE WRPs**

### *5.7.1 LOS ANGELES COUNTY WATERWORKS DISTRICT NO. 40 - BACKBONE PROJECT*

The Los Angeles County Waterworks District No. 40, Antelope Valley, (Waterworks District) has completed a project design concept for a \$33.4 million portion of the regional recycled water distribution system that would deliver recycled water to users in the Valley. The design concept consists of five separate packages to provide flexibility in system design. Each package will be prepared under the direction of the Waterworks District. The first of two mandatory design packages will concern pipeline alignments. The main backbone pipeline will originate at the Palmdale WRP, travel west down Rancho Vista Blvd (Avenue P), then north on 10th Street East, west on Avenue O-8, and north along Sierra Highway, terminating at Columbia Way (Avenue M). A lateral would run east along Columbia Way to serve the proposed Palmdale Hybrid Power Plant (PHPP), a 570-megawatt (MW) electric generating facility currently in the permit process. Another portion of the main backbone pipeline will head west from Sierra Highway, along Avenue O, to the Amargosa Creek, and roughly parallel the creek to reach the Waterworks District's tank site facility at Avenue P-10th Street West. The second mandatory design package will include the pump station and forebay tank to be located at the Palmdale WRP, along with the conversion of two potable storage tanks at the Waterworks District's Avenue P-10 tank site in order to provide operational storage for the system. The first of three optional design packages will include the backbone pipeline to connect the Lancaster WRP to the existing Division Street Corridor project (discussed previously in Section 4.1.5). The second optional design package will include the pump station and forebay tank proposed for the Lancaster WRP. The third optional design package will involve a new storage tank at the Waterworks District's Avenue M - 7<sup>th</sup> Street West site. Assuming that all of the involved parties agree, CDM would do the design from March 2010 to December 2010. It is estimated that the contract for construction would be awarded in May 2011 and completed in April 2012, with deliveries of up to 4,300 AFY targeted for mid 2012.

A contract for the sale of up to 13,500 AFY of recycled water produced at the Lancaster and Palmdale WRPs to Los Angeles County Waterworks District No. 40 was signed in January 2008.

### *5.7.2 CITY OF PALMDALE*

The City of Palmdale signed a contract with the Sanitation Districts in July 2009 for the purchase of up to 2,000 AFY of recycled water from the Palmdale and Lancaster WRPs. The City is initially planning on installing a recycled water distribution line along 30<sup>th</sup> St. East, south to Avenue R-8 then east until 55<sup>th</sup> St. East with laterals to five parks: McAdam, Palmdale Oasis, Yellen, Joshua Hills, and Domenic Massari. These parks are expected to use approximately 1,000 to 1,200 AFY. The City also plans on using recycled water on the numerous (150 to 200) Landscape Maintenance Districts (LMDs) and five Elementary Schools along the route of the recycled water line. In addition, any schools or businesses that are easily accessible to this water will also be connected. The City and Los Angeles County Waterworks are planning for the portion of the Backbone project that will connect the Palmdale WRP to the proposed PHPP (discussed in Section 5.7.1, above).



## ***LIST OF ABBREVIATIONS***

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ABATP	Alamitos Barrier Advance Treatment Plant
AF	acre-foot
AFY	acre-foot per year
AVTTP	Antelope Valley Tertiary Treatment Plant
AWWARF	American Water Works Association Research Foundation
BOD	biological oxygen demand
CBMWD	Central Basin Municipal Water District
CDM	Camp/Dresser/McKee
CEQA	California Environmental Quality Act
CLWA	Castaic Lake Water Agency
COD	chemical oxygen demand
CTR	California Toxics Rule
DIP	ductile iron pipe
DPH	State Department of Public Health (formerly Health Services)
EIR	Environmental Impact Report
EPA	United States Environmental Protection Agency
FMP	Farm Management Plan
FY	fiscal year
GAC	granular activated carbon
gpm	gallons per minute
HP	horsepower
JOS	Joint Outfall System
JWPCP	Joint Water Pollution Control Plant
LACDPR	Los Angeles County Department of Parks and Recreation
LACDPW	Los Angeles County Department of Public Works
LADWP	City of Los Angeles Department of Water and Power
LAWA	Los Angeles World Airports
LBWD	Long Beach Water Department
LVLf	Leo Vander Lans Facility
MBR	membrane bioreactor
MF/RO	membrane filtration/reverse osmosis
MGD	million gallons per day

MRF	Materials Recovery Facility
MTA	Metropolitan Transportation Authority
MWD	Metropolitan Water District of Southern California.
MWH	Montgomery-Watson-Harza
NDMA	N-nitrosodimethylamine
NDN	nitrification-denitrification
O&M	operation and maintenance
OCWD	Orange County Water District
PERG	Puente Hills Energy Recovery from Landfill Gas Facility
PVC	polyvinyl chloride
RWD	Rowland Water District
RWQCB	Regional Water Quality Control Board
SAT	soil aquifer treatment
SCE	Southern California Edison
SJCWRP	San Jose Creek Water Reclamation Plant
SGVMWD	San Gabriel Valley Municipal Water District
SGVWC	San Gabriel Valley Water Company
SRF	State Revolving Funds
SWS	Suburban Water Systems
THUMS	Texaco, Humboldt, Union, Mobil, Shell
TOC	total organic carbon
USGS	United States Geologic Survey
USGVMWD	Upper San Gabriel Valley Municipal Water District
UV	ultraviolet light disinfection
WDR	waste discharge requirements
WNWRP	Whittier Narrows Water Reclamation Plant
WRD	Water Replenishment District of Southern California
WRP	water reclamation plant
WVWD	Walnut Valley Water District

**CHRONOLOGY OF SANITATION DISTRICTS' REUSE ACTIVITIES**

- July 1927            The Tri-City Plant serving Pomona, Claremont, and La Verne is placed into service and the effluent is used for irrigation of crop and pasture land by the Diamond Bar Ranch Company and the Northside Water Company.
- December 1941      The 0.36 MGD Lancaster Treatment Plant is placed into service.
- April 1949            Sanitation Districts' Report upon the Reclamation of Water from Sewage and Industrial Wastes in Los Angeles County, California is published which demonstrated the feasibility of water reclamation and eventual reuse.
- January 1952        The Lancaster Treatment Plant is expanded from 0.36 to 1.35 MGD.
- September 1953     The 0.75 MGD Palmdale Treatment Plant is placed into service.
- September 1954     Sanitation Districts assumes operations of Tri-City Plant.
- November 1958      The Palmdale Treatment Plant is expanded from 0.75 to 2.5 MGD.
- November 1958      Sanitation Districts' A Report Upon the Potential Reclamation of Sewage Now Wasting to the Ocean in Los Angeles County outlining the financing and construction of the Whittier Narrows WRP is published.
- May 1959            Deliveries of effluent from the Palmdale WRP for alfalfa irrigation begin.
- October 1959        A new Lancaster WRP is constructed and put into full service, with a capacity of 6.5 MGD. The original plant ceased operation two months later.
- 1960                Edwards Air Force Base constructs "C" dike on Rosamond Dry Lake to impound effluent from the Lancaster WRP, forming Piute Pond.
- July 1962            The 15 MGD Whittier Narrows WRP goes into operation, becoming first of the "upstream" treatment plants in the Sanitation Districts' JOS.
- July 1962            The Saugus WRP in what is now the City of Santa Clarita is put into service, with effluent being discharged into the Santa Clarita River.
- August 1962        The Whittier Narrows WRP begins delivering recycled water for groundwater replenishment in the Montebello Forebay of the Central groundwater basin.
- November 1962     The Angeles Crest Development Company completes the La Cañada WRP on the site of the La Cañada-Flintridge Country Club to treat wastewater produced by the homes surrounding the golf course. Recycled water produced by this facility is still used as a source of supply for the lakes and the irrigation system on the golf course.

July 1963 The Sanitation Districts produce A Plan for Water Re-use that studied the reclamation potential for the entire JOS and proposed the construction of 11 water reclamation facilities. However, this plan was only partially implemented.

August 1964 The Saugus WRP is expanded to 0.75 MGD.

October 1965 The Saugus WRP is expanded from 0.75 to 1.5 MGD.

June 1966 Pomona WRP is constructed to replace Tri-City Plant.

September 1966 The La Cañada WRP is purchased by the Sanitation Districts.

July 1967 The Valencia WRP in what is now the City of Santa Clarita is put into service with the capacity of 1.5 MGD. Effluent is discharged into the Santa Clarita River.

February 1968 The Saugus WRP is expanded from 1.5 to 5 MGD.

May 1968 The Central and West Basin Water Replenishment District (now the Water Replenishment District of Southern California, or WRD) contracts for the purchase of recycled water from the proposed San Jose Creek WRP.

September 1969 The County of Los Angeles constructs the Antelope Valley Tertiary Treatment Plant to further treat Lancaster WRP effluent for use at Apollo Lakes Regional County Park, which opened in November 1972.

March 1970 The Pomona WRP is expanded to 10 MGD.

October 1970 The 12.5 MGD Los Coyotes WRP in Cerritos is completed and placed in operation.

May 1971 The La Cañada WRP is expanded to 0.2 MGD.

June 1971 The 37.5 MGD San Jose Creek WRP in Whittier is completed.

September 1972 The Palmdale WRP is expanded from 2.5 to 3.1 MGD.

May 1973 The 12.5 MGD Long Beach WRP is completed and placed in operation.

December 1973 Deliveries of recycled water from the Pomona WRP through the Pomona Water Department to Cal Poly Pomona begin. Currently, eight reuse sites are served by the city's pressure system.

June 1975 The Los Coyotes WRP is expanded from 12.5 to 37.5 MGD.

April 1976 The Valencia WRP is expanded from 1.5 to 4.5 MGD.

February 1977 The Sanitation Districts' Pomona Virus Study final report is published, demonstrating that direct filtration (adding coagulant just prior to inert media filters) was as effective at removing virus from secondary effluent as coagulation followed by a separate flocculation basin and then filtration. This led to the construction of effluent filters at the upstream WRPs in the late 1970's. The WRPs were then classified as tertiary treatment facilities.

- June 1978 The first direct recycled water deliveries from the San Jose Creek WRP begins with the adjacent California Country Club.
- October 1978 Revised wastewater reclamation regulations are adopted by the State Department of Health Services (now Department of Public Health, or DPH) as Title 22 of the California Code of Regulations. The effluent from the Sanitation Districts' tertiary treatment plants can be used for all of the approved applications contained in these regulations.
- November 1978 First direct recycled water deliveries from the Los Coyotes WRP, beginning with the Ironwood 9 Golf Course and Caruthers Park.
- October 1979 The first industrial use of recycled water occurs as Garden State Paper (later Blue Heron Paper Company) begins to use more than 3 MGD of Pomona WRP effluent for recycling old newspapers.
- August 1980 The first direct recycled water deliveries from the Long Beach WRP through the City of Long Beach Water Department (LBWD) begins at El Dorado Park West and Golf Course.
- January 1981 Contract signed with City of Los Angeles Department of Airports (now Los Angeles World Airports, or LAWA) for the use of recycled water from the Palmdale WRP for tree irrigation and effluent disposal.
- May 1981 Agreement is signed requiring the maintenance of 200 acres of wetlands at Piute Pond for use by waterfowl migrating along the Pacific Flyway migratory route.
- April 1982 The Orange and Los Angeles Counties (OLAC) Water Reuse Study is published, which detailed numerous potential recycled water distribution system projects, many of which were subsequently constructed in the Sanitation Districts' service area and elsewhere.
- September 1982 The City of Industry completes its 7,100 gpm recycled water pump station located at the San Jose Creek WRP and begins deliveries of recycled water to the Industry Hills Recreation Area through a 36-inch transmission line.
- July 1983 Deliveries of recycled water from the Pomona WRP begin to the Spadra Landfill and the adjacent Gas-to-Energy Facility (SPERG).
- October 1982 The San Jose Creek WRP is expanded from 37.5 to 62.5 MGD.
- January 1984 LBWD's North Long Beach recycled water distribution system is completed, with 11 sites being connected by September of the following year.
- March 1984 The Sanitation Districts publish the Health Effects Study. This study determined that the recharge of recycled water into the groundwater drinking supply of the Central Basin did not adversely affect in a statistically significant way the health of people ingesting up to 15% recycled water in regards to gastrointestinal disease and cancers or birth defects. It also determined that recharge with recycled water was not adversely affecting the groundwater quality of the Central Basin.
- May 1984 During this month, daily average reuse flows in the Sanitation Districts' service area exceed 70 MGD for the first time.

June 1984 The Long Beach WRP is expanded from 12.5 to 25 MGD.

March 1986 LBWD's South Long Beach recycled water distribution system is completed, with five sites being connected.

May 1986 Walnut Valley Water District (WVWD) constructs a 27-mile distribution system and begins delivery of recycled water from the Pomona WRP (purchased from the Pomona Water Department). This system served 160 reuse sites as of June 2007.

January 1987 The Saugus WRP's treatment process is upgraded to tertiary with the addition of dual-media pressure filters.

March 1987 The Los Angeles Regional Water Quality Control Board (RWQCB) adopts Board Order No. 87-40, which permits the increase in the use of recycled water for groundwater recharge in the Montebello Forebay from 32,700 to 50,000 acre-feet per year.

December 1987 The City of Cerritos completes its 14,500 gpm pump station at the Los Coyotes WRP and expands delivery of recycled water to dozens of landscape irrigation sites throughout the city.

May 1988 During this month, daily average reuse flows in the Sanitation Districts' service area exceed 80 MGD for the first time.

June 1988 Deliveries of recycled water from the Lancaster WRP to Nebeker Ranch for alfalfa irrigation begin.

September 1988 The Valencia WRP is expanded from 4.5 to 7.5 MGD.

December 1988 Norman's Nursery moves from the site of the Stage III expansion of the San Jose Creek WRP to a site next to the Whittier Narrows WRP, using recycled water from the latter facility.

February 1989 The Palmdale WRP is expanded from 3.1 to 6.5 MGD.

March 1989 LBWD's North Long Beach recycled water distribution system is extended, with six more sites being connected.

June 1989 During this month, daily average reuse flows in the Sanitation Districts' service area exceed 90 MGD for the first time, and the running 12-month average daily reuse flows exceed 60 MGD.

August 1989 The City of Lakewood begins deliveries from the Los Coyotes WRP through the City of Cerritos' recycled water distribution system.

November 1989 The Lancaster WRP is expanded from 6.5 to 8 MGD.

June 1991 The Pomona WRP is expanded from 10 to 15 MGD.

September 1991 The Los Angeles RWQCB adopts Board Order No. 91-100, which increases the amount of recycled water for groundwater recharge in the Montebello Forebay up to 60,000 acre-feet per year in any one year (150,000 acre-feet in any three-year period).



October 1991	The Saugus WRP is expanded from 5 to 6.5 MGD with the completion of flow equalization facilities.
January 1992	LBWD's North Long Beach recycled water distribution system is extended again, with seven more sites being connected.
February 1992	Central Basin Municipal Water District (CBMWD) constructs its 26-mile Century (E. Thornton Ibbetson) distribution system, delivering recycled water from the Los Coyotes WRP via the City of Cerritos' pump station.
December 1992	The Lancaster WRP is expanded from 8 to 10 MGD.
January 1993	The San Jose Creek WRP is expanded from 62.5 to 100 MGD, as Stage III begins discharging effluent.
July 1993	The Palmdale WRP is expanded from 6.5 to 8 MGD.
August 1993	Daily average reuse flows in the Sanitation Districts' service area exceed 100 MGD for this month, setting a record at 113 MGD.
February 1994	The running 12-month daily average reuse flows exceed 70 MGD for the first time.
April 1994	The running 12-month daily average reuse flows exceed 75 MGD for the first time.
May 1994	The running 12-month daily average reuse flows exceed 80 MGD for the first time.
July 1994	CBMWD begins operating the Rio Hondo (Esteban Torres) recycled water pump station and distribution system, which was interconnected to that agency's Century recycled water distribution system. For the first time, two different water reclamation plants (Los Coyotes and San Jose Creek) are used to supply recycled water to the same regional distribution system.
November 1994	The City of Santa Clarita begins hauling recycled water from the Valencia WRP via water truck for irrigation of city-owned trees and parkways. This activity is extended to the Saugus WRP in March 1995; however, this practice ends in September 1995.
December 1994	The Valencia WRP is expanded from 7.5 to 11 MGD
April 1995	WVWD extends its recycled water distribution system to the Fairway Business Park development, serving the landscaping around numerous commercial buildings.
June 1995	LBWD restores recycled water service to THUMS project on Island White for oil field repressurization. Results indicate that recycled water can effectively be used for this application.
December 1995	Sanitation Districts complete the <u>Plan for Beneficial Use of Recycled Water</u> , which identifies impediments to expanding water reuse, along with solutions and potential new users.
February 1996	An outfall trunk sewer for waste activated sludge disposal and excess storm flows was completed that connected the La Cañada WRP with the main sewer system in the Los Angeles Basin, officially making this plant a JOS facility.

June 1996 The Valencia WRP is expanded from 11 to 13.5 MGD

July 1996 The Palmdale WRP is expanded from 10 to 15 MGD.

December 1996 RAND Corporation publishes its first epidemiological study, commissioned by WRD, of the health effects associated with the consumption of recycled water that had been used to augment the surface recharge of the Central Basin aquifer. There was no statistical evidence that indicated that recycled water consumed in this manner adversely impacted human health in regards to certain cancers and gastrointestinal diseases.

May 1997 The Lancaster WRP is expanded from 10 to 16 MGD.

Also this month, the Los Angeles RWQCB readopts all of the Sanitation Districts' reuse permits that had been previously issued in the 1980's.

October 1997 The daily average reuse flow exceeds 100 MGD for the first time since November 1993.

November 1997 Following years of delays, recycled water deliveries finally begin to the Puente Hills Landfill and the adjacent Gas-to-Energy Facility (PERG).

June 1998 Recycled water deliveries through the Puente Hills distribution system are extended to Rose Hills Memorial Park.

July 1999 The Sanitation Districts' 400<sup>th</sup> reuse site began receiving recycled water when the Wind River residential development was connected to the WVWD's distribution system.

October 1999 RAND Corporation publishes its second epidemiological study, commissioned by the WRD, of the health effects associated with the consumption of Central Basin groundwater that had been augmented by the surface recharge of recycled water. There was no statistical evidence indicating that recycled water consumed in this manner adversely impacted human health in regards to certain birth outcomes.

September 2000 The daily average reuse flow exceeds 100 MGD for the first time since October 1997, with 100 MGD being exceeded during the following month as well.

December 2000 State DHS adopts revised Title 22 Water Recycling Criteria that contains an expanded list of approved uses of recycled water.

June 2001 The San Jose Creek WRP East and West produce over 100,000 acre-feet of recycled water during a fiscal year for the first time.

March 2002 Antelope Valley Farms begins installing center pivot irrigation systems in order to make commercial use of Palmdale WRP effluent on land leased from LAWA by Sanitation Districts. Also, this month begins a string of five consecutive months in which the daily average reuse flow exceeds 100 MGD.

December 2002 Antelope Valley Farms expands its operation with an additional two large and one mini center pivot irrigation systems at its Palmdale site. Another large and two mini center pivots are also constructed nearby for effluent land application and potential reuse.

January 2003 Rowland Water District takes over that portion of WVWD's recycled water distribution system that lies within Rowland's service area.

- February 2003 WRD completes construction of the Alamos Barrier Advanced Treatment Plant and begins using Long Beach WRP effluent for process testing.
- May 2003 The capacity of the Valencia WRP is increased to 17 MGD with the completion of additional aeration tanks.
- June 2003 The Upper San Gabriel Valley Municipal Water District (USGVMWD) completes a transmission system extension of the Rio Hondo system and begins serving recycled water from the San Jose Creek WRP to its first two customers.
- August 2003 The Tournament Players Club golf course began using recycled water from the Valencia WRP. It is the first user on the Castaic Lake Water Agency's recycled water distribution system, and the first permanently plumbed reuse site in the Santa Clarita Valley.
- January 2005 Antelope Valley Farms expands its operation again with four large and one mini center pivot irrigation systems at its Palmdale site. Four additional mini-pivots were also constructed nearby for land application of excess effluent.
- May 2005 The capacity of the Valencia WRP was increased to 21.6 MGD when some of the facilities of the Stage V expansion were put into service.
- October 2005 Recycled water deliveries through the CBMWD's Century distribution system are extended to the City of Vernon with the start-up of the Malburg Generation Station power plant.
- August 2006 After extensive retrofitting, USGVMWD connects a large section the lower portion of Rose Hills Memorial Park, making this site one of the largest direct users of Sanitation Districts' recycled water.
- September 2006 The USGVMWD completes its distribution system from the Whittier Narrows WRP and begins deliveries of recycled water to the Whittier Narrows Recreation Area.
- February 2007 A 1 MGD pilot membrane bioreactor (MBR) plant begins operation at the Lancaster WRP, supplying tertiary treated effluent to the Sanitation Districts' Eastern Agricultural Site.
- February 2007 The Sanitation Districts adopt the last of its Water Recycling Ordinances for its various service areas that allow it to govern the use of its recycled water supplies.
- March 2007 One of the Sanitation Districts' largest nonpotable users, Blue Heron Newsprint, ceases operations and stops receiving its usual three million gallons a day of recycled water from the Pomona WRP.
- May 2007 MWD ceases all deliveries of imported water for groundwater replenishment, increasing the demand for recycled water.
- July 2007 The LBWD expanded recycled water deliveries to three large parks in the southern portion of the city (Bluff, Stearns, and Bixby).
- November 2007 The Sanitation Districts and the WVWD sign an agreement for the direct sale of recycled water from the Pomona WRP.

- January 2008 The Sanitation Districts and Los Angeles County Waterworks District No. 40 sign an agreement for the sale of 13,500 AFY of recycled water from the Lancaster and Palmdale WRPs.
- March 2008 The Sanitation Districts and the City of Lancaster sign an agreement for the sale of 950 AFY of recycled water from the Lancaster WRP.
- July 2008 The Sanitation Districts adopt “Rules and Regulations” to regulate the use of its recycled water supplies.
- August 2008 The Sanitation Districts initiate the Reuse Site Supervisor Training Program.
- September 2008 The Sanitation Districts, USGVMWD, and WRD sign a Memorandum of Understanding to contract with MWH to study the feasibility of advanced treatment at the San Jose Creek WRP for increased groundwater recharge in both the Central and Main San Gabriel basins.
- January 2009 Deliveries of tertiary treated recycled water from the Lancaster WRP to the City of Lancaster began.
- April 2009 The Los Angeles RWQCB adopts a general reuse permit allowing for the use of recycled water for non-irrigation purposes.
- April 2009 A 24-inch valve was installed between chlorine contact chambers nos. 2 and 3 at the Long Beach WRP to increase recycled water supply to LBWD.
- April 2009 LARWQCB revises the 1991 Montebello Forebay recharge permit to eliminate the existing annual and three-year total quantity limits (60,000 and 150,000 AF, respectively), and rely on a running 5-year average recycled water contribution of 35%. This change is expected to allow for approximately 5,000 AFY more of recycled water to be recharged.



**QUALITY OF RECYCLED WATER PRODUCED AT SANITATION DISTRICTS' TERTIARY WRPS**

**TABLE B-1**  
**LONG BEACH WATER RECLAMATION PLANT**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.57	7.9	6.8
Turbidity	NTU	0.8	1.6	0.4
Total Coliform	org./100 ml	<1	19	<1
Temperature	deg. F	78	85	70
Suspended Solids	mg/L	<2.5	4.0	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	595	628	562
Total COD	mg/L	<25	31	<25
Total BOD	mg/L	<3	8	<3
Ammonia Nitrogen	mg/L	1.19	2.06	0.85
Organic Nitrogen	mg/L	1.94	2.79	1.09
Nitrate Nitrogen	mg/L	5.66	7.71	3.76
Nitrite Nitrogen	mg/L	0.07	0.18	0.02
Phosphate (PO4)	mg/L	0.58	0.94	0.39
Fluoride	mg/L	0.68	0.76	0.61
Boron	mg/L	0.344	0.377	0.310
Cyanide	mg/L	<0.004	<0.005	0.002
Chloride	mg/L	114	128	109
Sulfate	mg/L	96.9	111	84.6
Total Hardness	mg/L	181	199	162
Antimony	µg/L	0.54	0.60	0.44
Arsenic	µg/L	2.86	2.95	2.79
Barium	µg/L	45.9	49.1	38.5
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.42	1.39	0.04
Total Chromium	µg/L	0.27	0.29	0.25
Hexavalent Chromium	mg/L	0.0031	0.0049	0.0012
Copper	µg/L	1.99	3.30	1.10
Lead	µg/L	<0.20	0.33	0.13
Manganese	µg/L	49.4	55.1	43.7
Mercury	µg/L	0.0027	0.0098	0.0012
Nickel	µg/L	1.31	1.51	1.08
Selenium	µg/L	0.40	0.43	0.34
Silver	µg/L	<0.07	<0.20	<0.02
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	33.6	43.6	29.9
Detergents (MBAS)	mg/L	<0.10	0.11	<0.10
Oil and Grease	mg/L	<4.0	<4.0	<4.0

**TABLE B-2**  
**LOS COYOTES WATER RECLAMATION PLANT**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.29	7.8	6.2
Turbidity	NTU	0.8	1.8	0.5
Total Coliform	org./100 ml	<1	17	<1
Temperature	deg. F	80	87	72
Suspended Solids	mg/L	<2.5	<2.5	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	827	934	750
Total COD	mg/L	<25	35	<25
Total BOD	mg/L	<4	10	<3
Ammonia Nitrogen	mg/L	1.24	1.86	0.91
Organic Nitrogen	mg/L	1.04	1.56	0.57
Nitrate Nitrogen	mg/L	6.47	7.97	4.36
Nitrite Nitrogen	mg/L	<0.05	0.216	<0.02
Phosphate (PO4)	mg/L	0.46	0.61	0.34
Fluoride	mg/L	0.56	0.89	0.42
Boron	mg/L	0.408	0.441	0.366
Cyanide	mg/L	<0.0032	<0.005	0.0013
Chloride	mg/L	192	228	170
Sulfate	mg/L	180	210	158
Total Hardness	mg/L	284	313	256
Antimony	µg/L	1.09	1.30	0.74
Arsenic	µg/L	0.76	0.86	0.70
Barium	µg/L	40.3	45.7	34.0
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	<0.10	<0.25	<0.01
Total Chromium	µg/L	0.59	0.91	0.47
Hexavalent Chromium	mg/L	0.0031	0.0046	0.0019
Copper	µg/L	1.92	2.90	1.30
Lead	µg/L	0.49	0.61	0.42
Manganese	µg/L	58.3	71.5	45.1
Mercury	µg/L	0.0028	0.0077	0.0012
Nickel	µg/L	4.11	4.82	3.17
Selenium	µg/L	0.60	0.71	0.54
Silver	µg/L	<0.06	<0.20	0.01
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	35.7	44.0	30.0
Detergents (MBAS)	mg/L	<0.11	0.16	<0.10
Oil and Grease	mg/L	<4.5	<5.0	<4.0



**TABLE B-3**  
**POMONA WATER RECLAMATION PLANT**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.61	8.2	7.0
Turbidity	NTU	0.9	2.2	0.4
Total Coliform	org./100 ml	<1	13	<1
Temperature	deg. F	78	86	68
Suspended Solids	mg/L	<2.5	7.0	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	597	652	512
Total COD	mg/L	<26	51	<25
Total BOD	mg/L	<3	21	<3
Total Organic Carbon	mg/L	7.00	8.01	5.94
Ammonia Nitrogen	mg/L	0.98	1.49	0.61
Organic Nitrogen	mg/L	1.41	2.55	0.94
Nitrate Nitrogen	mg/L	5.72	6.80	4.63
Nitrite Nitrogen	mg/L	0.062	0.155	0.029
Fluoride	mg/L	0.30	0.34	0.24
Boron	mg/L	0.275	0.316	0.219
Cyanide	mg/L	<0.0027	<0.005	0.0012
Chloride	mg/L	131	147	119
Sulfate	mg/L	73.4	87.0	58.6
Total Alkalinity	mg/L	187	216	152
Total Hardness	mg/L	240	288	204
Calcium	mg/L	63.3	66.5	58.0
Magnesium	mg/L	19.9	20.1	12.6
Antimony	µg/L	0.46	0.65	0.34
Arsenic	µg/L	1.32	1.68	0.95
Barium	µg/L	34.5	40.7	28.8
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.14	0.50	0.05
Total Chromium	µg/L	0.87	1.12	0.72
Hexavalent Chromium	mg/L	<0.0036	<0.010	0.0007
Copper	µg/L	6.29	7.88	4.29
Iron	mg/L	0.07	0.20	0.027
Lead	µg/L	0.47	0.71	0.343
Manganese	µg/L	3.44	4.56	2.18
Mercury	µg/L	0.0035	0.0166	0.0015
Nickel	µg/L	2.21	5.19	1.35
Potassium	mg/L	13.3	15.1	11.9
Selenium	µg/L	0.47	0.55	0.39
Silver	µg/L	0.08	<0.2	0.03
Sodium	mg/L	103	118	91.8
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	58.7	74.3	53.0
Detergents (MBAS)	mg/L	<0.12	0.36	<0.10
Oil and Grease	mg/L	<4.2	<5.0	<4.0

**TABLE B-4**  
**SAN JOSE CREEK WATER RECLAMATION PLANT EAST**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		6.95	7.2	6.5
Turbidity	NTU	0.7	1.3	0.5
Total Coliform	org./100 ml	<1	5	<1
Temperature	deg. F	80	90	72
Suspended Solids	mg/L	<2.5	3.0	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	662	736	594
Total COD	mg/L	<25	28	<25
Total BOD	mg/L	<3	<3	<3
Total Organic Carbon	mg/L	5.66	7.54	4.69
Ammonia Nitrogen	mg/L	1.13	1.44	0.68
Organic Nitrogen	mg/L	1.68	3.01	1.25
Nitrate Nitrogen	mg/L	3.69	4.99	1.42
Nitrite Nitrogen	mg/L	0.04	0.07	0.03
Fluoride	mg/L	0.49	0.68	0.33
Boron	mg/L	0.334	0.388	0.282
Cyanide	mg/L	<0.0028	<0.005	0.0010
Chloride	mg/L	154	165	127
Sulfate	mg/L	129	144	111
Total Alkalinity	mg/L	160	209	137
Total Hardness	mg/L	244	263	192
Calcium	mg/L	65.6	68.7	62.7
Magnesium	mg/L	20.9	24.5	19.4
Antimony	µg/L	0.66	0.71	0.57
Arsenic	µg/L	0.90	1.19	0.66
Barium	µg/L	66.0	74.9	55.1
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.19	0.33	<0.03
Total Chromium	µg/L	0.52	0.57	0.37
Hexavalent Chromium	mg/L	<0.0036	<0.01	0.0012
Copper	µg/L	3.53	5.30	2.00
Iron	mg/L	0.096	0.20	0.054
Lead	µg/L	0.226	0.313	0.18
Manganese	µg/L	21.0	37.1	4.14
Mercury	µg/L	0.0025	0.0066	0.0011
Nickel	µg/L	8.62	30.20	2.79
Potassium	mg/L	16.0	17.5	14.0
Selenium	µg/L	0.55	0.68	0.45
Silver	µg/L	0.06	<0.20	<0.03
Sodium	mg/L	126	146	111
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	46.1	51.0	42.0
Detergents (MBAS)	mg/L	<0.10	0.12	<0.10
Oil and Grease	mg/L	<4.0	<4.0	<4.0

**TABLE B-5**  
**SAN JOSE CREEK WATER RECLAMATION PLANT WEST**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.03	7.2	6.8
Turbidity	NTU	0.8	1.4	0.4
Total Coliform	org./100 ml	<1	2	<1
Temperature	deg. F	80	86	72
Suspended Solids	mg/L	<2.5	3.0	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	571	660	520
Total COD	mg/L	<25	25	<25
Total BOD	mg/L	<3	<3	<3
Total Organic Carbon	mg/L	5.14	5.73	4.63
Ammonia Nitrogen	mg/L	0.86	1.09	0.67
Organic Nitrogen	mg/L	1.12	1.84	0.65
Nitrate Nitrogen	mg/L	6.90	8.00	4.78
Nitrite Nitrogen	mg/L	0.03	0.03	0.03
Fluoride	mg/L	0.69	0.79	0.50
Boron	mg/L	0.356	0.396	0.285
Cyanide	mg/L	<0.0034	<0.005	0.0011
Chloride	mg/L	116	143	99.1
Sulfate	mg/L	97.9	134	83.9
Total Alkalinity	mg/L	154	172	139
Total Hardness	mg/L	213	250	190
Calcium	mg/L	57.4	60.8	54.7
Magnesium	mg/L	16.3	18.6	15.2
Antimony	µg/L	0.57	0.65	0.52
Arsenic	µg/L	0.96	1.28	0.63
Barium	µg/L	32.4	37.4	21.7
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.16	0.43	0.05
Total Chromium	µg/L	0.97	1.31	0.52
Hexavalent Chromium	mg/L	<0.0035	<0.010	0.0010
Copper	µg/L	4.68	7.00	2.00
Iron	mg/L	0.66	0.20	0.0.6
Lead	µg/L	0.22	0.28	0.17
Manganese	µg/L	14.3	38.3	7.43
Mercury	µg/L	0.0022	0.0081	0.0008
Nickel	µg/L	1.85	2.93	1.52
Potassium	mg/L	14.0	16.6	12.8
Selenium	µg/L	0.39	0.66	0.28
Silver	µg/L	<0.158	0.247	<0.01
Sodium	mg/L	99.9	121	88.5
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	47.6	58.0	39.0
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.1	<5.0	<4.0

**TABLE B-6**  
**WHITTIER NARROWS WATER RECLAMATION PLANT**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.35	7.8	7.0
Turbidity	NTU	0.8	1.9	0.3
Total Coliform	org./100 ml	<1	2	<1
Temperature	deg. F	77	83	71
Suspended Solids	mg/L	<2.5	3.0	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	578	642	516
Total COD	mg/L	<25	28	<25
Total BOD	mg/L	<3	6	<3
Total Organic Carbon	mg/L	4.83	5.44	4.12
Ammonia Nitrogen	mg/L	1.03	2.23	0.46
Organic Nitrogen	mg/L	1.56	4.95	0.13
Nitrate Nitrogen	mg/L	6.26	7.91	4.78
Nitrite Nitrogen	mg/L	<0.04	0.35	<0.02
Phosphate (PO4)	mg/L	1.49	5.22	0.41
Fluoride	mg/L	1.12	3.23	0.77
Boron	mg/L	0.261	0.315	0.216
Cyanide	mg/L	<0.0043	<0.005	0.0011
Chloride	mg/L	112	122	102
Sulfate	mg/L	108	129	97
Total Alkalinity	mg/L	170	186	163
Total Hardness	mg/L	211	246	176
Calcium	mg/L	56.2	62.9	51.7
Magnesium	mg/L	16.7	18.8	15.4
Aluminum	µg/L	55.5	79.8	28.9
Antimony	µg/L	0.67	0.81	0.46
Arsenic	µg/L	1.28	1.61	1.10
Barium	µg/L	42.5	68.6	34.7
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.18	0.99	0.05
Total Chromium	µg/L	1.04	1.84	0.81
Hexavalent Chromium	mg/L	<0.0088	<0.010	0.0026
Copper	µg/L	4.25	4.67	3.74
Iron	mg/L	<0.048	<0.20	0.017
Lead	µg/L	0.54	0.87	0.33
Manganese	µg/L	3.79	7.91	1.85
Mercury	µg/L	0.0059	0.040	0.0013
Nickel	µg/L	5.24	7.72	3.71
Potassium	mg/L	12.6	13.3	11.6
Selenium	µg/L	0.48	0.59	0.37
Silver	µg/L	<0.05	<0.20	0.01
Sodium	mg/L	117	132	107
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	63.4	132.0	48.9
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.3	<5.0	<4.0

**TABLE B-7**  
**VALENCIA WATER RECLAMATION PLANT**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.28	7.7	7.0
Turbidity	NTU	0.6	1.3	0.3
Total Coliform	org./100 ml	<1	1	<1
Temperature	deg. F	77	83	68
Suspended Solids	mg/L	<2.5	<2.5	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	743	808	648
Total COD	mg/L	<29	36	<25
Total BOD	mg/L	<3	<3	<3
Ammonia Nitrogen	mg/L	0.55	0.83	0.35
Organic Nitrogen	mg/L	0.86	1.67	0.41
Nitrate Nitrogen	mg/L	2.51	3.86	1.47
Nitrite Nitrogen	mg/L	<0.3	<0.3	<0.03
Fluoride	mg/L	0.35	0.40	0.30
Boron	mg/L	0.616	0.70	0.524
Cyanide	µg/L	<3.711	<5.005	2.305
Chloride	mg/L	145	154	134
Sulfate	mg/L	193	222	176
Total Hardness	mg/L	280	306	238
Antimony	µg/L	0.71	1.33	0.49
Arsenic	µg/L	<0.85	1.15	0.60
Barium	µg/L	11.15	12.60	9.88
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.18	0.39	0.07
Total Chromium	µg/L	<0.29	<0.50	0.19
Hexavalent Chromium	mg/L	0.0030	0.0044	0.0015
Copper	µg/L	9.56	11.50	8.69
Iron	mg/L	<0.13	<0.20	0.053
Lead	µg/L	<0.18	<0.25	0.11
Mercury	µg/L	0.0023	0.009	0.0005
Nickel	µg/L	3.24	11.50	1.68
Selenium	µg/L	<0.54	<1.00	0.33
Silver	µg/L	<0.19	<0.25	<0.01
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	40.0	63.0	31.0
Detergents (MBAS)	mg/L	<0.10	<0.10	<0.10
Oil and Grease	mg/L	<4.6	<5.0	<4.0

**TABLE B-8**  
**SAUGUS WATER RECLAMATION PLANT**  
**RECYCLED WATER QUALITY, FY 2008-09**

Constituent	Units	Mean	Maximum	Minimum
pH		7.49	7.9	7.2
Turbidity	NTU	0.6	1.0	0.1
Total Coliform	org./100 ml	<1	1	<1
Temperature	deg. F	76	83	68
Suspended Solids	mg/L	<2.5	<2.5	<2.5
Settleable Solids	ml/L	<0.1	<0.1	<0.1
Total Dissolved Solids	mg/L	667	800	588
Total COD	mg/L	<25	<25	<25
Total BOD	mg/L	<3	<3	<2
Ammonia Nitrogen	mg/L	1.04	3.84	0.41
Organic Nitrogen	mg/L	1.13	1.83	0.70
Nitrate Nitrogen	mg/L	2.99	3.62	2.39
Nitrite Nitrogen	mg/L	0.034	0.069	<0.03
Fluoride	mg/L	0.27	0.29	0.23
Boron	mg/L	0.686	0.774	0.581
Cyanide	mg/L	0.0028	0.0038	0.0016
Chloride	mg/L	146	153	140
Sulfate	mg/L	128	168	112
Total Hardness	mg/L	244	321	202
Antimony	µg/L	0.49	0.60	0.40
Arsenic	µg/L	1.56	1.66	1.45
Barium	µg/L	32.0	40.5	25.5
Beryllium	µg/L	<0.25	<0.25	<0.25
Cadmium	µg/L	0.42	1.41	0.08
Total Chromium	µg/L	0.33	0.45	0.26
Hexavalent Chromium	mg/L	0.0034	0.0047	0.0013
Copper	µg/L	7.16	13.90	5.73
Iron	mg/L	<0.09	<0.20	0.008
Lead	µg/L	0.24	0.31	0.18
Mercury	µg/L	0.0027	0.0126	0.0005
Nickel	µg/L	1.31	1.61	1.16
Selenium	µg/L	0.53	0.63	0.34
Silver	µg/L	<0.18	<0.25	0.02
Thallium	µg/L	<0.25	<0.25	<0.25
Zinc	µg/L	67.5	77.0	59.0
Detergents (MBAS)	mg/L	<0.10	0.10	<0.10
Oil and Grease	mg/L	<4.8	<5.0	<4.0

### LONG BEACH WATER DEPARTMENT

Phase 1 was completed in 1980 at a cost of \$280,000. It consisted of a 200 HP, 2,500 gallon per minute (gpm) pump station, and 1,500 feet of 12-inch line that served the 285 acre El Dorado Park West and Golf Course.

Phase 2 made use of a previously constructed, but never used, 21-inch line between the Long Beach WRP and the Island White oil pumping facility in Long Beach Harbor. Recycled water travels through the 21-inch steel concrete-cylinder transmission line that runs south along Studebaker Road, west on Atherton Street, south on Clark Avenue, west on Anaheim Street, and then south on Park Avenue. At the intersection of Park Avenue and 11th Street, the 21-inch line turns west again, then south on Obispo Lane on its way to Island White. The line was capped at Obispo and 2<sup>nd</sup> Street. This line was built in 1970 by the THUMS group (Texaco, Humboldt, Union, Mobil, and Shell) in the hope of using recycled water from the then under-construction Long Beach WRP to repressurize the oil-bearing zones that were being depleted. This project did not proceed at that time and the THUMS group deeded ownership of the pipeline to the city. In 1982, 520 feet of 12-inch line was installed to deliver recycled water to the 184-acre Recreation Park and Golf Course, at a cost of \$50,000. Additional sites were added along the 21-inch line in 1983 (Whaley Park), 1984 (405 Freeway), and 1985 (California State University, Long Beach).

Phase 3 was completed in 1983 at a total cost of \$2,560,000. It consisted of a 750 HP, 8,500 gpm pump station (five variable speed, vertical turbine pumps producing 95 psi, with capacity for a sixth pump) connected to the adjacent Long Beach WRP effluent forebay through a 36-inch line, 25,685 feet of 20-inch pipe, and 4,130 feet of 12-inch pipe. The 20-inch main line runs north along the east bank of the San Gabriel River. Just south of Carson Street, the pipeline turns west and runs through a siphon under the river, then along Parkcrest Street. At Clark Avenue, the pipeline reduces to 12-inches, turns south and terminates at Wardlow Road. This expansion delivered recycled water to a total of 808 acres at El Dorado Park East, the Nature Center, the 605 Freeway from Carson Street to Willow Street, Kitano Nursery (out of business), DeMille Junior High School, Heartwell Golf Park, Heartwell Park, Long Beach City College, Veterans' Memorial Stadium, Douglas Park, and Skylinks Golf Course. In 1983, the 200 HP 2,100 gpm pump located in El Dorado Park West was relocated to a spot next to the lake in El Dorado Park East where it serves to supply lake water to the recycled water system when recycled water may be unavailable. Sunrise Growers Nursery (now Jauregui Nursery), the former Long Beach Naval Hospital (now the site of the Long Beach Towne Centre), and Lakewood 1<sup>st</sup> Presbyterian Church were added to this phase in later years.

Phase 4 was completed in 1986 and consisted of 3,760 feet of 8-inch pipe and 2,350 feet of 6-inch pipe at a cost of \$410,000. At Park Avenue and 11<sup>th</sup> Street, an 8-inch steel line was connected to the 21-inch transmission line that had been built to serve the THUMS project. The 8-inch line runs south along Park Avenue, through Woodlands Park, then east along 6<sup>th</sup> Street, reducing to a 6-inches after serving the Recreation 9-Hole Golf Course. The 6-inch line turns south on Monrovia Avenue and terminates at the northern boundary of Marina Vista Park. This expansion delivered recycled water to a total of 84 acres at the Lawn Bowling Green and Blair Field in Recreation Park, Woodlands Park, Recreation 9-Hole Golf Course, Colorado Lagoon Park, and Marina Vista Park.

Phase 5 was completed in the first half of 1989 at a cost of \$3,980,000. It consisted of 4,820 feet of 20-inch pipe, 5,917 feet of 14-inch pipe, 12,364 feet of 12-inch pipe, and 1,857 feet of 8-inch pipe. Also included in this project was a four pump, 500 HP, 105 psi, 3,000 gpm pump station at the south lake of the Lakewood Golf Course that had supplied recycled water, stored in the lake during the day peak supply period, to the distribution system during the peak nighttime demand period. From the end of the 20-inch Stage 3 line in Long Beach City College, a 20-inch ductile iron pipe (DIP) runs 300 feet north, where it turns west on Carson Street,

and continues to the South Lake pumping plant. A 16-inch DIP continues westerly from the pumping plant along Carson Street, reducing to 14-inches. At Gardenia Avenue, the pipe turns north and runs to 45<sup>th</sup> Street where it reduces to 12-inches. The 12-inch line continues westerly along 45<sup>th</sup> Street, then north on Falcon Avenue, then southwest on San Antonio Drive, then northwest on East Goldfield Avenue, then southwest on 45<sup>th</sup> Way, then north on California Avenue, then west on 46<sup>th</sup> Street to its terminus at the Virginia Country Club. This expansion delivered recycled water to Lakewood Golf Course, Virginia Country Club, Cherry Avenue Park, Scherer Park, Sunnyside Memorial Park, and All Souls' Cemetery.

The North Long Beach extension of Phase 5 was completed at the beginning of 1992 at a total cost of \$627,000, extending recycled water service to Somerset Park, Reservoir Park, Burroughs Elementary, Hughes Middle and Longfellow Elementary Schools, the LBWD Service Center, and the 405 Freeway at Walnut. This project connected to the 14-inch line at the intersection of Carson Street and Gardenia Avenue with a 14-inch tapping sleeve expanding to a 20-inch DIP. This 20-inch line runs 375 feet south to Marshall Place where it turns west and runs 666 feet along Marshall Place to a T-section at Gaviota Avenue. This line turns south again from the T-section and runs 4,586 feet along Gaviota Avenue to Wardlow Road. The line turns west again and runs 318 feet along Wardlow Road to Walnut Avenue where it terminates in a T-section. From this T-section, an 8-inch DIP line runs south along Walnut Avenue 1,470 feet to the 405 Freeway where it terminates in a 3-inch service for use by the California Department of Transportation. Approximately midway along this final stretch of pipe, at 33<sup>rd</sup> Street, a 2-inch service runs to the LBWD Service Center. In addition, several smaller lines branch off the main distribution line:

- At the intersection of Marshall Place and Gaviota Avenue, a 6-inch DIP line branches off the T-section and runs 319 feet west to Walnut Avenue where it terminates in a T-section. From this point, the 6-inch line continues north another 140 feet where it terminates at a 4-inch service to Somerset Park.
- At the intersection of Gaviota Avenue and Bixby Road there is a T-section, from where an 8-inch DIP runs 2,076 feet west to a point just beyond Cerritos Avenue where it supplies a 4-inch service to Hughes Junior High School. The 8-inch line continues west to Myrtle Avenue where it terminates in a 2-inch service to Longfellow Elementary School.
- At the intersection of Gaviota Avenue and Wardlow Road, a 6-inch DIP branches off a T-section and runs 427 feet east to a point just past Rose Avenue where it terminates in a two more 2-inch services to the LBWD Service Center.
- At the intersection of Walnut Avenue and 33<sup>rd</sup> Street, a 6-inch DIP branches off and runs 1,289 feet west into the City of Signal Hill and to a 3-inch service to Burroughs Elementary School, where it terminates. In addition, the 6-inch lateral has a 6-inch T-section at Brayton Avenue that extends north 135 feet and terminates in a 4-inch service to Reservoir Park.

Recycled water service for use in repressurization of the oil-bearing strata, initially constructed in 1971, was restored to the THUMS project on Island White in June 1995. After recycled water is delivered to the island, it is treated similarly to the potable water supplies: oxygen removal, polymer coagulation, and 5- and 10-micron filtration. Results indicate that the recycled water can be treated to achieve desirable injection qualities and that no negative effects of recycled water use have been detected in the oil extraction wells or the re-injection wells.

Recycled water service was extended to the common areas of the El Dorado Lakes Condominiums in August 1998. From the 20-inch main line running north along the San Gabriel River, an 8-inch DIP branches off and runs east for 2,114 feet along Spring Street. This line reduces to a 4-inch DIP which runs for another 1,704 feet to the condominiums located on the east side of the 605 Freeway.



The recycled water system was extended again as LBWD began implementing its Master Plan with the completion of Phase 1A in June 1999 at a cost of \$1.4 million. LBWD's potable water tanks nos. 22 and 23 on Alamitos Hill were converted to recycled water storage. Each tank has its own new 20-inch discharge line connecting to a 36-inch DIP that runs north for 263 feet, then west for 281 feet along 20<sup>th</sup> Street to a T-section at Redondo Avenue. The north side of this T-section on Redondo serves a 24-inch line which was constructed in 2000 as Phase 1B. A 24-inch DIP continues westerly along 20<sup>th</sup> Street for 939 feet to a T-section at Obispo Lane. The line turns south on Obispo and runs for 4,645 feet, where it terminates in a new T-section installed in the existing 21-inch recycled water line on 11<sup>th</sup> Street. Along Obispo, 45 feet of 6-inch DIP branches off and runs east along 14<sup>th</sup> Street, allowing for future expansion and customer connections.



### CITY OF CERRITOS

A 14,800 gpm pump station next to the north side of the Los Coyotes WRP effluent forebay delivers recycled water to reuse sites through 142,600 feet of pipe that loops through the city. Provisions were made so that neighboring cities could connect to this distribution system sometime in the future and make use of the ultimate system capacity of 4,000 AFY.

The pump station discharges into a 30-inch cement mortar-lined and coated steel line which branches into two, 24-inch concrete cylinder pipelines. One of these lines runs east through the north part of the city, while the other turns south along the San Gabriel River. The two lines ultimately meet and form a loop in the distribution system. Pipes greater than 12-inches are cement mortar-lined and coated steel, and the 4- to 10-inch pipes are PVC.

The 24-inch main line serving the northern part of the city runs east from the WRP past the Ironwood 9 Golf Course, then continues east under the 605 Freeway and along 166<sup>th</sup> Street. At Studebaker Road, a 6-inch line runs north to Cerritos College, and an 8-inch line runs south to Gahr High School. At the school, the line branches into a 4-inch line running north to the 91 Freeway, and a 6-inch line running to the Artesia Cemetery. The 24-inch northern line reduces to 20-inches at 166<sup>th</sup> Street and Studebaker, then continues east along 166<sup>th</sup> through the City of Norwalk. This line branches into two 16-inch lines at the intersection of 166<sup>th</sup> and Norwalk Boulevard.

- One 16-inch line runs south along Norwalk Boulevard to form the west side of a smaller loop in the distribution system. At Artesia Boulevard, a 6-inch line branches off and runs west to Juarez Elementary School and two sections of the 91 Freeway on Pioneer Boulevard. The 16-inch line turns east on Artesia and runs to Barnhill Avenue where a short 4-inch line branches off and runs south to Kennedy Elementary School and Loma Park. At this point, the 16-inch line reduces to 14-inches and continues east on Artesia to Bloomfield Avenue before it continues south. At Bloomfield and 183<sup>rd</sup> Street, a 6-inch line branches off the 14-inch line and runs west to Cerritos High School. It reduces to a 4-inch line before continuing west to Elliot Elementary School where it terminates. Also at Bloomfield and 183<sup>rd</sup>, an 8-inch line runs east to Dina Place where it connects with a 10-inch line from the east half of the loop (described below). Also at this point, a short 6-inch line branches off and runs south to Heritage Park.
- The second 16-inch line at Norwalk and 166<sup>th</sup> continues east. At Elm Park Drive, a 4-inch line runs north to Satellite Park, and the 16-inch line reduces to 14-inches before continuing east. At Bloomfield, a 6-inch line runs south to serve Frontier Park, Wittman Elementary School and a section of the 91 Freeway. The 14-inch line continues east to Carmenita Road, where a 6-inch line continues east along 166<sup>th</sup> into Carmenita Junior High School and then to Carmenita Park. A 4-inch line branches off the 6-inch line south on Stowers Avenue to Park Street, then east to Gonsalves Elementary School where it terminates. The 14-inch line on 166<sup>th</sup> reduces to 10-inches and turns south on Carmenita, forming the east side of the smaller loop. An 8-inch line branches off at Red Plum Street to City Park East at Ironbark Drive where it terminates. The 10-inch line also reduces to 8-inches at this point and it continues south toward Artesia Boulevard, at which point two 4-inch lines branch to the west and east to Saddleback Park and Friendship Park, respectively. When the 8-inch line on Carmenita reaches 183<sup>rd</sup>, a 6-inch line branches off and runs east then south on Stowers Avenue to Cerritos Elementary School, Rainbow Park and Bettencort Park. Also from the 8-inch line at Carmenita and 183<sup>rd</sup>, a 10-inch line runs west on 183<sup>rd</sup>, then runs south under the freeway to Brookhaven Street. At this point, a 4-inch line branches off southeast to serve another section of the 91

Freeway, and a second 4-inch line branches off to Brookhaven Park. At the intersection of Shoemaker and 183<sup>rd</sup>, the southern branch of the main loop (the second 24-inch line leaving the WRP) connects with the northern branch to complete the system.

From the WRP, the second 24-inch transmission line runs south along the San Gabriel River. At 183<sup>rd</sup>, a 6-inch line branches east through an Edison easement to the Bellflower Christian School and a section of the 605 Freeway. At South Street, a short 12-inch line branches off west past Westgate Park, providing a connection point for the City of Lakewood.

Approximately 1,000 feet south of 195<sup>th</sup> Street, the 24-inch line branches off into a 10-inch line to the south to provide a connection point for the City of Lakewood, and a 20-inch line to the east that follows a Southern California Edison (SCE) right-of-way. The 20-inch line passes the Orange County nursery and the SCE-operated nursery and at Gridley Road, a 4-inch line branches off north to Bragg Elementary School. At Pioneer Boulevard, a 6-inch line branches off south to Cabrillo Lane Elementary School. At Jacob Street, a 6-inch line branches off north to Pat Nixon Elementary School. At Norwalk Boulevard, a 6-inch line branches off south to provide the third connection point for Lakewood.

At Norwalk Boulevard, the 20-inch line reduces to 16-inches and continues east to Bloomfield, where it enters Cerritos Regional County Park. The 16-inch line reduces to 8-inches (with a 16-inch stub out for future connections to other municipalities) and curves north onto Shoemaker. A 4-inch line at Espinheira Drive branches off to Sunshine Park, and a 4-inch line at Droxford Street branches off to Leal Elementary School. The 8-inch line connects with the rest of the transmission system loop at the intersection of Shoemaker and 183<sup>rd</sup>.

## CITY OF LAKEWOOD

The City of Cerritos provided three stub-out locations on one of its 24-inch concrete mortar lined and coated steel distribution lines for connections to the City of Lakewood. Each of these stub-out locations is within the City of Lakewood. A 12-inch stub-out connection is located on South Street, on the west side of the San Gabriel River, and consists of two, 6-inch meters in a manifold structure with isolation valves. A 10-inch stub-out connection is located across Del Amo Boulevard into River Park, approximately 40 feet west of Studebaker Avenue and consists of a single, 6-inch meter. A 6-inch stub-out is located on Norwalk Boulevard, just south of Del Amo Boulevard and approximately 70 feet south of the City of Lakewood boundary. This last stub-out is not in use and currently there are no future plans for it.

From the first stub-out location on South Street, a 12-inch PVC line runs west for approximately 4,300 feet to a T-section at Woodruff Avenue. From this T-section, a 10-inch PVC line continues west along South Street for approximately 4,300 feet, ending in a T-section at the Los Cerritos Drainage Channel. There are smaller connections branching off the 10- and 12-inch transmission lines on South Street.

- Approximately 550 feet east of Woodruff Avenue, the 12-inch PVC line along South Street branches at a T-section to a 6-inch PVC line. This line follows Spahn Avenue north, turning west at Edgefield Street and continuing for approximately 410 feet until it reaches Woodruff Avenue. At Woodruff, the 6-inch line heads north for approximately 1,200 feet along Woodruff. There are two, 2-inch connections to parkway irrigation systems along this 6-inch line. A 4-inch connection approximately 600 feet north of Edgefield Street runs approximately 100 feet west to serve St. Joseph's Parish School. Approximately 120 feet north of Arabella Street, the 6-inch line connects to a 4-inch line serving Mayfair High School and Lindstrom Elementary School.
- Along the 12-inch PVC line on South Street there are five, 2-inch connections to parkway irrigation systems east of Woodruff. Approximately 1,700 feet east of Woodruff, 12-inch PVC line is flanged underground to 12-inch ductile iron pipe on either side of the Palo Verde storm drain. The iron pipe then runs above ground to be suspended over the 14-foot wide channel, with air release valves on either side of the channel.
- A 10-inch PVC line branches off the T-section on South Street at Woodruff and runs south along Woodruff approximately 6,800 feet, terminating in a T-section at Centralia Street. A 6-inch PVC line branches from the T-section at Centralia and runs west along Centralia to just past Eastbrook Avenue, where it turns south and feeds a 4-inch connection serving Lakewood High School. There is a 4-inch connection approximately 800 feet south of Arbor Road, to service Del Valle Park. From this 4-inch line there is also a 2-inch connection to service parkway irrigation systems. A 4-inch PVC line branches off a T-section at Arbor. The 4-inch line runs west along Arbor, ending just before Radnor Avenue with a 4-inch service connection to the City of Lakewood Water Yard. Another 4-inch PVC line branches off a T-section at Dashwood Street. The line runs west along Dashwood, ending in a 4-inch connection on the west side of Ocana Avenue to service San Martin Park. There are six, 2-inch connections to parkway irrigation systems from the 10-inch PVC line along Woodruff Avenue.
- Along the 10-inch PVC line on South Street (west of Woodruff), there are five 2-inch connections to parkway irrigation systems and one 4-inch PVC line approximately 570 feet east of the Los Cerritos Channel serving Foster Elementary School.

- A 6-inch PVC line branches off the T-section on South Street at Fidler Avenue at a 45-degree angle. The 6-inch line crosses Fidler at an angle until it reaches the edge of Mayfair Park. From there, the line turns directly south and follows the park's eastern boundary until it reaches Bigelow Street. A 4-inch line branches from a T-section at Bigelow and crosses over the Los Cerritos Channel. This 4-inch line serves the west side of Mayfair Park. From the T-section at Bigelow, a 6-inch line branches off at a 45-degree angle. The line heads southwest until it reaches the south end of Mayfair Park where it then heads directly south along the east side of the channel. At Candlewood Street, the 6-inch line ends with a T-section. From here, a 2-inch PVC line runs south to the Civic Center and a 6-inch line runs west crossing the channel. The line is flanged underground on either side of the channel to 6-inch ductile iron that runs aboveground to be suspended under a footbridge over the channel. After crossing the channel, the 6-inch line terminates in a T-section, from which a second 2-inch PVC line runs south to serve the Civic Center.

From the second stub-out location on Del Amo Boulevard, a 6-inch PVC line branches from a T-section and runs approximately 640 feet west terminating in a T-section at Mae Boyer Park. Another 10-inch PVC line branches from the T-section at the connection point, running south along the east side of the San Gabriel River channel for approximately 2,000 feet and ending with a 4-inch service connection to the River Park pump station. There are several smaller connections branching off the 6-inch and 10-inch transmission lines from the second connection point to the system.

- Approximately 1,200 feet south of Del Amo, a 4-inch PVC line branches from the 10-inch line on the east side of the San Gabriel River. The line runs approximately 490 feet east, terminating at a T-section with a 2-inch service connection to Rynerson Park.
- A 4-inch PVC line branches from the 6-inch line at a T-section located on the west side of the San Gabriel River. The 4-inch line runs approximately 1,400 feet south, then turns west through the city yard for approximately 280 feet, then south to Monte Verde Park.
- From the T-section at Mae Boyer Park, 4-inch lines run 85 feet under Del Amo to either side of the road. These 4-inch lines feed service connections to Mae Boyer Park that is on both the north and south sides of Del Amo.

## CENTRAL BASIN MWD - CENTURY SYSTEM

Construction of Phase I of the Century Reclamation Program began in March 1991 and was completed in February 1992. The facilities in this phase consist of the 30-inch concrete mortar-lined and coated steel “backbone” pipeline from the Los Coyotes WRP that crosses over the San Gabriel River and runs 18,900 feet north along the western bank to a point north of Firestone Boulevard, where the outfall from the San Jose Creek WRP discharges into the San Gabriel River. At this point, the line reduces to a 24-inch concrete mortar-lined and coated steel line that continues northerly another 4,200 feet to Florence Avenue, then easterly 2,227 feet to Fairview Avenue, where it runs 314 feet to Dollison Drive. The line then follows Dollison southeasterly for 1,614 feet to Buell Street, where it crosses under the Santa Ana (5) Freeway to Orr & Day Road. The line runs north on Orr & Day for 823 feet back to Florence, then easterly for 1,335 feet to Jersey Avenue where it terminates. Several 6- and 8-inch PVC lines branch off the large diameter transmission lines at various points.

- At a point just south of Compton Boulevard, an 8-inch PVC line branches off the 30-inch line and runs northwesterly for 459 feet to Compton, where it continues westerly for 1,456 feet to its terminus at Bellflower High School. A 6-inch PVC line branches off this line at McNab Avenue and runs northerly for 929 feet.
- At a point just north of Columbus High School, another 8-inch PVC line branches off the 30-inch line and runs westerly for 1,461 feet through an easement to Woodruff Avenue, where it turns south and runs 159 feet to Everest Street. This line runs westerly for 662 feet to Benedict Avenue, then another 706 feet through Gauldin School to its terminus on Dunrobin Avenue at Independence Park.
- At a point north of Firestone Boulevard, a 6-inch PVC line branches off the 30-inch line and runs westerly for 1,190 feet through the Rio San Gabriel Park parking lot to Newville Avenue, where it turns north and runs northerly for 546 feet to La Villa Street. The line then runs westerly for 561 feet to Pangborn Avenue, where it turns north and runs for 736 feet to Buell Street. The line runs westerly for 272 feet to its terminus at Casanes Avenue.
- From the 24-inch line on Florence Avenue, a 6-inch PVC line branches off at Little Lake Road and runs southerly for 1,200 feet to its terminus at Little Lake Park and School.
- At the end of the 24-inch line at Florence and Jersey Avenue, an 8-inch PVC line runs north on along an easement for 1,389 feet back to Jersey, then another 3,000 feet to Joslin Avenue. This line then runs westerly along Joslin for 37 feet and easterly for 307 feet to its terminus at Fallon Avenue.

In 2007, The City of Downey constructed additional pipelines connecting to the existing CBMWD distribution system at two points: on the 8-inch line on Dunrobin Avenue at Independence Park, and on another 8-inch line on Lakewood Boulevard at Donovan Street (see Construction Schedule 2 of Phase II below).

From the connection point on Lakewood Boulevard, a 12-inch line runs northeasterly along Lakewood for approximately 8,526 feet to its termination point at 5<sup>th</sup> Avenue. Three smaller lines branch off of this 12-inch line:

- At Firestone Boulevard, a 4-inch line runs west approximately 273 feet to its termination at Nash Avenue.

- At Stewart & Gray Road, an 8-inch line runs east for approximately 1,113 feet to a T-section at Bellflower Boulevard, then easterly for another 1,245 feet to its termination at a point just east of Coldbrook Avenue.
- At Clark Avenue, an 8-inch line runs south along Clark for approximately 353 feet to a newly constructed portion of Congressman Steve Horn Way, where it turns east and continues for 2,829 feet to Bellflower Boulevard. There is a T-section at Steve Horn Way and Bellflower where two more 8-inch lines branch off. The first line runs north along Bellflower for approximately 2,580 feet to Stewart & Gray Road where it connects to the T-section on the previously described 8-inch line in this street. The second line continues east for approximately 1,530 feet along Steve Horn Way and through Independence Park where it connects to the existing CBMWD distribution system on Dunrobin Avenue.

Construction of Phase II began in March 1992 and was completed in June 1993. Four construction “schedules” provided for several pipelines to branch off the main 30-inch and 24-inch Phase I line.

**Schedule 1:** From the end of the 24-inch Phase I line in the City of Santa Fe Springs at Florence and Jersey, the Phase II 24-inch line continues east for 6,724 feet to Bloomfield Avenue, where it terminates in a 4-way X-section. From this point, the 24-inch line runs southerly for 1,328 feet to Lakeland Road, then easterly for 1,745 feet to Greenstone Avenue, where it terminates in a T-section. At this point, a 16-inch PVC pipe branches off and runs southerly for 3,974 feet to Sunshine Avenue, then easterly for 898 feet to Shoemaker Avenue, then southerly for 1,415 feet to Leffingwell Avenue where the line jogs to the west into an easement parallel to Shoemaker. The 16-inch line then continues southerly for 1,660 feet to a point just south of the AT&SF railroad right-of-way where Shoemaker begins again. The line continues southerly along Shoemaker for 4,962 feet until it reaches Firestone Boulevard where the line turns southeasterly and runs approximately 2,700 feet to Excelsior Drive. At this point, the line continues east along Excelsior for approximately 3,065 feet until the dead-end at Marquardt Avenue. The 16-inch line then follows a storm drain easement easterly for 630 feet, where it was jacked under the Coyote Creek channel. On the east side of the channel, the line turns south and runs along the channel levee for 914 feet, then runs easterly for 511 feet to its terminus at Bona Vista Avenue. At this point, an 8-inch PVC line branches off south along Bona Vista for 283 feet to the end of the cul-de-sac. There are several other lines that branch off the 24- and 16-inch main line in this schedule.

- From the 24-inch line on Florence Avenue, a 6-inch PVC line branches off at Fulton Wells Avenue (between Pioneer and Norwalk) and runs southerly for 422 feet to Lakeland Road, where it turns west and runs for another 522 feet to its terminus at Zeus Avenue.
- As the 16-inch line proceeds southwesterly along Firestone Boulevard, a 6-inch PVC line branches off at Dinard Avenue and runs 805 feet north to Mapledale Street, where it turns easterly and runs another 345 feet to its terminus just east of Cabrillo Avenue.
- At the intersection of Excelsior Drive and Marquardt Avenue, a 6-inch PVC line branches off the 16-inch line and runs south along Marquardt for 767 feet to its terminus.
- At the four-way X-section at Florence Avenue and Bloomfield Avenue, an 8-inch PVC line branches off the 24-inch line and runs south along Bloomfield for 1,370 feet to its terminus at Lakeland Avenue. This line was constructed by the City of Santa Fe Springs in 2008.

**Schedule 2:** This portion of the recycled water system branches off to the east and west from the 30-inch line at Foster Road. The east section begins as a 12-inch cement mortar-lined and coated steel pipe connected to the 30-inch line on the west side of the San Gabriel River, just north of Foster Road. This line crosses the river along the Foster Road Bikeway, then runs southerly back to Foster Road where it turns east again into the City of Norwalk. At Dalwood Avenue, a 6-inch PVC line branches off and runs approximately 890 feet south to



Leffingwell Road where it terminates. The 12-inch line on Foster continues east approximately 6,580 feet to a T-section at McRae Avenue. From this point, one branch of the Tee, a 6-inch PVC line, runs northerly along McRae for approximately 1,255 feet until it terminates at Ratliffe Street. From the T-section at Foster and McRae, a 12-inch steel line runs southerly to Leffingwell, then east to Gard Avenue where a T-section was installed. The 6-inch line on Leffingwell continues east for another 630 feet until it terminates just east of Maidstone. From the T-section at Leffingwell and Gard, a 6-inch PVC line runs southerly 1,390 feet along Gard to Taddy Street where it turns west and runs 1,150 feet to Harvest Avenue where it turns south. The 6-inch line runs 2,495 feet along Harvest to Mapledale Street where a T-section branches to the east and west. From this point, a 6-inch PVC line runs westerly along Mapledale to Graystone Avenue where it turns south and runs 595 feet to its terminus at Sibley Street. Also, from the Tee at Harvest and Mapledale, another 6-inch line runs easterly approximately 1,757 feet to Jersey. This line turns south and runs 1,424 feet until it ends at Excelsior Drive.

The west section also begins as a 12-inch cement mortar-lined and coated steel pipe connected to the 30-inch line on the west side of the San Gabriel River, just south of Foster Road. This line jogs back onto Foster and runs westerly along this road, which forms the boundary between the cities of Downey and Bellflower. This line runs for approximately 10,000 feet to Lakewood Boulevard where it turns north and reduces to 8 inches. The 8-inch line runs approximately 3,310 feet along Lakewood until it terminates at Meadow Road, just north of Imperial Highway. Two other lines branch off the 12-inch line along Foster at Bellflower Boulevard.

- A 6-inch PVC line comes off a T-section in the middle of the intersection of Foster and Bellflower and runs southerly for approximately 1,360 feet until it terminates just south of Arthurdale Street.
- A second 6-inch PVC line comes off a T-section just to the west of the first T-section on Bellflower and Foster and runs northerly for 942 feet until it terminates near Angell Street.

**Schedule 3:** In the City of Bellflower, a 24-inch line connects to the 30-inch main line just after it crosses the San Gabriel River from the Los Coyotes WRP. This line runs westerly for approximately 1,530 feet along Flora Vista Street to an existing Metropolitan Transportation Authority (MTA) right-of-way. At this point the line runs northwesterly toward the Los Angeles River for approximately 20,886 feet. At this point, an 8-inch branch runs southerly along an SCE right-of-way (just west of Texaco Avenue) to Alondra Boulevard. The 24-inch line turns north and follows the SCE right-of-way for 1,660 feet to Cortland Avenue, where it runs west for 325 feet to Orange Avenue. The line then runs north on Orange for 1,318 feet to Century Boulevard where a T-section was installed. From this point, the 24-inch line runs westerly along Century to the Los Angeles River, where it was jacked under the river and the Long Beach (710) Freeway. This line terminates just to the west of the freeway for connection to Construction Schedule 4 (detailed below) at Martin Luther King Jr. Boulevard. From the T-section on Century, the line reduces to a 16-inch pipe that runs northeasterly 365 feet back to the SCE right-of-way, where the line runs northerly then northeasterly for 14,221 feet to Rio Hondo Drive. The 16-inch line continues northeast along this street for 1,120 feet to the end of the cul-de-sac. At this point, the line crosses over to the Rio Hondo channel and continues northeast for 1,663 feet along the flood channel's east side levee. The line reduces to 8-inches and uses an existing footbridge to cross the Rio Hondo channel where it terminates at John Anson Ford Park in the City of Bell Gardens. There are several other lines that branch off the 24- and 16-inch main line in this schedule.

- A 16-inch cement-coated and lined pipe branches off the 24-inch line running along the MTA right-of-way (located just west of the intersection of Somerset Boulevard and Hayter Avenue) and runs southerly along Los Angeles Department of Water and Power (LADWP) right-of-way for 4,966 feet to a point just north of Flower Street.
- At the point where the 24-inch line ends within the MTA right-of-way and moves into the SCE right-of-way, the 8-inch line (previously mentioned) runs southerly for 4,429 feet along the east side of the SCE right-of-way by Texaco Avenue where a T-section was installed at San Luis Street. At this

point a 6-inch line continues to Somerset Boulevard where it turns west for 363 feet to the west side of the SCE right-of-way. The 6-inch line continues southerly for 2,625 feet to the south side of Alondra Boulevard where it terminates in a T-section.

- From the 8-inch line, another 6-inch PVC line branches off just north of Exeter Street and runs westerly for 584 feet to Gundry Avenue, where it turns north and runs for 1,645 feet to its terminus at San Rafael Street.
- At the T-section at San Luis Street, an 8-inch line crosses the SCE right-of-way westerly, continuing along San Luis Street for 3,262 feet to San Antonio Avenue where another T-section was installed. The 8-inch line continues southerly for 350 feet along San Antonio to Somerset Boulevard, where the line turns westerly and runs for 330 feet to its terminus at the Los Angeles River.
- From the T-section at San Luis and San Antonio, a 4-inch PVC line runs westerly along San Luis for 380 feet to its terminus at Banana Park. A 6-inch PVC line branches off the 8-inch line on San Luis at San Jose Avenue (east of San Antonio) and runs southerly for 1,066 feet to Mark Keppel Street where it terminates in a T-section. From this point, a 6-inch line runs 70 feet to the west and 235 feet to the east.
- Farther north along the 16-inch line in the SCE right-of-way, a 6-inch PVC line branches off at Southern Avenue, which becomes Stewart & Gray Road, and runs easterly for 1,135 feet to Pernell Avenue. The 6-inch line turns south and runs 256 feet to Cole Street, where it turns east for 174 feet back to Pernell Avenue. The line turns south and runs 384 feet to the Los Amigos Country Club, where the line runs easterly another 651 feet to its terminus.
- Also along the 16-inch line in the SCE right-of-way, another 6-inch PVC line branches off at Garfield Avenue and runs southerly for 1,600 feet to its terminus in a public alley south of Burntwood Street.
- The Bell Gardens Extension was completed in July 1995, and was connected to the 8-inch line that terminated in John Anson Ford Park. A diecentric reducer was installed to allow for a 16-inch line to be connected. The 16-inch line then runs 663 feet north through the park to Scout Avenue, where it turns east. The line continues along Scout, which changes to Park Lane, for 1,775 feet to its terminus at Garfield Avenue.

**Schedule 4:** A 24-inch cement-lined and coated steel pipe was connected to the 24-inch Schedule 3 line that terminated just west of the 710 Freeway. This line runs westerly for 505 feet along Martin Luther King Jr. Blvd. to a T-section at Wright Road, where two sections of pipeline run to the north and south. The north section begins with a 12-inch line that runs north for approximately 4,335 feet along Wright to Duncan Avenue, where both Wright and the 12-inch line turn north. This line runs for another 3,850 feet to Atlantic Avenue, where the line turns northeast and runs 338 feet to a T-section at Tweedy Boulevard, then west for 92 feet to its terminus.

The south section begins with an 8-inch line from the T-section at Wright and Martin Luther King Jr. and runs south for 5,538 feet along Wright to McMillan Street. At this point, the line turns west and runs for 800 feet to Gibson Avenue, where it turns south and runs for 1,039 feet to a T-section at San Rafael Street. From this point, the line reduces to a 6-inch pipe and runs easterly for 682 feet along San Rafael to its terminus at the 710 Freeway.

In 2008, The City of Lynwood connected an extension to the 8-inch line along the southerly section of the line on Wright. An 8-inch PVC line runs westerly for 981 feet along Josephine Street to its termination point at Virginia Avenue where it will serve the relocated Ham Park.

**WALNUT VALLEY WATER DISTRICT**

A 3,500 gpm pump station and an 8,000 gallon wet well was constructed at the intersection of Valley Blvd. and Grand Avenue, at the end of the 21-inch concrete gravity line from the Pomona WRP. At the pump station, a smaller, 500 gpm booster pump and hydro-pneumatic system supplies a 12-inch PVC pipe which runs north along Grand Avenue to Snow Creek Drive where it reduces to an 8-inch PVC pipe. The 8-inch line continues north from Snow Creek to Amar Road where it turns west and terminates just before Lemon Avenue. An 8-inch AC line branches off the 12-inch PVC line at Snow Creek and Grand and runs east, reducing to a 6-inch PVC line at La Puente Road and terminating east of Rodeo Way. A 6-inch AC line branches off from the 8-inch AC line at La Puente where it runs north before terminating just south of Bridgewater Lane.

From the pump station, a 20-inch cement mortar-lined and coated steel pipe runs west along Valley Boulevard to Fairway Avenue, where it turns south. This line continues to Colima Road, then south again along Brea Canyon Cutoff Road, where it terminates at the storage reservoirs located at Oakleaf Canyon Road. Several smaller transmission lines branch off the 20-inch main transmission line.

- A 6-inch PVC line branches off the main line on Valley Boulevard at Somerset Drive to serve the Walnut Ridge housing tract.
- An 8-inch PVC line branches off the main line on Valley and Pierre Avenue. This line runs north on Pierre to Puente Avenue, where it reduces to a 6-inch PVC line. The 6-inch line continues east on Puente, then north on Suzanne Road where it terminates just south of Fuerte Drive.
- A 6-inch PVC line branches off the main line at Valley and Lemon Avenue, running north to Vejar Road where it splits into 6-inch PVC lines running east and west. The line continues north on Lemon and terminates north of La Puente Road. The west line turns north through an easement, then continues west on Avenida Deseo, then south on Avenida Alipaz, where it terminates at Calle Baja. The east line continues along Vejar to its termination just east of Scherer Avenue.
- At the point where the 20-inch main line turns south off of Valley and onto Fairway, a 12-inch PVC line branches off and continues west along Valley to Nogales Street, where it reduces to 8-inches. The line terminates at a T-section at Trafalgar Avenue, allowing for future expansion. Several smaller lines branch off this section of the distribution system. A 6-inch PVC line branches off at Valley and Sentous Street, where it runs north to Hollingworth Street. From this point, three 6-inch lines branch off for short distances to serve users located to the east, west and north. A 12-inch PVC line branches off at Valley and Nogales Street, where it runs north to its terminus just before La Puente Avenue. In addition to serving Nogales High School, this line allows for possible future service into the City of West Covina. A 6-inch PVC line continues north from the T-section at Valley and Trafalgar, then east on Rorimer Street and north on Deepmead Avenue to its terminus at Sunshine Park.
- Another 12-inch PVC line branches off the line on Fairway, running west along Colima Road to Otterbein Avenue, where it reduces to 8-inches that terminates at Shabarum Regional County Park, just before Azusa Avenue. Several smaller lines branch off this section of the distribution system. A 6-inch PVC line branches off the 12-inch line, running 795 feet north along Bandida Avenue to its terminus at Rowland Regional County Park. Two 6-inch PVC lines branch off the 12-inch line at the intersection of Colima and Otterbein. The first line runs north to Addis Street, while the second runs south along Otterbein, then west along Killian Street, then south on Lerona Avenue. An 8-inch PVC line branches off the 12-inch line, running south along Fullerton Road to a T-section at Galatina

Street. One end of the T-section is blind-flanged, while a 6-inch PVC line runs east through an easement, then continuing along Galatina. This line then runs north on Cantaria Avenue, east on Farjardo Street to its terminus just before Los Padres Drive. Another 6-inch PVC line runs 1,100 feet north along Batson Avenue from Farjardo.

- A second 12-inch PVC line branches off the main transmission line along Fairway, running east along Colima to Lemon, where a 6-inch PVC line branches off and runs north to serve several users. The 12-inch line continues east along Colima to Grand, where it turns north to a meter at the Diamond Bar Golf Course. The 12-inch line continues north along Grand, where it reconnects to the 20-inch main line on Valley. Two 6-inch PVC lines branch off the 12-inch line to supply a looped-system serving Gateway Corporate Center. Another 6-inch PVC line branches off the 12-inch line at Brea Canyon Road, terminating just north of Golden Springs Drive.
- In a 1994-95 extension of the recycled water system, a 12-inch PVC line was connected to the 20-inch main transmission line on Fairway, running east along Business Parkway and Currier Road, and terminating on Currier just before Brea Canyon Road. A 6-inch AC line branches off the 12-inch PVC line and runs north through an easement to join an 8-inch PVC line on Spanish Lane. The 8-inch PVC line runs west where it terminates just west of Brea Canyon. The 8-inch line also runs east on Spanish Lane, then north on Cheryl Lane and Brea Canyon to its terminus at the WWD office. This section serves the landscaping around a number of commercial and light industrial buildings.
- In a 1998-99 extension of the recycled water system, the 8-inch PVC line terminating at the WWD office was extended north approximately 940 feet to Old Ranch Road. From this point, the line turns east and runs approximately 1,040 feet to a frontage road along the Union Pacific Railroad, where it turns and runs north approximately 3,890 feet to its terminus at Grand in the City of Industry. Also during this year, a 12-inch PVC was connected to an existing 12-inch PVC line on Golden Springs, with the new line running approximately 600 feet south along Adel Avenue and Davan Street. Approximately 100 feet of DIP runs east along a right-of-way to Via Sorella, where the line changes back to PVC and continues south for approximately 750 feet to Brea Canyon. The line continues southerly for another 850 feet to its terminus at Diamond Lane. This line serves the Diamond Crest Homeowners Association.

## CENTRAL BASIN MWD - RIO HONDO SYSTEM

Construction began in April 1993 on a 22,000 gpm pump station, located adjacent to the 66-inch San Jose Creek Outfall on the east side of San Gabriel River Parkway, approximately 900 feet north of Beverly Boulevard. The pump station was completed in March 1994 and went on-line delivering recycled water in July 1994. The first schedule of pipeline construction in the City of Whittier and the City of Santa Fe Springs began in April 1993 and was completed in February 1994, with the Whittier Connector Unit crossing of the 605 Freeway/San Gabriel River being completed in May 1994. Construction on the Vernon Phase 1 and 2A Unit began in June 1993 and was completed in September 1994, while construction on the Pico Rivera, Montebello, Montebello/Vernon, and Vernon 2B units has not yet begun.

**Whittier Connector Unit:** A 48-inch cement mortar-lined and coated steel pipeline carries recycled water from the Rio Hondo pump station toward San Gabriel River Parkway. Just outside the pump station, a 36-inch cement mortar-lined and coated steel pipeline tees off and runs back toward the San Gabriel River levee, where it turns and runs 512 feet north. The line then turns east and invert siphons under the San Gabriel River channel, where it then crosses an SCE and a Yellow Freight Company railroad right-of-way. The line was then jacked 540 feet under a Union Pacific Railroad line and the 605 Freeway to Pioneer Boulevard, just south of Strong Avenue. Between the railroad and the freeway, the pipeline was reduced to 24-inches. The 30-inch line is contained in a 42-inch steel casing, and the 24-inch line is contained in a 36-inch steel casing. At Pioneer, the 24-inch line expands back to 30-inches, then it runs 1,025 feet southwest to a point where it is jacked under Beverly Blvd. in a 42-inch steel casing. This portion of the pipeline construction connects to the Whittier Unit on the south side of Beverly.

**Whittier Unit:** The construction for this schedule began where the Whittier Connector Unit ended on Pioneer just south of Beverly. From this point, the 30-inch line continues southwest along Pioneer for 1,305 feet to Orange Grove Avenue, where it turns southeast. The line continues for 2,827 feet along Orange Grove to Norwalk Boulevard, where it turns southwest and runs for 783 feet to El Rancho Drive. At this point, the line turns southeast and runs 3,209 feet along El Rancho Drive to a T-section at Broadway Road. From this T-section, an 18-inch line runs 302 feet east along Broadway to Western Avenue where it terminates in a temporary blow-off valve, plug and blind flange. Any future (although currently unplanned) extensions of the recycled water system into the City of Whittier will continue from the point.

From the T-section at El Rancho and Broadway, a 16-inch cement mortar-lined and coated steel pipeline continues southwesterly along Broadway for 7,923 feet to Norwalk Boulevard. Along the way, the line was jacked underneath Washington Boulevard. At Norwalk, the 16-inch line turns south and runs 2,416 feet to a point just south of Walnut Street, where the line connects to the Santa Fe Springs Unit. Along the way, the line was jacked underneath Slauson Avenue.

A second set of pipelines was constructed from the Rio Hondo pump station. From the pump station, a 48-inch cement-lined and coated steel pipeline runs to the property line on San Gabriel River Parkway, where it terminates in a T-section. A 12-inch line runs northeasterly 2,037 feet from the T-section along the parkway to the intersection of Fairway Drive, where it terminates in a blind-flanged T-section. Also branching from the 48-inch line T-section is a 36-inch cement-lined and coated steel line that runs southwesterly 975 feet to Beverly. At this point, the line reduces to 30-inches and terminates in a T-section at Tobias Avenue, with the 30-inch branch blind-flanged. A 10-inch line runs 60 feet along Tobias from the T-section before it also terminates in a blind-flange. Future construction will continue from the blind-flanged sections.

**Santa Fe Springs Unit:** The main portion of this construction schedule is a 16-inch cement-lined and coated steel that connects to the Whittier Unit on Norwalk Boulevard, between Walnut and Burke Streets. The 16-inch line continues south along Norwalk for 9,810 feet to Florence Avenue, where it connects to a 24-inch line of the Century recycled water distribution system. This is the first of several links between the two distribution systems. Along the 16-inch line in Norwalk, two T-sections were installed to allow for construction of other pipelines.

The first T-section on the 16-inch line is located at the intersection of Norwalk and Burke, with a 12-inch line branching off and running east for 1,580 feet to its termination at a T-section at Dice Road. From this point, a looped-section of pipelines begins. The northern portion consists of a 12-inch line running north on Dice for 577 feet to a T-section, then 1,660 feet east through an alley to a T-section on Sorenson Avenue, where the line reduces to 6-inches and continues south for 4,623 feet to a T-section at Santa Fe Springs Road, then 1,433 feet southwest to a T-section at Los Nietos Road. The south portion also begins at the T-section at Burke and Dice and consists of a 12-inch line running 2,754 feet south to Los Nietos, then 2,919 feet southeast to Santa Fe Springs Road, where it connects to the northern portion at the T-section.

From the T-section at Los Nietos and Santa Fe Springs Road (the street name changes to Bloomfield Avenue at Telegraph Road), the 12-inch line continues southwest for 4,575 feet to Florence Avenue, where it connects to a 12-inch line of the Century recycled water distribution system.

The second T-section on the 16-inch Norwalk line is located at Norwalk Boulevard and Los Nietos Road. From this point, an 8-inch line runs 4,117 feet west to Pioneer Boulevard, where the line terminates in a temporary blow-off valve and plug.

**Vernon Phase 1 and 2A Unit:** This section of pipeline connects the west side of the Rio Hondo distribution system to Schedule 4 of the Century distribution system, detailed in Section 2.3.4. The 12-inch line of Schedule 4 terminated at a T-section at the intersection of Atlantic Avenue and Tweedy Boulevard in the City of South Gate. From this point, an 18-inch line runs north for 5,823 feet along Atlantic to a T-section at Ardine Street, where a 10-inch line runs west for 2,372 feet to Quartz Avenue, then south for 511 feet to its terminus at Independence Avenue.

From the T-section at Atlantic and Ardine, the 18-inch line continues north for another 2,359 feet to a T-section at Elizabeth Street. At this intersection, the line turns west and runs for 2,563 feet to Otis Avenue. The 18-inch line turns north again and runs for 6,539 feet along Otis to a T-section at Randolph Street.

From the T-section at Otis and Randolph, a short section of 6-inch line runs east for 50 feet where a blind-flange was installed to allow for future construction. The 18-inch line continues west along Randolph for 6,299 feet to its terminus at Boyle Avenue. Along Randolph, an 8-inch line branches off at Newell Street and runs south for 2,745 feet to its terminus at Saturn Avenue.

**PUENTE HILLS/ROSE HILLS**

The distribution system consists of 2,956 feet of 36-inch reinforced concrete gravity line that runs east from the 66-inch San Jose Creek WRP Outfall on Workman Mill Road to the original landfill entrance. The first of two pump stations lifts 12,000 gpm of recycled water 500 feet through 2,200 feet of 36-inch force main to an existing 650,000 gallon reservoir located close to the PERG Facility. The second pump station lifts the recycled water another 300 feet through 3,700 feet of 30-inch force main to a 1.2 million gallon reservoir constructed by Rose Hills on the border between the landfill and cemetery. Construction of the gravity line was completed in June 1993, with construction of its connection to the San Jose Creek Outfall completed in March 1996. The last of the pre-purchased pumps and electrical components was delivered in November 1993. Two additional construction items had to be added to the project. First, a thrust block to restrain the force main leaving the first pump station was found to be necessary. Second, an air-gap connection to the landfill's potable water supply had to be devised and constructed.

In order to serve the eastern portions of the landfill and the upper areas of the ever-expanding cemetery, \$4 million of additional on-site distribution facilities were required. In mid 2001, construction was completed on a 2,200 gpm pump station (two 200 HP horizontal, split case pumps, with room for a future third pump) at the Rose Hills storage tank, 4,700 feet of 18-inch buried DIP leading to a new 800,000 gallon reservoir located at the former Nike site, with 2,000 feet of aboveground galvanized steel pipe serving the eastern landfill.

### USGVMWD - WHITTIER NARROWS RECREATION AREA EXTENSION

Recycled water is delivered from the USGVMWD pump station located adjacent to the chlorine contact tanks in the northwest section of the WNWRP. This pump station, designed by Tetra Tech, Inc., is capable of providing 10,000 gpm of recycled water to the transmission and distribution system. This pumping plant consists of one 200 HP, 2,000 gpm and three 350 HP, 4,000 gpm vertical turbine pumps provided by Simflo Pumps Inc. The third 4,000 gpm pump serves as a backup.

From the USGVMWD pump station the recycled water is transported through a 24-inch, Class 200 ductile iron pipeline (DIP) that runs northeasterly, suspended along the eastern side of the WRP's chlorine contact tank. All buried portions of the DIP have been double-bagged with 8 ml purple plastic to protect it against corrosion and to identify it as a recycled water pipeline. The 24-inch pipeline exits the pump station near the northeast corner of the WNWRP site and heads north for approximately 165 feet and turns northwest for 115 feet, tentatively following the property line. The pipeline then turns due west for 195 feet.

Approximately 50 feet south of the northwest corner of the WRP's property and a SCE easement, the 24-inch pipeline exits the WRP site and runs approximately 66 feet northwest to the southern edge of the SCE easement, then north through the easement for approximately 242 feet. On the north side of the easement, the pipeline is jacked under Mission Creek and encased in an 82-foot long, 36-inch welded steel casing. The 24-inch pipeline continues northward for another 907 feet, through an archery range and a second SCE easement to a point approximately 33 feet north of the easement where it ends in a Tee-section (hereinafter identified as "Junction 1").

There is a 24-inch butterfly valve on the western branch of the Tee at Junction 1, after which the 24-inch pipeline continues due west for 666 feet, then northwesterly for 229 feet, then due west again for another 403 feet, then northwesterly for another 131 feet until it reaches the eastern bank of the Rio Hondo. The 24-inch pipeline then follows the bike path northward for approximately 1,136 feet along the eastern edge of the river until it passes under the Caltrans 60 (Pomona) Freeway right-of-way. Under the freeway, the pipeline is encased in a 267-foot long, 36-inch welded steel casing. Just north of the freeway, the 24-inch pipeline turns east and runs parallel to the freeway for approximately 1,739 feet to Loma Avenue.

Along Loma Ave., the 24-inch pipeline runs north for approximately 1,890 feet where it reduces to an 18-inch Class 250 DIP. Along this 1,890-foot run, three Tee-sections with gate valves (two 6-inch and one 12-inch) were installed to serve the existing irrigation systems in what is known as Area "A" of the Whittier Narrows Recreation Area. The 18-inch pipeline continues north along Loma Ave. for another 1,333 feet where it terminates with an 18-inch butterfly valve and a blind-flange for future extension. Three more Tee-sections with 6-inch gate valves for servicing Area "A" have been installed along the 18-inch pipeline.

In order to interconnect the irrigation systems serving Area "A" (located north of the 60 Freeway and bordered by Loma Ave. on the west and Rosemead Boulevard on the east) and Area "B" (located east of Rosemead Blvd.), a 12-inch Class 350 DIP was installed. On the south side of the Rosemead entrance to Area "A", approximately 2,195 feet north of the 60 Freeway, a 12-inch tapping sleeve and gate valve was installed on an existing 12-inch AC irrigation pipeline. From this point, a 12-inch DIP runs 127 feet northeast to the north side of the park entrance where it was jacked under Rosemead Blvd. and encased in 180 feet of 18-inch welded steel casing. From the west side of Rosemead Blvd., the 12-inch pipeline runs due east for a total of approximately 658 feet to Area "B". At the end of this pipeline, an 8-inch reducer and tapping sleeve with a gate valve were installed on an existing 8-inch irrigation pipeline completing the interconnection of the two recreation areas.



Back at the Tee-section at Junction 1, the east branch reduces to a 16-inch Class 250 DIP through a butterfly valve, running due east for 270 feet to a Tee-section with a 6-inch stub-out and gate valve for a future extension. From this Tee, the 16-inch pipeline jogs slightly to the north, then continues due east for another 170 feet where a second Tee-section with a 6-inch stub-out and gate valve for a future extension was installed. From the second Tee, the 16-inch pipeline continues due east for another 710 feet where a third Tee-section with a 6-inch stub-out and gate valve for a future extension was installed. From the third Tee, the 16-inch pipeline continues due east for another 350 feet to the west side of Rosemead Blvd. at the southern entrance to the Whittier Narrows Recreation Area, approximately 1,422 feet south of the 60 Freeway. At this point, the 16-inch pipeline was jacked under the street and encased in 180 feet of 24-inch welded steel casing.

From the east side of Rosemead Blvd., the 16-inch pipeline continues 150 feet due east into Area "D" of the Whittier Narrows Recreation Area where a fourth Tee-section with a 6-inch stub-out and gate valve for a future extension was installed. From the fourth Tee, the 16-inch pipeline continues due east for another 1,038 feet to the edge of Legg Lake. From this point, the 16-inch pipeline was jacked under the connecting channel between the middle lake and the south lake and encased in 163 feet of 24-inch welded steel casing. From this point, the 16-inch pipeline continues due east for approximately 279 feet where it turns southeast and runs for another 1,744 feet to a Tee-section at the intersection of Santa Anita Avenue and Lexington Gallatin Road (hereinafter identified as "Junction 2").

There is a 16-inch butterfly valve on the southeastern branch of the Tee at Junction 2, after which the 16-inch pipeline continues southeast for 910 feet, where it terminates in a fifth Tee-section with a 6-inch stub-out and gate valve for a future extension.

Back at Junction 2 at the Santa Anita/Lexington Gallatin intersection, an 8-inch reducer and gate valve is connected to the Tee-section, and an 8-inch, Class 350 DIP pipeline runs northeasterly for approximately 1,032 feet. This pipeline then turns southeast and runs approximately 535 feet. The pipeline then runs due east for approximately 805 feet where it terminates at Andrews Street in a Tee-section with a 6-inch gate valve and an 8-inch lateral that serves a 4-inch stub out to South El Monte High School.

**LANCASTER EASTERN AGRICULTURAL SITE**

To deliver recycled water to this site, approximately 17.2 miles of transmission lines (terminating in a 2 million gallon storage tank) were designed and constructed to supply the proposed agricultural area of approximately 4,650 acres (3,800 acres actually cultivated). A 36-inch steel transmission line runs south from the Lancaster WRP along Sierra Highway, then east along East Avenue E. At 60<sup>th</sup> Street East, the transmission line transitions down to a 28-inch HDPE line and splits, with one line running down Avenue E then south on 90<sup>th</sup> Street East to Avenue G, then east again to its terminus halfway between 90<sup>th</sup> and 100<sup>th</sup> Streets. The second line runs south on 60<sup>th</sup> Street East then east on East Avenue F to 90<sup>th</sup> Street East where it reconnects with the first line.